Documents of the World Radiocommunication Conference (WRC-97) (Geneva, 1997)

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 301-E
15 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

FOURTH REPORT OF WORKING GROUP 4C TO COMMITTEE 4

Working Group 4C adopted the following proposed actions with regard to resolutions and recommendations for consideration by Committee 4.

Res. No. *	**Subject**	**Proposed action**
8	Transfer procedures/changes in HF-FX	NOC
39	Decisions of WARCs and use of monitoring facilities	NOC
500	New carrier for LFBC in R1	NOC
508	WRC for HFBC	SUP
511	Planning system for HFBC	SUP
512	HF transmitters in bands governed by RR 531	SUP
513	Harmful interference in HFBC bands	SUP
514	Technical standards for HFBC	SUP
515	HFBC Planning System/consultation procedure	SUP
516	Antennas in HFBC	SUP
517	Transition from DSB to SSB in HFBC	MOD (Attached)
523	Planning for HFBC	SUP
529	HFBC	SUP
530	Application of AR17	SUP
641	Use of the band 7 000 - 7 100 kHz	NOC

Rec. No. *	Subject	Proposed action
503	HFBC	MOD (Attached)
509	Experts in HFBC	SUP
510	Planning parameters for HFBC	SUP
512	Propagation prediction method for HFBC	SUP
513	National coverage in HFBC	SUP
514	Propagation prediction method for HFBC	SUP
515	DSB/SSB in HFBC	MOD (Attached)
516	Synchronized transmitters in HFBC	SUP
517	SSB PR in HFBC	NOC
518	HFBC receivers	NOC
519	Introduction of SSB	NOC
520	Elimination of out-of-band HFBC emissions	NOC

RESOLUTION 517 (Rev.WRC-97)

TRANSITION FROM DOUBLE-SIDEBAND (DSB) TO SINGLE-SIDEBAND (SSB) OR OTHER SPECTRUM-EFFICIENT MODULATION TECHNIQUES IN THE HF BANDS BETWEEN 5 900 kHz AND 26 100 kHz ALLOCATED TO THE BROADCASTING SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the HF bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz are severely congested;

b) that SSB techniques provide a more efficient utilization of the frequency spectrum than DSB techniques;

c) that SSB techniques enable reception quality to be improved;

d) that Recommendation **515 (HFBC-87)** encourages the accelerated design and manufacture of SSB transmitters and receivers;

e) Appendix **S11** to the Radio Regulations concerning the SSB system specification in the HF broadcasting services;

f) that rapid developments are taking place in digital sound broadcasting technologies;

g) that digital modulation or other spectrum-efficient modulation techniques are expected to provide the means to achieve the optimum balance between sound quality, circuit reliability and bandwidth;

h) that digitally modulated emissions can, in general, provide network coverage more efficiently than amplitude modulated transmissions by using fewer simultaneous frequencies and less power;

i) that the lifetime of a transmitter is at least twenty years;

j) that it is economically unattractive, using current technology, to convert existing conventional DSB broadcasting systems to SSB operation;

k) that some existing DSB transmitters have been used with digital modulation techniques without transmitter modifications;

l) that the lifetime of a receiver is of the order of ten years;

m) that the Radiocommunication Sector is carrying out urgent studies on the development of broadcast digital modulation emissions in the bands allocated to the broadcasting service below 30 MHz;

n) that other spectrum-efficient modulation techniques may be developed in the future,

resolves

1 that the procedure in the Annex to this Resolution shall be used for the purpose of ensuring an orderly transition from DSB to SSB or other spectrum-efficient modulation techniques recommended by ITU-R in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service;

2 that the final date for the cessation of DSB emissions specified in the Annex to this Resolution shall be periodically reviewed by competent future world radiocommunication conferences in the light of the latest available complete statistics on the worldwide distribution of SSB and other spectrum-efficient modulation technique transmitters and receivers, as called for in Resolution **COM4-14**,

instructs the Director of the Radiocommunication Bureau

to compile and maintain the statistics referred to in *resolves* 2, to make these statistics available to administrations and to submit summaries thereof to the competent future world radiocommunication conferences,

invites ITU-R

to continue its studies on digital techniques in HF broadcasting as a matter of urgency with a view to the development of this technology for future use in HF broadcasting,

invites administrations

to assist the Director of the Radiocommunication Bureau by providing the relevant statistical data and to participate in ITU-R studies on matters relating to the development and introduction of digitally modulated transmissions in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service.

ANNEX TO RESOLUTION 517 (Rev.WRC-97)

PROCEDURE FOR THE TRANSITION FROM DOUBLE-SIDEBAND (DSB) TO SINGLE-SIDEBAND (SSB) OR OTHER SPECTRUM-EFFICIENT MODULATION TECHNIQUES IN THE HF BANDS BETWEEN 5 900 kHz AND 26 100 kHz ALLOCATED TO THE BROADCASTING SERVICE

1 The early introduction of SSB or other spectrum-efficient modulation techniques recommended by ITU-R is encouraged.

2 All DSB emissions shall cease not later than 31 December 2015, at 2359 hours UTC.

3 SSB emissions shall comply with the characteristics specified in Appendix **S11** to the Radio Regulations.

4 Other spectrum-efficient modulation techniques, including digital, shall comply with the characteristics to be recommended by ITU-R.

5 After 31 December 2015, 2359 hours UTC, SSB emissions shall comply with the characteristics specified in Appendix **S11** to the Radio Regulations which, *inter alia*, require a carrier reduction of 12 dB relative to peak envelope power.

6 Until 31 December 2015, 2359 hours UTC, SSB emissions intended for reception by DSB receivers with envelope demodulation, in the bands currently used under Article **S12**, shall have a carrier reduction of 6 dB relative to peak envelope power.

7 SSB emissions with a carrier reduction of 12 dB relative to peak envelope power can also be introduced in the spectrum allocated for the type of emission described in § 6 above.

8 Other spectrum-efficient modulation techniques recommended by ITU-R, including digital, can also be introduced in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service.

9 Until 31 December 2015, 2359 hours UTC, whenever an administration replaces a DSB emission by an emission using SSB or other spectrum-efficient modulation techniques, including digital, it shall ensure that the level of interference is not greater than that caused by the original DSB emission.

RECOMMENDATION No. 503 (Rev.~~HFBC-87~~WRC-97)

HF BROADCASTING

The World ~~Administrative Radio Conference, for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987)~~Radiocommunication Conference (Geneva, 1997),

considering

a) the congestion of the HF broadcasting bands;

b) the extent of adjacent channel interference;

noting

the possibility of improving the situation by implementing pertinent ~~CCIR~~ITU-R Recommendations;

recommends that administrations

1. pay special attention to the provisions for "out-of-band spectrum" contained in ~~CCIR~~ Recommendation ITU-R SM.[328-~~6~~9];

2. encourage, to the maximum extent possible, manufacturers to design and build HF broadcasting receivers that conform to ~~CCIR~~ Recommendation ITU-R SM.[332-4] concerning the selectivity of receivers;

[invites administrations

to take advantage, to the maximum extent practicable, of synchronized frequency transmitter operation, taking into account ~~CCIR~~ITU-R Recommendation [205-2];]

invites ~~the CCIR~~ITU-R

to carry out further studies in relation to the Recommendations mentioned above, taking into account the requirements of HF broadcasting, with a view to updating these three Recommendations whenever necessary.

RECOMMENDATION No. 515 (~~HFBC-87~~Rev.WRC-97)

INTRODUCTION OF HF BROADCASTING TRANSMITTERS AND RECEIVERS CAPABLE OF ~~BOTH DOUBLE-SIDEBAND (DSB) AND SINGLE SIDEBAND (SSB) MODES OF OPERATION~~ OPERATION WITH SPECTRUM-EFFICIENT MODULATION TECHNIQUES

~~The World Administrative Radio Conference for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987)~~The World Radiocommunication Conference (Geneva, 1997),

considering

a) Resolution **517 (~~HFBC-87~~Rev.WRC-97)** relating to the introduction of SSB[1] ~~techniques~~ or other spectrum-efficient modulation techniques, including digital;

~~*b) that the First Session of the present Conference (Geneva, 1984), in its Report to the Second Session, dealt with the progressive introduction of SSB emissions;*~~

b) that industry should be encouraged to manufacture appropriate transmitters and receivers;

~~*c) that incentives clearly need to be provided to industry to manufacture receivers with synchronous demodulation, and appropriate transmitters;*~~

~~*d)* Appendix **45** to~~*c)* Appendix **S11** of the Radio Regulations relating to the SSB system specification for the HF bands allocated to the broadcasting service,

considering further

~~*e*~~*a)* that the introduction of SSB or other spectrum-efficient modulation techniques can be accelerated by the appropriate transmitting and receiving equipment being more widely available in good time;

~~*f*~~*b)* that lead-time is necessary for manufacturers to produce ~~equipment capable of working either in both modes, SSB[1] and DSB, or in the SSB[1] mode alone~~appropriate equipment,

~~*recommends to administrations*~~

~~that new transmitters which are installed after 31 December 1990 should, as far as possible, be capable of working either in both modes, SSB[1] and DSB, or in the SSB mode alone,~~

invites ~~the CCIR~~ITU-R

to complete its studies into receivers for ~~SSB~~spectrum-efficient modulation techniques,

~~invites~~recommends administrations

to bring to the notice of the transmitter and receiver manufacturers the most recent results of relevant ~~CCIR~~ITU-R studies on spectrum-efficient modulation techniques suitable for use at HF as well as the information referred to in *considering* *c)*~~*d)* and to encourage them to start to produce, by 31 December 1990, low-cost receivers having synchronous demodulators capable of receiving both DSB and SSB broadcasting emissions~~,

instructs the Secretary-General

to transmit this Recommendation to the International Electrotechnical Commission (IEC).

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~~[1] With the possibility of both a 6 dB and a 12 dB carrier reduction relative to peak envelope power.~~

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COMMITTEE 4

FIFTH REPORT OF WORKING GROUP 4C

RESOLUTION [COM4-16]

INFORMATION ON THE OCCUPANCY BY FIXED AND MOBILE SERVICES IN THE ADDITIONAL HF BANDS ALLOCATED BY WARC-92 TO THE BROADCASTING SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97, in response to Resolution **529 (WRC-95)** did not recommend a date or dates by which the fixed and mobile services, in the additional HF bands allocated by WARC-92 to the broadcasting service, would no longer be protected, due to insufficient information on the current use of these bands by the fixed and mobile services;

b) that the fixed and mobile services in use in each of the above-mentioned bands shall be protected until 1 April 2007;

c) that Resolution **21 (Rev.WRC-95)** established a procedure for the transfer of the fixed and mobile service assignments in the above-mentioned bands to other appropriate frequency bands;

d) that it may be possible and desirable for the broadcasting service to use parts of the above-mentioned bands prior to 1 April 2007,

resolves to instruct the Director of the Radiocommunication Bureau

1 to present a report to CPM-99 and WRC-99, providing information gathered by means of consultation with administrations, on the occupancy by fixed and mobile services in each of the additional HF bands allocated by WARC-92 to the broadcasting service;

2 to provide to CPM-99 and WRC-99 any new information with regard to possible sharing between broadcasting and other services in the HF bands, together with that information already provided to WARC-92,

urges administrations

1 to provide to the Director of the Radiocommunication Bureau the information which would permit the action in *resolves* 1 and 2 to be carried out;

2 to submit to WRC-99 proposals with regard to the status to be given prior to 1 April 2007 to the broadcasting service in each of the additional HF bands, or portions thereof, allocated by WARC-92 to the broadcasting service.

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COMMITTEE 4

SIXTH AND FINAL REPORT OF WORKING GROUP 4C TO COMMITTEE 4

At its final meeting, Working Group 4C adopted the following decisions:

1) In Article S12 (Document 279):
   - deletion of the word "exclusively" in the title and S12.1;
   - deletion of S12.14;
   - deletion of footnote 1 (in the title), as Resolution 529 has been proposed for deletion;
   - deletion of footnote 3 (in S12.9), as a consequence of adoption of Resolution COM4-6.
2) Suppression of Article S12A.
3) In Document 268, draft Recommendation 4C-A:
   - Deletion of the word "exclusively" in the title, *considering* a) and *considering* d).
4) Footnotes in Article S5:

MOD S5.134 The use of the bands 5 900 - 5 950 kHz, 7 300 - 7 350 kHz, 9 400 - 9 500 kHz, 11 600 - 11 650 kHz, 12 050 - 12 100 kHz, 13 570 - 13 600 kHz, 13 800 - 13 870 kHz, 15 600 - 15 800 kHz, 17 480 - 17 550 kHz and 18 900 - 19 020 kHz by the broadcasting service is limited to single-sideband emissions with the characteristics specified in Appendix **S11** to the Radio Regulations or to any other spectrum efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference.

   - Delete S5.135 and S5.148 and make consequential deletions in the Table of Frequency Allocations.

5) Propose the following modification of item 4 in the WRC-99 agenda:

   4. examination of the adequacy of the frequency allocations for HF broadcasting from about 4 MHz to 10 MHz taking into account the seasonal; planning procedures adopted by WRC-97 and to consider bringing forward the date of availability of the HF bands allocated by WARC-92 to the broadcasting service in response to Resolution [COM4-16] and Resolution [COM4-14].

6) No proposals for WRC-01 agenda relating to HF broadcasting issues.
7) Regarding the date of entry into force of Article S12, Working Group 4C was prepared to accept the date applicable to other provisions concerning coordination, notification and recording of frequency assignments.

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COMMITTEE 4

CHAIRMAN, WORKING GROUP 4A

FIFTH REPORT FROM WORKING GROUP 4A TO COMMITTEE 4

1 The Working Group reviewed the text of Article S9 of the Simplified Radio Regulations, from the point of view of the consistency of its provisions with other provisions of the Radio Regulations, based on the decisions taken at the ninth meeting of Committee 4 concerning the methodology to be followed in this respect (Document 284 refers). The approved text also reflects some of the decisions taken by WG PL1. The approved text, as reproduced in Attachment 1, is submitted to Committee 4 for consideration.

2 In accordance with agenda item 2, the Working Group considered the issues related to the revised ITU-R Recommendations incorporated by reference in the Radio Regulations, which have been communicated by the RA-97 (Document 122 refers) in accordance with Resolution 28 (WRC-97). In this connection, the Working Group proposes to update the following references in the Radio Regulations, in accordance with the principles contained in the Annex to Resolution 27 (WRC-95):

- In No. **S1.14**, change the reference from **ITU-R TF.460-4** to **ITU-R TF.460-5**.
- In Nos. **S51.35**, S52.148, S52.149, S52.152, S52.153, **S52.159** and S54.2, change the reference from **ITU-R M.541-6** to **ITU-R M.541-8**.
- In **Appendix S5 (Annex 1, 3.2, Table 1)** and Resolution 46 (Rev.WRC-95) (Annex 2, Table 1), change the reference from **ITU-R M.1185** to **ITU-R M.1185-1**.
- In Nos. **S5.511A** and S29.12, change the reference from **ITU-R RA.769** to **ITU-R RA.769-1** (the new reference was already used in No. S5.208A).

The text of Resolution 27 (WRC-95) is still under consideration in Working Group 4A and the appropriate conclusions in this respect will be communicated in another report.

Attachment: 1

ATTACHMENT 1

ARTICLE S9

MOD **Procedure for Effecting Coordination With or Obtaining Agreement of Other Administrations**[1, 2, 3, 4]

ADD AS9.4 [4] Resolution [**GTPLEN2-1**] shall also be applied with respect to those Space Networks that are subject to it.

Note by WG 4A - It may be necessary to include an additional footnote referencing a Resolution on the implementation of certain provisions of this Article.

MOD A.S9.1 [1] For the application of the provisions of this Article with respect to stations in a space radiocommunication service using frequency bands covered by the fixed-satellite service allotment plan, see also Appendix **S30B** ~~and Resolution **107 (Orb-88)**~~.

MOD A.S9.3 [3] See Appendices **S30** and **S30A** as appropriate for the coordination of: ~~frequency assignments of other services in relation to stations of the broadcasting-satellite service and to stations of feeder links for this service in the bands covered by those Appendices.~~

a) proposed modifications to the Appendices **S30** Plan for the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

b) frequency assignments in other services to which the frequency bands referred to in a) above are allocated, with respect to assignments in the broadcasting-satellite service which are subject to the Appendix **S30** Plans;

c) proposed modifications to the Appendices **S30A** Plan for the feeder links to the broadcasting-satellite service in the frequency bands 17.3 - 17.8 GHz (in Region 2), and 14.5 - 14.8 GHz and 17.3 - 18.1 GHz (in Regions 1 and 3), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

d) frequency assignments in other services to which the frequency bands referred to in c) above are allocated, with respect to assignments in the fixed-satellite service (Earth-to-space) which are subject to the Appendix **S30A** Plan.

For the broadcasting-satellite service and for the feeder links for the broadcasting-satellite service in the fixed-satellite service in Region 2, Resolution **42** (**Orb-85**) is also applicable.

MOD **Section I. Advance Publication of Information on ~~Planned~~ Satellite Networks or Satellite Systems - General**

MOD **S9.1** Before initiating any action under this Article or under Article **S11** in respect of frequency assignments for a satellite network or a satellite system, an administration, or one[1] acting on behalf of a group of named administrations, shall, prior to the coordination procedure described in Section II of Article **S9** below, where applicable, send to the Bureau a general description of the network or system for advance publication in the Weekly Circular not earlier than ~~six~~five years and preferably not later than two years before the planned date of bringing into use of the network or system (see also No[s]. **S11.44 [**and **S11.44B]**). The characteristics to be provided for this purpose are listed in Appendix **S4**. The coordination or notification information may also be communicated to the Bureau at the same time; it shall be considered as having been received by the Bureau not earlier than six months after the date of receipt of the information for advance publication where coordination is required by Section II of Article **S9**. Where coordination is not required by Section II, notification shall be considered as having been received by the Bureau not earlier than six months after the date of publication of the advance publication information.

NOC **S9.1.1** [1] Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of that group retain the right to respond in respect of their own networks or systems.

MOD **S9.2** Amendments to the information sent in accordance with the provisions of No. **S9.1** shall also be sent to the Bureau as soon as they become available. ~~For geostationary-satellite networks and non-geostationary-satellite networks which are subject to Section II of Article **S9**,~~ The use of an

additional frequency band will require the application of the advance publication procedure for this band. ~~For non-geostationary-satellite networks which are not subject to Section II of Article **S9**, the use of an additional frequency band or an extension of the service area will require the application or recommencing, respectively, of the advance publication procedures for these modifications (see Resolution **48 (WRC-95)**).~~

NOC **S9.2A** If the information is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

NOC **S9.2B** On receipt of the complete information sent under Nos. **S9.1** and **S9.2**, the Bureau shall publish it in a Special Section of its Weekly Circular within three months. When the Bureau is not in a position to comply with the time limit referred to above, it shall periodically so inform the administrations, giving the reasons therefor.

ADD **Sub-Section IA. Advance Publication of Information on Satellite Networks or Satellite Systems That Are Not Subject to Coordination Procedure under Section II**

MOD **S9.3** If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration believes that interference which may be unacceptable may be caused to its existing or planned satellite networks or systems ~~or terrestrial stations~~[2], it shall within four months of the date of the Weekly Circular communicate to the publishing administration its comments on the particulars of the anticipated interference to its existing or planned systems. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available. If no such comments are received from an administration within the aforementioned period, it may be assumed that there are ~~administration concerned has~~ no ~~basic~~ objections to the planned satellite network(s) of the system on which details have been published.

SUP **S9.3.1** ~~[2] The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. **S9.11**, **S9.11A** and **S9.21**.~~

MOD **S9.4** In the case of difficulties, the administration responsible for the planned satellite network shall explore all possible means to resolve the difficulties without considering the possibility of adjustment to networks of other administrations. If no such means can be found, it may request the other administrations to explore all possible means to meet its requirements. The administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks. An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of No. **S9.2B** shall, after the

period of four months, inform the Bureau of the progress made in resolving any difficulties. If necessary, a further report shall be provided prior to ~~the commencement of coordination or~~ the submission of notices under Article **S11** to the Bureau.

NOC **S9.5** The Bureau shall inform all administrations of the list of administrations which have sent comments under No. **S9.3** and provide a summary of the comments received.

MOD **S9.5A** The procedure of Section IA shall be considered ~~solely~~mainly for the purposes of informing all administrations of developments in the use of space radiocommunications ~~and minimizing any difficulties that might otherwise arise during the coordination stage~~.

ADD **Sub-Section IB. Advance Publication of Information on Satellite Networks or Satellite Systems That Are Subject to Coordination Procedure under Section II**

ADD **S9.5B** If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration considers its existing or planned satellite systems or networks or terrestrial stations[1] to be affected, it may send its comments to the administration responsible for the satellite system or networks in question, so that the latter may take those comments into consideration when initiating the coordination procedure. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available.

ADD **S9.5B.1** [1] The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. **S9.11**, **S9.11A** and **S9.21**.

ADD **S9.5C** The procedure of Section IB shall be considered mainly for the purposes of informing all administrations of developments in the use of space radiocommunications

ADD **S9.5D** If the information under No. **S9.30** has not been received by the Bureau within the period of 24 months of the date of receipt by the Bureau of the relevant information under Nos. **S9.1** and **S9.2,** the information published under No. **S9.2B** shall be cancelled after the administration concerned has been informed at least three months before the end of the 24-month period. The Bureau shall also publish the cancellation in its Weekly Circular.

MOD **Section II. Procedure for Effecting Coordination ~~Procedure~~**

Sub-Section IIA. Requirement and Request for Coordination

MOD **S9.6** Before an administration[1,2] notifies to the Bureau or brings into use a frequency assignment in any of the cases listed below, it shall effect coordination, as required, with other administrations identified under No. S9.27:

MOD **S9.6.1** [1] In the case of coordination of an assignment in a satellite network ~~in relation to another satellite network~~, an administration may act on behalf of a group of named administrations. Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of the group retain the right to respond in respect of their own services which could affect or be affected by the proposed assignment~~networks or systems~~.

ADD **S9.6.2** [2] In all cases, the coordination of an earth station with terrestrial stations or other earth stations operating in the opposite direction of transmission shall remain within the authority of the administration on the territory of which this station is located.

MOD **S9.7** *a)* for a station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, ~~for~~ in any space radiocommunication service~~s and frequency bands except those covered by the Plans of Appendices **S30, S30A** and **S30B**~~ in a frequency band and in a region where this service is not subject to a Plan, with the exception of coordination between earth stations operating in the opposite direction of transmission.

NOC **S9.8** *b)*[4] for a transmitting space station of the fixed-satellite service using the geostationary-satellite orbit in a frequency band shared on an equal primary basis with the broadcasting-satellite service, in respect of stations of the latter service which are subject to the Appendix **S30** Plan;

NOC **S9.9** *c)*[4] for a transmitting space station of the fixed-satellite service using the geostationary-satellite orbit in a frequency band shared on an equal primary basis with the feeder links of the broadcasting-satellite service which are subject to the Appendix **S30A** Plan;

MOD [4] ~~Application of these provisions is suspended pending the decision of the 1997 World Radiocommunication Conference on revision of Appendices **S30** and **S30A** with respect to Articles 6 and 7 of those two~~

~~Appendices.~~Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD **S9.11** *d)* for a space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and ~~in which there is no plan for~~where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services;

NOC **S9.11A** *e)* for a station for which the requirement to coordinate is included in a footnote of the Table of Frequency Allocations referring to this provision:

MOD **S9.13** ii) in a satellite network using the geostationary-satellite orbit, in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

MOD **S9.15** iv) which is either a specific earth station or typical [mobile] earth station of a non-geostationary satellite network, in respect of terrestrial stations in frequency bands allocated with equal rights to space and terrestrial services and where the coordination area of the earth station includes the territory of another country;

NOC **S9.17** *f)*[5] for any specific earth station or typical [mobile] earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services, in respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country, with the exception of the coordination under No. **S9.15**;

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5 ~~Application of these provisions is suspended pending the decision of the 1997 World Radiocommunication Conference on revision of Appendices **S30** and **S30A** with respect to Articles 6 and 7 of those two Appendices.~~ Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD **S9.17A** *g)* for any specific earth station, in respect of other earth stations operating in the opposite direction of transmission, in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission and where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station, with the exception of the frequency bands subject to the Appendix **S30A** Plans;

MOD **S9.18** *h)* for any transmitting station of a terrestrial service in the bands referred to in No. **S9.17** within the coordination area of an earth station, in respect of this earth station, with the exception of the coordination under Nos. **S9.16** and **S9.19**;

MOD **S9.19** *i)*[6] for any transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to an earth station of the broadcasting-satellite service, except where this service is subject to the Appendix **S30** Plan;

MOD [6] ~~The application of these provisions with respect to the bands and services of Articles 6 and 7 of Appendices S30 and S30A is suspended pending the decision for the 1997 World Radiocommunication Conference on revision of those two Appendices.~~Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

NOC **S9.32** If the responsible administration concludes that coordination is not required under Nos. **S9.7** to **S9.9**, it shall send the relevant information pursuant to Appendix **S4** to the Bureau for action under No. **S9.34**.

NOC **S9.41** Following receipt of the Weekly Circular referring to requests for coordination under Nos. **S9.7** to **S9.9**, an administration believing that it should have been included in the request shall, within four months of the date of publication of the relevant Weekly Circular, inform the initiating administration and the Bureau, giving its technical reasons for doing so, and shall request that its name be included.

MOD **S9.43** ~~Following action under No. **S9.41**, t~~Those administrations not responding under No. **S9.41** within the time limit specified ~~in No. **S9.41**~~ therein shall be regarded as unaffected and the provisions of Nos. **S9.48** and **S9.49** shall apply.

Sub-Section IIC. Action Upon a Request for Coordination

MOD **S9.50** An administration having received a request for coordination under Nos. **S9.7** to **S9.21**, or having been included in the procedure following action under No. **S9.41**, shall promptly examine the matter with regard to interference which may be caused to, or in certain cases, by its own assignments[2], identified in accordance with Appendix **S5**[3].

MOD **S9.51** Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.7** to **S9.9** shall, within four months of the date of publication of the ~~relevant~~ Weekly Circular under No. **S9.38**, either inform the requesting administration and the Bureau of its agreement or act under No. **S9.52**.

MOD **S9.51A** Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.15** to **S9.19** shall, within four months of the date of dispatch of the coordination data under No. **S9.29**, either inform the requesting administration of its agreement or act under No. **S9.52**.

MOD **S9.52** If an administration, following its action under Nos. **S9.50**, does not agree to the request for coordination, it shall, within the ~~same~~ four-months ~~period~~of the date of publication of the Weekly Circular under **S9.38**, or of the date of dispatch of the coordination data under No. **S9.29**, inform the requesting administration of its disagreement and shall provide information concerning its own assignments upon which that disagreement is based. It shall also make such suggestions as it is able to offer with a view to satisfactory resolution of the matter. A copy of that information shall be sent to the Bureau. Where the information relates to terrestrial stations or earth stations operating in the opposite direction of transmission within the coordination area of an earth station, only that information relating to existing radiocommunication stations or to those to be brought into use within the next three months for terrestrial stations, or three years for earth stations, shall be treated as notifications under Nos. **S11.2** or **S11.9**.

NOC **S9.52C** For coordination requests under Nos. **S9.11** to **S9.14** and **S9.21**, an administration not responding under No. **S9.52** within the same four-month period shall be regarded as unaffected and, in the cases of **S9.11** to **S9.14**, the provisions of Nos. **S9.48** and **S9.49** shall apply.

MOD **S9.60** If, within the same four-month period specified in Nos. **S9.51** or **S9.51A**, an administration with which coordination is sought under Nos. **S9.7 - S9.9** and **S9.15 - S9.19** fails to reply or to give a decision under Nos. **S9.51** or **S9.51A** or, following its ~~action~~disagreement under No. **S9.52**, fails to ~~reply, to give a decision or to~~ provide information concerning its own assignments on which its disagreement is based, the requesting administration may seek the assistance of the Bureau.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 305-E
15 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

FIFTH REPORT OF WORKING GROUP 4D TO COMMITTEE 4

Since the last report to Committee 4, the following progress has been made in WG 4D:

1 The Chairman and the BR representative met with the delegate of Russia to resolve a question raised by him during the meeting of Committee 4 concerning the identification of Tables X and XX in Section 1.5 of Document 269. It was agreed that the Tables X and XX refer to Tables 2 and 3 of Article 10, Appendix 30. The BR will be preparing the text with the references in the appropriate language for the Final Acts. The Russian delegation agreed with this reference, so long as the table proposed in the Russian proposal RUS/15/12 will be studied by ITU-R between now and 1999 for possible revision at WRC-99.

2 Regarding further changes to Annex 2 of Appendices 30 and 30A indicated in Document DT/8, several sections were considered non-applicable since they refer to changes to Appendix S4 which will not be pursued after the compromise that was reached on the approach to regulatory/procedural issues. Some sections remain pending and will be dealt with at the next meeting.

3 Working Group 4D ad hoc 6 was established to study the beam grouping concept when using one orbital position, and to consider those beam groupings that have been received by the Bureau based on the use of more than one orbital position. Existing systems in the Plan will not be touched.

4 Concerning Annex 7 of Appendix 30, it was agreed to retain it without changes at this Conference. WG 4D ad hoc has been asked to included appropriate text indicating that Annex 7 will be reviewed within the context of the preparation for the possible planning conference (including the 8 dB reduction). Appropriate action on Annex 7 will be taken at WRC-99. In the mean time the reference in Annex 7 to a reduction of 8 dB will be applied only to systems with e.i.r.p.s that are at the level of the 1977 Plan.

5 Concerning the use of either OEPM or EPM method to examine Article 4 proposed modifications to Appendices 30 and 30A, the meeting agreed to apply the EPM method.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 306-E
17 November 1997
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COMMITTEE 4

FIRST REPORT OF AD HOC 1 OF COMMITTEE 4

The annexed Resolution was agreed to go forward to Committee 4. The Resolution still contains square brackets to be resolved as follows:

- [multinational and subregional] (*considering* d) and *recognizing* a) and c)) – it is understood definitions for the appropriate term to be used are currently being considered in WG 4D and this text should be aligned with any decision made;
- [should] – this word in the *resolves* was agreed for forwarding to Committee 4 but several delegations wished to comment during the Committee 4 consideration of the document.

ANNEX

DRAFT RESOLUTION [COM4-XA]

OPERATION OF BROADCASTING SATELLITES SERVING OTHER COUNTRIES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) the institutional nature of ITU, which is founded on an agreement between Member States;

b) the treaty status of the Plans in Appendices **S30** and **S30A**;

c) that the Plans were established recognizing planning principles which included, *inter alia*, that the Plans should be based mainly on national coverage;

d) the increasing number of applications under Article **4** for modifications to the Plans which lead to many [multinational and subregional] systems;

e) that **S23.13 [2674]** requires that: "in devising the characteristics of a space station in the broadcasting-satellite service, all technical means available shall be used to reduce, to the maximum extent practicable, the radiation over the territory of other countries unless an agreement has been previously reached with such countries",

recognizing

a) that current technology provides opportunities to implement broadcasting-satellite systems with [multinational or subregional] service areas;

b) that several such systems have been implemented and others are being planned;

c) that successful Article **4** coordination of [multinational and subregional] systems does not in any way imply licensing authorization to provide a service within the territory of a Member,

resolves

that, in addition to observing **S23.13 [2674]**, and before providing satellite broadcasting services to other administrations, administrations originating the services [should] obtain the agreement of those other administrations.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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17 November 1997
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

NOTE FROM THE CHAIRMAN OF COMMITTEE 5
TO THE CHAIRMAN OF COMMITTEE 4

MODIFICATIONS TO APPENDIX S5

As part of its consideration of the WRC-97 agenda, Committee 5 considered modifications to Sections 1.2.2 and 1.2.3 of Appendix S5.

The text approved by Committee 5 containing these modifications can be found in Document 244. Committee 4 should take these into account when considering modifications to Appendix S5.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

SECOND SERIES OF TEXTS SUBMITTED BY WORKING GROUP 1 OF THE PLENARY TO THE EDITORIAL COMMITTEE

Working Group 1 of the Plenary has concluded its consideration of Document DT/46+Addendum 1 and unanimously adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairman of Working Group 1 of the Plenary

Annex: 1

Proposed action with regard to WARC/WRC Resolutions

Resolution No. *	Subject	Proposed action
16 (WARC-79)	Telecommunications for rural development	SUP
17 (WARC-79)	Conference structure	SUP
19 (Mob-87)	Regional conferences	SUP
22 (WARC-92)	Changes in allocations/assistance	SUP
37 (WARC-79)	Automated Frequency Management	SUP
38 (Rev.Mob-87)	Reassignment of frequencies in 2 MHz (R1)	SUP
45 (Orb-88)	Improved accuracy of MIFR, IFL, List VIIIA	SUP
47 (WRC-95)	Immediate application of RS46 in some bands	SUP
61 (WARC-79)	Division of the world into climatic zones	SUP
65 (WARC-79)	Cross-referencing of ITU-R Recommendations in RR	SUP
69 (Orb-88)	Simplified methods for interference assessment	SUP
93 (WARC-92)	Treatment of Resolutions/Recommendations	SUP
94 (WARC-92)	**Review of Resolutions/Recommendations**	SUP
104 (Orb-88)	Application of RR1550	SUP
106 (Orb-88)	Provisional application of AP30A	SUP
107 (Orb-88)	Existing networks AP30B	SUP
109 (Orb-88)	AP30A in MIFR	SUP
113 (WARC-92)	Adjustment to FX in 1 - 3 GHz	SUP
403 (WARC-79)	Aeronautical frequencies (3 023 kHz and 5 680 kHz)	SUP
409 (Mob-87)	Aeronautical public correspondence	SUP
410 (WARC-92)	Development of AP26 Plan	SUP
505 (WARC-79)	BSS (sound) in 1.5 GHz	SUP
507 (WARC-79)	Agreements/Plans for BSS	SUP
640 (WARC-79)	Disaster communications	SUP
702 (WARC-79)	RARC for VHF/UHF bands in R3	SUP
704 (Mob-83)	Planning of MMS/Aero. Nav. in LF/MF	SUP
718 (WRC-95)	**Agenda for WRC-97**	SUP
719 (WRC-95)	**Urgent studies for WRC-97**	SUP

Proposed action with regard to WARC/WRC Recommendations

Recommendation No. *	Subject	Proposed action
1 (WARC-79)	Use of space systems in disasters ...	SUP
2 (WARC-79)	**Spectrum occupation by space services**	SUP
6 (WARC-79)	Assistance to developing countries	SUP
10 (WARC-79)	Presentation of draft amendments to RR	SUP
11 (WARC-79)	Marginal numbering of the RR	SUP
13 (WARC-79)	WARC for partial revision of RR	SUP
15 (Orb-88)	Review of Article 14 of the RR	SUP
30 (WARC-79)	International monitoring	SUP
31 (WARC-79)	Handbook on Frequency Management	SUP
60 (WARC-79)	Technical standards of the IFRB	SUP
62 (WARC-79)	Classification of emissions	SUP
65 (WARC-79)	Spectrum sharing	SUP
68 (WARC-79)	Studies on propagation and noise	SUP
69 (WARC-79)	Frequency tolerances	SUP
72 (WARC-79)	Terminology	SUP
73 (WARC-79)	Use of term "channel"	SUP
74 (WARC-79)	Use of SI	SUP
103 (WARC-79)	Energy dispersal in FSS systems	SUP
403 (WARC-79)	Congestion in HF - AM(R)S	SUP
406 (WARC-79)	Revision of AP26	SUP
407 (WARC-79)	Definition of sub-area 5B in AP27	SUP
502 (WARC-79)	Specification of low-cost TV receivers	SUP
505 (WARC-79)	Propagation studies in 12 GHz, BSS	SUP
508 (WARC-79)	BSS transmitting antennae	SUP
601 (WARC-79)	Frequency band for collision avoidance system	SUP
607 (Mob-87)	Requirements for MLS in 5 GHz	SUP
620 (WARC-79)	Meteo Aids in 27 MHz	SUP
704 (WARC-79)	Sharing BC/Radionav. at VHF	SUP
712 (WARC-79)	Design characteristics for BSS	SUP
714 (Mob.87)	Compatibility BC/AM(R)S in VHF	SUP

UNION INTERNATIONALE DES TELECOMMUNICATIONS

CMR-97 CONFERENCE MONDIALE DES RADIOCOMMUNICATIONS

GENEVE, 27 OCTOBRE – 21 NOVEMBRE 1997

Corrigendum 2 au Document 309-F/E/S 20 novembre 1997 Original: anglais

SÉANCE PLÉNIÈRE

MODIFICATION AU RAPPORT DE LA COMMISSION 2 À LA SÉANCE PLÉNIÈRE

(Pouvoirs)

Il convient d'effectuer les modifications suivantes à l'Annexe au Document 309 :

Section 1	Insérer	MOZAMBIQUE SOUDAN
Section 2	Insérer	ALBANIE GAMBIE
Section 4	Supprimer	ALBANIE GAMBIE

Adolar MAPUNDA
Président

PLENARY MEETING

MODIFICATION TO THE REPORT OF COMMITTEE 2 TO THE PLENARY MEETING (Credentials)

The following modifications should be made to the Annex to Document 309 :

Section 1	Insert	MOZAMBIQUE SUDAN
Section 2	Insert	ALBANIA GAMBIA
Section 4	Delete	ALBANIA GAMBIA

Adolar MAPUNDA
Chairman

SESIÓN PLENARIA

MODIFICACIÓN AL INFORME DE LA COMISIÓN 2 A LA SESIÓN PLENARIA (Credenciales)

Procede introducir en el anexo al Documento 309 las modificaciones siguientes:

Sección 1	Insertar	MOZAMBIQUE SUDAN
Sección 2	Insertar	ALBANIA GAMBIA
Sección 4	Suprimir	ALBANIA GAMBIA

Adolar MAPUNDA
Presidente

UNION INTERNATIONALE DES TELECOMMUNICATIONS

CMR-97 CONFERENCE MONDIALE DES RADIOCOMMUNICATIONS

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SÉANCE PLÉNIÈRE

MODIFICATION AU RAPPORT DE LA COMMISSION 2 À LA SÉANCE PLÉNIÈRE (Pouvoirs)

Il convient d'effectuer les modifications suivantes à l'Annexe au Document 309 :

Section 1	Insérer	PHILIPPINES
Section 2	Insérer	LIBYE ZAMBIE
Section 4	Supprimer	LIBYE PHILIPPINES ZAMBIE

Adolar MAPUNDA
Président

PLENARY MEETING

MODIFICATION TO THE REPORT OF COMMITTEE 2 TO THE PLENARY MEETING (Credentials)

The following modifications should be made to the Annex to Document 309 :

Section 1	Insert	PHILIPPINES
Section 2	Insert	LIBYA ZAMBIA
Section 4	Delete	LIBYA PHILIPPINES ZAMBIA

Adolar MAPUNDA
Chairman

SESIÓN PLENARIA

MODIFICACIÓN AL INFORME DE LA COMISIÓN 2 A LA SESIÓN PLENARIA (Credenciales)

Procede introducir en el anexo al Documento 309 las modificaciones siguientes:

Sección 1	Insertar	FILIPINAS
Sección 2	Insertar	LIBIA ZAMBIA
Sección 4	Suprimir	LIBIA FILIPINAS ZAMBIA

Adolar MAPUNDA
Presidente

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

Document 309-E
17 November 1997
Original: English

PLENARY MEETING

REPORT BY COMMITTEE 2 TO THE PLENARY MEETING
(Credentials)

1. Terms of reference

To verify the credentials of delegations and to report on its conclusions to the Plenary Meeting within the time specified by the latter (No. 361 of the Convention, Geneva, 1992).

2. Meetings

The Committee met twice, on 30 October and 17 November 1997.

At its first meeting, it set up a working group comprised of the Chairman and the Vice-Chairman of the Committee and delegates from Spain, United States, Hungary, Japan and Russia to verify the credentials of delegations, in accordance with Article 31 of the Convention of the International Telecommunication Union (Geneva, 1992).

3. Credentials

The situation is as follows:

- 126 credentials were deposited to date with the Secretariat of Committee 2,
- 125 credentials are in order, out of which 3 received clarifications by telegram, according to No. 338 of the Geneva Convention, 1992,
- 1 credential is not in order.

4. Transfer of powers

In accordance with the provisions of No. 335 of the Geneva Convention (1992), the transfer of powers from Micronesia to the United States was found to be in order.

.../...

5. Conclusions

The Committee's conclusions are given in the Annex to the present document and are submitted to the Plenary Meeting for approval.

6. Closing remarks

The Committee recommends the Plenary to authorize the Chairman and/or the Vice-Chairman of Committee 2 to verify the credentials received after the date of this report and to submit their conclusions in that respect to the Plenary Meeting.

Adolar MAPUNDA
Chairman

Annex : 1

ANNEX

1. Credentials deposited by the delegations of countries having the right to vote and found to be in order

ALGERIA
GERMANY
ANDORRA
SAUDI ARABIA
ARGENTINA
ARMENIA
AUSTRALIA
AUSTRIA
BAHAMAS
BAHRAIN
BANGLADESH
BELARUS
BELGIUM
BENIN
BRUNEI DARUSSALAM
BULGARIA
BURKINA FASO
CAMEROON
CANADA
CHINA
CYPRUS
VATICAN CITY STATE
COLOMBIA
KOREA (REP. OF)
CROATIA
CUBA
DENMARK
EGYPT
UNITED ARAB EMIRATES
ECUADOR
SPAIN
ESTONIA
UNITED STATES
ETHIOPIA
FINLAND
FRANCE
HUNGARY
INDIA
INDONESIA
IRAN (ISLAMIC REPUBLIC OF)
IRELAND
ICELAND
ISRAEL
ITALY
JAPAN
JORDAN
KENYA
KUWAIT
LAO P.D.R.
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
LIECHTENSTEIN
LUXEMBOURG
MALAYSIA
MALI
MALTA
MOROCCO
MAURITIUS
MEXICO
MOLDOVA
MONACO
MONGOLIA
NAMIBIA
NEPAL
NORWAY
NEW ZEALAND
OMAN
UGANDA
PAKISTAN
PAPUA NEW GUINEA
PARAGUAY
NETHERLANDS
POLAND
PORTUGAL

SYRIA
KYRGYZSTAN
DEM. PEOPLE'S REP. OF KOREA
SLOVAKIA
CZECH REPUBLIC
ROMANIA
UNITED KINGDOM
RUSSIA
SAN MARINO
SENEGAL
SINGAPORE
SLOVENIA
SRI LANKA
SOUTH AFRICA
SWEDEN
SWITZERLAND
SURINAME
THAILAND
TOGO
TONGA
TUNISIA
UKRAINE
VENEZUELA
VIET NAM
ZIMBABWE

Conclusion

The delegations of the above countries are entitled to vote and to sign the Final Acts.

2. Credentials deposited by the delegations of countries without the right to vote and found to be in order (see Document 99(Rev.3))

BRAZIL
BURUNDI
CAPE VERDE
CHILE
COSTA RICA
EL SALVADOR
GABON
GHANA
GREECE
GUINEA
JAMAICA
KAZAKSTAN
LATVIA
LEBANON
LIBERIA
LITHUANIA
MALAWI
MAURITANIA
NIGER
NIGERIA
UZBEKISTAN
PANAMA
QATAR
TANZANIA
CHAD
TURKEY
YEMEN

Conclusion

The delegations of the above countries are not entitled to vote but may sign the Final Acts.

3. Transfer of powers deposited by countries unable to send their own delegations to the Conference (No. 335 of the Geneva Convention) and found to be in order (see Document 98)

FROM	TO
MICRONESIA	UNITED STATES

Conclusion

The delegation of the United States is entitled to vote and to sign on behalf of the Federated States of Micronesia.

4. Delegations participating in the Conference which have not deposited credentials or for which credentials have not been found in order

ALBANIA ***)**
ANGOLA ***)**
BOSNIA AND HERZEGOVINA
CÔTE D'IVOIRE
DOMINICAN REPUBLIC ***)**
FIJI ***)**
GAMBIA ***)**
GEORGIA ***)**
GUATEMALA ***)**
LIBYA ***)**
PERU
PHILIPPINES
TRINIDAD AND TOBAGO
URUGUAY ***)**
ZAMBIA ***)**

Conclusion

The delegations of the above countries are not entitled to vote nor to sign the Final Acts until the situation has been rectified.

_____

***)** These countries have lost their right to vote (See Document 99(Rev.4)).

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 310-E
27 November 1997
Original: French

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

SUMMARY RECORD

OF THE

NINTH MEETING OF COMMITTEE 4

(REGULATORY AND ASSOCIATED ISSUES)

Friday, 14 November 1997, at 1935 hours

Chairman: Mr. E. George (Germany)

Subjects discussed		**Documents**
1	Announcement by the Chairman of Working Group PLEN-1	-
2	Report by the Chairman of ad hoc Group 2	284

1 Announcement by the Chairman of Working Group PLEN-1

1.1 The **Chairman of Working Group PLEN-1** urged participants to make every effort to resolve outstanding issues, given the large number of items being forwarded to WRC-99. The list of items was such that, as things stood, it was impossible to set an agenda for the next conference. Moreover, the financial implications of the decisions of the current Conference, especially in terms of the work of BR and the ITU-R study groups, must not be overlooked.

2 Report by the Chairman of ad hoc Group 2 (Document 284)

2.1 The **Chairman of ad hoc Group 2** reported that the Group, which had worked in English, had unanimously approved the methodology for the treatment of procedural and regulatory questions related to Appendices 30 and 30A. In the third bulleted indent, the term "procedures" should be replaced by "provisions".

2.2 The **delegate of Algeria** said that, regrettably, he had not been able to participate in the work of ad hoc Group 2 due to the lack of an interpretation service.

2.3 The **Chairman** invited participants to consider the methodology proposed in Document 284, indent by indent.

First indent

2.4 Approved.

Second indent

2.5 The **delegate of Algeria** said that the text was very general and contained no precise indication. The **delegate of the Islamic Republic of Iran** explained that the text had originally specified particular annexes (Annexes 3, 4 or 5 for example), but that since those annexes were still under consideration, a more general wording had been deemed preferable, so that the old versions of annexes or articles could be replaced by those amended or adopted by the Conference. The **delegate of Algeria** pointed out that the term "necessary" was very restrictive; if the Conference were to opt for replanning, it would be obliged to amend all the annexes and appendices immediately, even though it would be wiser to review them once the results of the replanning exercise were known. His delegation was therefore opposed to the use of the word "necessary", since it placed an obligation on the Conference to amend the annexes and appendices. It would be preferable to speak of "possible amendments" and to delete the words "if any". The **delegate of Jordan** endorsed that view.

2.6 The **Chairman** proposed that the second indent should read as follows: "Include in all relevant appendices and annexes any amendment required for the implementation of WRC-97 decisions".

2.7 The **delegate of the United Kingdom,** supported by the **delegate of Norway**, said that what was involved was not detailed procedures, but a methodology for the treatment of procedural and regulatory questions. The necessary amendments referred to in the text before the meeting covered WRC-97 decisions. It was thus only a question of making the amendments arising from the decisions that were taken.

2.8 The **Chairman of ad hoc Group 2**, while noting that the amendment proposed by Algeria did not radically alter the indent, was in favour of maintaining the text as it stood; the indent was the fruit of very hard work in the ad hoc Group.

2.9 The **delegate of Algeria** said that the term "necessary" posed a problem since it might be taken to imply that, of the amendments which the Conference adopted, the only ones to be included would be those required for the purposes of planning and replanning. Since he was opposed as a matter of principle to any amendment prior to replanning, he proposed that either the adverb "possibly" should be inserted before "include", or the text should be left unchanged, in which case the Algerian Administration would reserve the right to return to the issue when it was examined in detail.

2.10 The **Chairman** pointed out that the Committee was discussing general principles and methodologies, not deciding on what amendments were necessary. The **Chairman of Working Group 4D** believed that the text of the second indent merely stated a responsibility of the Conference, namely to ensure that any agreed amendment was reflected in the Radio Regulations.

2.11 The second indent was **approved** as it appeared in Document 284.

Third indent

2.12 The **Chairman** reminded the meeting that, in the proposed text, "procedures" should be replaced with "provisions" and, in the English version, the word "Articles" should be deleted. In response to requests for clarification from the **delegates of Luxembourg** and **Pakistan**, he explained that the provisions referred to in the third indent were only suspended in the context of Article S9. Articles 4, 6 and 7 of Appendices 30 and 30A would remain applicable until such time as they were deleted by WRC-99, if it so decided.

2.13 The third indent was **approved**, as amended.

Fourth indent

2.14 The **delegate of Algeria** considered that it was not for the Conference to update Recommendation 35 (WRC-95), which should merely be noted and referred to WRC-99 without any comment on its contents.

2.15 The **delegate of France** stated that the fourth indent was an essential component of the overall compromise reached on the text. Irrespective of whether Recommendation 35 remained unchanged or was amended to reflect updates since 1995, it must necessarily be mentioned in the methodology for the treatment of procedural and regulatory questions related to Appendices 30 and 30A in order to make it clear that WRC-99 could consider the possibility of merging Appendices 30 and 30A, and in particular Articles 4 and 5.

2.16 The **delegate of Syria** said that the ad hoc Group had agreed to the principle of reviewing Recommendation 35 at WRC-99 with a view to merging Articles 4 and 5, but to his mind it would be very difficult to update the Recommendation at so late a stage in the work of WRC-97.

2.17 The **Chairman** read out the "*recommends*" paragraph of Recommendation 35 which, in his opinion, contained the essence of the message which the Conference wished to communicate to future conferences. There would thus seem to be no need to update Recommendation 35. Updating would, in any case, be a very difficult task in the short time available.

2.18 The **Chairman of Working Group 4D** said that, as he understood it, what was important for the French delegation was that WRC-99 should be able to consider the possibility of merging Appendices 30 and 30A. The **delegate of Algeria** suggested that the Conference reflect France's concerns in a *considering* paragraph of a recommendation noting Recommendation 35 and transmitting it to WRC-99. The **Chairman of Working Group 4D** proposed that the beginning of the fourth indent should be amended as follows: "Taking note of Recommendation 35 (WRC-95), consider the possibility of merging …".

2.19 The fourth indent, as amended, was **approved**.

Fifth indent

2.20 **Approved**.

2.21 Document 284 as a whole was **approved**, as amended.

2.22 The **Chairman of ad hoc Group 2** said that, in view of the very rapid development of telecommunication technology, there was a real need to consider organizing a forum or symposium to address the problem of the complexity of the Radio Regulations, which were becoming increasingly difficult to use, not only for developing countries but also for other countries.

2.23 The **delegate of Syria** said that the amendments to the Radio Regulations adopted by WRC-95 had not yet been assimilated. Developing countries thus welcomed the fact that ad hoc Group 2 had agreed to postpone until WRC-99 a possible amendment of Appendices 30 and 30A, which would thus remain in force even if only four Member States had notified the Secretary-General that they agreed to be bound by the WRC-95 revisions of the Radio Regulations.

2.24 The **Chairman**, speaking in his capacity as the delegate of Germany, expressed the opinion that WRC-95 had made a mistake in omitting, in Resolution 24, to instruct the Secretary-General to remind administrations that they should notify him whether they agreed to be bound by the above-mentioned revisions. Germany, for one, considered itself effectively bound by the revisions, even though it had omitted to inform the Secretary-General. It was very likely that the majority of other countries were in the same position.

The meeting rose at 2045 hours.

The Secretary:
T. GAVRILOV

The Chairman:
E. GEORGE

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 311-E
17 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

CHAIRMAN OF WORKING GROUP 4A

SIXTH REPORT FROM WORKING GROUP 4A TO COMMITTEE 4

The Working Group reviewed the text of Article S11 of the Simplified Radio Regulations, from the point of view of the consistency of its provisions with other provisions of the Radio Regulations, based on the decisions taken at the ninth meeting of Committee 4 concerning the methodology to be followed in this respect (Document 284 refers). The approved text also reflects some of the decisions taken by Working Group PLEN-1. The approved text, as reproduced in Attachment 1, is submitted to Committee 4 for consideration.

The delegation of Tonga reserved its position concerning the application of No. S11.44.

Attachment: 1

ATTACHMENT 1

MOD ARTICLE S11

Notification and Recording of Frequency Assignments[1,2]

MOD A.S11.1 [1] ~~For the notification and recording of assignments in the following Regions and frequency bands see also the appropriate Appendices:~~

See Appendices **S30** and **S30A** respectively, for the notification and recording of:

a) frequency assignments to stations in the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2);

b) frequency assignments in other services to which the frequency bands referred to in a) above are allocated, so far as their relationship to the broadcasting-satellite service which is subject to Appendix **S30** is concerned;

c) frequency assignments to feeder-link stations in the fixed-satellite service (Earth-to-space) in the frequency bands 14.5 - 14.8 GHz in Region 1 (see No. **S5.510**) and in Region 3, 17.3 - 18.1 GHz in Regions 1 and 3, and 17.3 - 17.8 GHz in Region 2 and other services in these bands;

d) frequency assignments in the same service or in other services to which the frequency bands referred to in c) above are allocated, so far as their relationship to the fixed-satellite service (Earth-to-space) in these bands is concerned.

For the broadcasting-satellite service in Region 2 and for feeder links in the fixed-satellite service for the broadcasting-satellite service in Region 2, Resolution **42 (Rev.Orb-88)** is also applicable.

See also Appendix 30B for the notification and recording of assignments in the following frequency bands:

All Regions, fixed-satellite service only

4 500 - 4 800 MHz (space-to-Earth)
6 725 - 7 025 MHz (Earth-to-space)
10.7 - 10.95 GHz (space-to-Earth)
11.2 - 11.45 GHz (space-to-Earth)
12.75 - 13.25 GHz (Earth-to-space)

~~**Region 1**~~	~~**Region 2**~~	~~**Region 3**~~	~~**Appendix**~~
~~11.7 - 12.5 GHz~~	~~12.2 - 12.7 GHz~~	~~11.7 - 12.2 GHz~~	~~**S30**~~
~~14.5 - 14.8 GHz~~ ~~17.3 - 18.1 GHz~~	~~17.3 - 17.8 GHz~~	~~14.5 - 14.8 GHz~~ ~~17.3 - 18.1 GHz~~	~~**S30A**~~
~~**All Regions, fixed-satellite service only**~~ ~~4 500 - 4 800 MHz~~ ~~(space-to-Earth)~~ ~~6 725 - 7 025 MHz~~ ~~(Earth-to-space)~~ ~~10.7 - 10.95 GHz~~ ~~(space-to-Earth)~~ ~~11.2 - 11.45 GHz~~ ~~(space-to-Earth)~~ ~~12.75 - 13.25 GHz~~ ~~(Earth-to-space)~~		~~See also S30B~~	~~**See also Appendix 30B**~~

ADD A.S11.2 [2] Resolution [**GTPLEN2-1**] shall also be applied with respect to those satellite networks that are subject to it.

Note to WG 4A - It may be necessary to include an additional footnote referencing a Resolution on the implementation of certain provisions of this Article.

MOD S11.14 Frequency assignments ~~for~~to ship stations and ~~for~~to mobile stations of other services, ~~for~~to stations in the amateur service, ~~for~~to earth stations in the amateur-satellite service, and those ~~for~~to broadcasting stations in the high frequency bands allocated [exclusively] to the broadcasting service between 5 900 kHz and 26 100 kHz~~5 950 - 6 200 kHz, 7 100 - 7 300 kHz (Regions 1 and 3), 9 500 - 9 900 kHz, 11 650 - 12 050 kHz, 13 600 - 13 800 kHz, 15 100 - 15 600 kHz, 17 550 - 17 900 kHz, 21 450 - 21 850 kHz, 25 670 - 26 100 kHz~~, which are subject to Article **S12A** ~~applies~~ shall not be notified under this Article.

MOD S11.18 *a)* stations covered by the allotment ~~or assignment~~ plan of Appendices **S25**, **S26** and **S27**;

MOD S11.21 *d)* any terrestrial stations in bands shared with space services which exceed the limits specified in Table II of Appendix **S7** and in **S21.3**;~~, which exceed the limits specified in No. **S21.3**, in accordance with No. **S21.7;**~~[2]

ADD **S11.21A** e) any terrestrial stations in bands listed in Table S21-2;[2]

MOD **S11.22** ~~*e)*~~*f)* earth stations whose coordination area ~~extends to~~includes the territory of another administration or where the earth station is located within the coordination area of a coordinated earth station;[2,3]

ADD **S11.22.1** [3] In this case, individual notices of frequency assignments are required for frequency bands allocated with equal rights to space services, in the opposite direction of transmission, where coordination is required under Appendix **S5**, Table S5-1.

(MOD) **S11.23** ~~*f)*~~*g)* earth stations whose interference potential is greater than that of a coordinated typical earth station.[2]

S11.20.1 to S11.23.1 [2] In these cases, individual notices of frequency assignments are required for frequency bands allocated with equal rights to terrestrial and space services where coordination is required under Appendix **S5**, Table S5-1.

MOD **S11.24** Notices relating to assignments for stations of terrestrial services, except for those referred to in No. **S11.25** or **ADD S11.26**, shall reach the Bureau not earlier than three months before~~, preferably not later than one month before, and in no case later than one month after~~ the assignments are brought into use.

MOD **S11.25** Notices relating to assignments for stations in space services, and for terrestrial stations involved in the coordination ~~of~~with a satellite network, shall reach the Bureau not earlier than three years before~~ and not later than three months before~~ the assignments are brought into use.

ADD **S11.26** Notices relating to assignments for high altitude platform stations in the fixed service in the 47.2 - 47.5 GHz and 47.9 - 48.2 GHz bands shall reach the Bureau not earlier than five years before the assignments are brought into use.

Section II. Examination of Notices and Recording of Frequency Assignments in the Master Register

MOD **S11.27** Notices not containing ~~the basic~~those characteristics specified in Appendix **S4** as mandatory or required shall be returned with comments to help the notifying administration to complete and submit them again, unless the information not provided is immediately forthcoming in response to an inquiry of the Bureau.

MOD **S11.31.3** [3] Notices relating to radio astronomy stations are~~ only~~ examined with respect to No. **S11.31** only.

NOC **S11.32A** *c)* with respect to the probability of harmful interference that may be caused to or by assignments recorded with a favourable finding under Nos. S11.36 and S11.37 or S11.38, or recorded in application of No. S11.41, or published under Nos. S9.38 or S9.58 but not yet notified, as appropriate, for those cases for which the notifying administration states that the procedure for coordination under No. S9.7 could not be successfully completed (see also No. S9.65);[4] or

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NOC **S11.32A.1** [4] The examination of such notices with respect to any other frequency assignment for which a request for coordination under **S9.7** has been published under No. **S9.38** but not yet notified shall be effected by the Bureau in the order of their publication under the same number using the most recent information available.

NOC **S11.33** *d)* with respect to the probability of harmful interference that may be caused to or by other assignments recorded with a favourable finding in application of Nos. S11.36 and S11.37 or S11.38 or in application of No. S11.41, as appropriate, for those cases for which the notifying administration states that the procedure for coordination or prior agreement under Nos. S9.17[5], S9.17A or S9.18[5] could not be successfully completed (see also No. S9.65);[6] or

MOD **S11.36** When the examination with respect to No. **S11.31** leads to a favourable finding, the assignment shall be recorded in the Master Register or examined further with respect to Nos. **S11.32** to **S11.34**, as appropriate. When the finding with respect to No. **S11.31** is unfavourable, the assignment shall be recorded in the Master Register for information purposes and subject to application of No. **S8.5**, only if ~~it includes a reference to~~ the administration ~~is deemed to have undertaken~~ shall undertake that it will be operated in accordance with ~~under the provision~~ No. **S4.4**, otherwise the notice shall be returned with an indication of the appropriate action.

(MOD) **S11.37** When the examination with respect to No. **S11.32** leads to a favourable finding, the assignment shall be recorded in the Master Register indicating the administrations with which the coordination procedure has been completed.[1] When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action, if Nos. **S11.32A** or **S11.33** do not apply.

ADD **S11.37.1** [1] When the agreement of the administrations affected has been obtained only for a specified period, the Bureau shall be notified accordingly and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned.

NOC **S11.38** When the examination with respect to Nos. **S11.32A** or **S11.33** leads to a favourable finding, the assignment shall be recorded in the Master Register indicating the names of the administrations with which coordination was completed and those with which it was not completed but in respect of which the finding was favourable. When the finding is unfavourable, the notice shall be returned with an indication of the appropriate action.

MOD **S11.39** When the examination with respect to No. **S11.34** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action. However, notices under Appendices **S25, S26** and **S27** shall be treated as follows:

NOC **S11.39A** In the case of a notice in conformity with the technical principles of Appendix **S27**, but not in conformity with the Allotment Plan, the Bureau shall examine whether the protection specified in Appendix **S27** is afforded to the allotments in the Plan and to assignments already recorded in the Master Register with a favourable finding.

NOC **S11.39B** When the examination under **S11.39A** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to **S11.39A**.

NOC **S11.39C** A notice in conformity with the technical principles of Appendix **S26**, but not in conformity with the Allotment Plan, shall be examined with respect to the allotments in Part III of Appendix **S26**.

NOC **S11.39D** When the examination under **S11.39C** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to **S11.39C**.

ADD **S11.39E** In the case of a notice not in conformity with the Allotment Plan of Appendix **S25**, the assignment may be recorded provisionally in the Master Register on the condition that the administration has initiated the procedure of Appendix **S25** in accordance with 1.23 of Section I of Appendix **S25**.

S11.40 Not used.

NOC **S11.41** After a notice is returned under No. **S11.38**, should the notifying administration resubmit the notice and insist upon its reconsideration, the Bureau shall enter the assignment provisionally in the Master Register with an indication of those administrations whose assignments were the basis of the unfavourable finding[7]. The entry shall be changed from provisional to

definitive recording in the Master Register only if the Bureau is informed that the new assignment has been in use, together with the assignment which was the basis for the unfavourable finding, for at least four months without any complaint of harmful interference being made (see Nos. **S11.47** and **S11.49**).

NOC **S11.42** Should harmful interference be caused by an assignment recorded under No. **S11.41** to any recorded assignment which was the basis of the unfavourable finding, the station using the frequency assignment recorded under No. **S11.41** shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

MOD **S11.43** In every case when a new assignment is recorded in the Master Register it shall, in accordance with the provisions of Article **S8** of this Chapter, include an indication of the finding ~~and of~~reflecting the ~~consequent~~ status of the assignment. This information shall also be published in the Weekly Circular.

MOD **S11.43A** A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix **S4**, shall be examined by the Bureau under Nos. **S11.31** to **S11.34**, as appropriate. Any change to the characteristics of an assignment that has been notified and confirmed as having been brought into use, shall be brought into use within [5] years from the date of the notification of the modification. Any change to the characteristics of an assignment that has been notified but not yet brought into use, shall be brought into use within the period provided for in **S11.44**.

MOD **S11.44** The notified date of bringing into use of any assignment to a space station of a satellite network shall be no later than five ~~six~~ years following the date of ~~publication~~ receipt by the Bureau of the relevant information under No. **S9.1** ~~relevant Weekly Circular referred to in No. **S9.2B**.~~ The notified date of bringing into use may ~~will~~ be extended at the request of the notifying administration by not more than two ~~three~~ years only under the conditions specified under No. **S11.44B**. Any frequency assignment not brought into use within the required period shall be cancelled by the Bureau after having informed the administration at least 3 months before the expiry of the above date.

ADD **S11.44A** A notice not conforming to No. **S11.44** shall be returned to the notifying administration with a recommendation to restart the advance publication procedure.

ADD **S11.44B** The notified date of bringing into use will be extended by the Bureau in accordance with No. **S11.44** if due diligence information is provided for the satellite network if required by Resolution GTPLEN2-1; the procedure for effecting coordination in accordance with Section II of Article **S9** as applicable has commenced; and the notifying administration certifies that the reason for the extension is one or more of the following specific circumstances;

ADD **S11.44C** a) launch failure;

ADD **S11.44D** b) launch delays for circumstances outside the control of the administration or operator;

ADD **S11.44E** c) delays caused by modifications of satellite design necessary to reach coordination agreements;

ADD **S11.44F** d) problems in meeting the satellite design specifications;

ADD **S11.44G** e) difficulties in obtaining coordination agreements;

ADD **S11.44H** f) financial circumstances outside the control of the administration or the operator; or

ADD **S11.44I** g) *force majeure*.

NOC **S11.45** The notified date of bringing into use of an assignment to a terrestrial station will be extended at the request of the notifying administration by not more than six months.

NOC **S11.46** In applying the provisions of this Article, any resubmitted notice which is received by the Bureau more than six months after the date on which the original notice was returned by the Bureau shall be considered to be a new notice.

MOD **S11.47** All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice, or by the extension date granted under No. S11.44 or No. S11.45. Within thirty days of such an assignment being brought into use, the notifying administration shall so inform the Bureau. If the Bureau does not receive that confirmation within the above period, after a reminder, it shall cancel the entry. The Bureau shall however ~~consult~~inform the administration concerned before taking such action.

MOD **S11.48** If after the expiry of the period of ~~six~~ five years, plus the extension specified in No. **S11.44**, as appropriate, from the date of ~~publication of the relevant Weekly Circular~~ receipt of the complete information referred to in **S9.1**, the administration responsible for the satellite network ~~has not submitted the Appendix **S4** information for notification under No. **S11.2** and~~ has not brought the frequency assignments to stations of the network into use, the corresponding information published under Nos. **S9.2B** and **S9.38**, as appropriate, shall be cancelled only after the administration concerned has been informed, at least three months before the expiry date referred to in **S11.44**.

SUP **S11.49** Where the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the assignment is to be brought back into regular use. This latter date shall not exceed two years from the date of suspension.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 312-E
17 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 5

Bulgaria (Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

(SUGGESTIONS RELATING TO DOCUMENT DT/131)

Option 4

BUL/312/1
MOD

GHz

Region	
40.5 – 42.5	BROADCASTING
	BROADCASTING-SATELLITE
	Fixed
	Fixed-Satellite (space-to-Earth)
	Mobile

BUL/312/2
ADD S5.XXA *Alternative allocation*: in (Country 1, …) the band 40.5 - 42.5 GHz is allocated to the fixed services on a primary basis.

BUL/312/3
ADD S5.XXB *Alternative allocation*: in (Country 1, …) the band 40.5 - 42.5 GHz is allocated to the fixed-satellite service on a primary basis.

BUL/312/4
ADD S5.XXC *Additional allocation*: in (Country 1, …) the band 40.5 - 42.5 GHz is allocated to the mobile services on a primary basis.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 313-E
17 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 5

Georgia

PROPOSALS FOR THE WORK OF THE CONFERENCE

Having taken into account texts of the Editorial Committee (Document 256), the Administration of Communications of Georgia wishes to exclude its name from the stipulated footnotes: S5.67, S5.194, S5.271, S5.338, S5.349, S5.350, S5.412, S5.428, S5.430, S5.448, S5.450, S5.478, S5.496, S5.501, so as mentioned additional allocations are not used by appropriated services.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

GENEVA, 23 OCTOBER – 17 NOVEMBER 1995

Document 314-E
18 November 1997
Original : English

PLENARY MEETING

REPORT OF THE BUDGET CONTROL COMMITTEE TO THE PLENARY MEETING

1. The Budget Control Committee held two meetings during the World Radiocommunication Conference (WRC-97) and considered the points arising from its terms of reference.

Under Nos. 364 to 366 of the Convention of the International Telecommunication Union (Geneva, 1992), the Budget Control Committee's terms of reference are:

a) to determine the organization and the facilities available to delegates;

b) to examine and approve the accounts for expenditure incurred throughout the duration of the Conference;

c) to present a report to the Plenary Meeting showing the estimated total expenditure of the conference as well as an estimate of the costs that may be entailed by the execution of the decisions taken by such conference.

2. Organization and facilities made available to delegates

The Budget Control Committee thanked the Secretary-General for the organization and the facilities provided for the Conference which, in spite of the much larger number of participants (1.676) compared to that of WRC-95 (1.223), had been satisfactory.

3. Financial responsibilities of conferences

The attention of the Budget Control Committee was drawn to Article 34 of the Convention of the International Telecommunication Union (Geneva, 1992), which stipulates that:

"1. Before adopting proposals or taking decisions with financial implications, the conferences of the Union shall take account of all the Union's budgetary provisions with a view to ensuring that they will not result in expenses beyond the credits which the Council is empowered to authorize.

2. No decision of a conference shall be put into effect if it will result in a direct or indirect increase in expenses beyond the credits that the Council is empowered to authorize."

4. Budget of the World Radiocommunication Conference (WRC-97)

At its 1995 session, the Council approved by Resolution 1071 the budget of the World Radiocommunication Conference (WRC-97) for the biennium 1996-1997 amounting to 3,721,000 Swiss francs, of which 1,781,000 Swiss francs was foreseen for documentation.

5. Situation of the accounts of the World Radiocommunication Conference (WRC-97) as at 14 November 1997

5.1 The table given in Annex 1 to this report sets out the budget of the World Radiocommunication Conference (WRC-97) and the forecast expenditure to the end of the Conference as estimated on 14 November 1997. It emerges that the total expenditure is estimated at 5,017,000 Swiss francs, thus exceeding the budget of the Conference by an amount of 1,296,000 Swiss francs.

5.2 The excess of 1,296,000 Swiss francs is explained as follows :

a) Staff costs : 215,000 Swiss francs
The excess expenditure on account of staff costs is due to additional requirements for interpretation and overtime payments to General Services staff which cannot be compensated by granting additional annual leave.

b) - Document production : 1,081,000 Swiss francs of which 648,000 Swiss francs is for reprography. The volume of the documentation has increased as follows :

Documentation

	Budget 1996-97		Projections	
	Pages	CHF(000)	Pages	CHF(000)
Translation	5,266	738	7,500	1,048
Typing	13,635	618	16,370	741
Reprography	7,740,000	425	25,872,000	1,073

5.3 In the light of the evolving draft agenda for WRC-99, the situation may not improve at WRC-99 if appropriate measures are not taken to limit the volume of documentation. The budget for WRC-99 approved by the 1997 Council amounts to 1,910,000 Swiss francs. The cost of the documentation is estimated at 2,839,000 Swiss francs.

5.4 The Secretary-General is requested to study measures to limit the number of copies of some documents made available to delegations including introduction of cost recovery mechanisms for copies additional to the limit referred to above and to report his findings to Council in line with PP Resolution 39.

6. Entities and international organizations taking part in the Conference

6.1 Article 33 of the Convention of the International Telecommunication Union (Geneva, 1992) provides that entities or organizations which have been authorized to participate in a Radiocommunication Conference shall share in defraying the expenses of the Conference in question unless they have been exempted by Council.

6.2 According to No. 481 of the Convention, the contributory unit for entities and organizations which contribute to the expenses of that Conference amounts to 10,300 Swiss francs. The contributions are considered as Union income.

6.3 The list of entities and international organizations not exempted from defraying the expenses of the WRC-97 is given in Annex 2 to this document.

6.4 As of 17 November 1997, seven out of eleven have notified their contribution totalling 4 ½ units as their share of Union expenses, i.e 46,350 Swiss francs. This amount will be considered as miscellaneous income in the Union budget.

6.5 The matter of the cost of participating in WRCs has been raised in relation to the contributory unit of 10,300 Swiss francs (See paragraph 6.2). The Secretary General has been requested to bring to the attention to the 1998 Council and subsequently to the Plenipotentiary Conference the full cost incurred by the Union due to the participation of entities and organizations at WRCs. The other matter of concern is the number of entities and international organizations exempted under Council Resolution 925.

7. Estimate of work for the execution of WRC-97 decisions

7.1 A Joint Working Group of Committee 3 and Plenary 1 was established in order to report to Committee 3 and Working Group 1 of the Plenary on the potential financial implications of the post-WRC-97 and the preparatory work necessary for WRC-99 and WRC-01 and on the financial implication of decisions of WRC-97 to be implemented by the Radiocommunication Sector and, in particular, by the Radiocommunication Bureau.

The Report of the Joint Working Group updated to take into account the latest information available is contained in Annex 3 of this Report.

7.2 It was recalled that the Council, at its June 1997 session, when approving the 1998-1999 budget, authorized a provision of 500,000 Swiss francs for WRC-97 post-conference work, subject to the approval of the Budget Control Committee of the WRC-97.

7.3 The Budget Control Committee noted that the estimate contained in Annex 3 had been considered by the Working Group of the Plenary 1. It expresses its concern and preoccupation at the high level of expenditure contemplated in Annex 3 of this report necessary to undertake the additional work required to implement the decisions of WRC-97.

7.4 Many decisions are still under consideration by the Conference, in particular with respect to the BSS replanning and the timely publication of coordination requests (see S9.30). Consequently, the Budget Control Committee requests the BR to review carefully all the new or modified provisions yet to be adopted by the Conference, as well as the estimates contained in Annex 3 and to report its findings to the 1998 Council. Pending such a review and to allow the immediate start of some work, the Budget Control Committee approves the provision of 500,000 Swiss francs for post-conference work.

7.5 Furthermore, the Budget Control Committee notes that the 1995-1999 Financial Plan does not contain any provision for implementation of decisions taken by WRCs. This situation needs to be addressed by the 1998 Plenipotentiary Conference when preparing the future Financial Plan 2000-2003 and by the session of Council to be held immediately after PP-98 having regard to the high cost of WRC conferences, the financial implications of their decisions and the interval between WRCs (See Draft Resolution GTPLEN1-2)

* * *

The Plenary Meeting is requested to consider and approve this Report, which will then be forwarded to the Secretary-General, together with the comments of the Plenary meeting for submission to the 1998 session of the Council.

M LANDSMANN
Chairman, Committee 3

Annexes:
1 Situation of the accounts of the World Radiocommunication Conference (WRC-97) as at 14 November 1997
2 List of entities and international organizations participating in the work of the Conference
3 Financial implications of WRC-97 decisions - Updated Report of the Joint Working Group COM3/PL1

ANNEX 1

Situation of the accounts of the World Radiocommunications Conference (WRC-97) as at 14 November 1997

CHF (000)

Recapitulation	1996/97 Budget *1*	Actual expenditure as at 14.11.97 *2*	Projected expenditure *3*	Total estimated expenditure *2+3*	Credits available *1-4*
Staff costs	1,589	1,473	330	1,803	-214
Other staff costs	81	66	15	81	0
Travel on duty					
Contractual services		1		1	-1
Rental & maintenance of premises and equipment	88	20	68	88	0
Materials and supplies	78	78		78	0
Acquisition of premises, furniture and equipment					
Public and internal services	85	85		85	0
Miscellaneous	19	8	11	19	0
Sub-Total	**1,940**	**1,731**	**424**	**2,155**	**-215**
Documentation					
Translation	738	211	837	1,048	-310
Typing	618	204	537	741	-123
Reprography	425	376	697	1,073	-648
Sub-Total	**1,781**	**791**	**2,071**	**2,862**	**-1,081**
TOTAL	**3,721**	**2,522**	**2,495**	**5,017**	**-1,296**

ANNEX 2

List of International Organizations participating in the work of the Conference

	Number of contributory units
1. UNITED NATIONS AND SPECIALIZED AGENCIES	
- United Nations (UN)	*
- International Civil Aviation Organization (ICAO)	*
- International Maritime Organization (IMO)	*
- World Meteorological Organization (WMO)	*
- United Nations Educational, Scientific and Cultural Organization (UNESCO)	*
2. REGIONAL TELECOMMUNICATION ORGANIZATIONS	
- Asia-Pacific Telecommunity (APT)	*
- European Conference of Postal and Telecommunications Administrations (CEPT)	*
- Inter-American Telecommunications Conference (CITEL)	*
- Panafrican Telecommunications Union (PATU)	*
- Regional Commonwealth in the Field of Communications (RCC)	*
3. INTERGOVERNMENTAL ORGANIZATIONS OPERATING SATELLITE SYSTEMS	
- Arab Satellite Communications Organization (ARABSAT)	**
- European Space Agency (ESA)	1/2
- European Telecommunications Satellite Organization (EUTELSAT)	1
- International Maritime Satellite Organization (INMARSAT)	1/2
- International Telecommunications Satellite Organization (INTELSAT)	1
- International Organization of Space Communications (INTERSPUTNIK)	**
- European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)	**
4. OTHER INTERNATIONAL ORGANIZATIONS	
- Agency for the Safety of Air Navigation in Africa and Madagascar (ASECNA)	*
- Arab States Broadcasting Union (ASBU)	*
- Asia-Pacific Broadcasting Union (ABU)	*
- Asia-Pacific Satellite Communication Council (APSCC)	*
- Association of European Radios (AER)	**
- European Commission (EC)	1/2
- International Chamber of Shipping (ICS)	1/2
- International Committee of the Red Cross (CICR)	*
- International Maritime Radio Association (CIRM)	*

- International Astronautical Federation (IAF)	*
- International Amateur Radio Union (IARU)	*
- International Transport Workers' Federation (ITF)	**
- International Society for Aeronautical Telecommunications (SITA)	1/2
- Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	*
- European Broadcasting Union (EBU)	*
- International Federation of Red Cross and Red Crescent Societies (IFRC)	*
- Union of National Radio and Television Organizations of Africa (URTNA)	*
Total number of contributions notified	**4 1/2**

* Exempted from any contribution under Council Resolution 925
** Class of contribution not yet notified

ANNEX 3

FINANCIAL IMPLICATIONS OF WRC-97 DECISIONS

UPDATED REPORT OF THE JOINT WORKING GROUP COM3/PL1

The creation of the Joint Working Group of Committee 3 and Working Group 1 of the Plenary as well as its terms of reference were adopted by the joint meeting of Committee 3 and WG PL1 on 4 November 1997.

Preliminary estimated additional work for the execution of WRC-97 decisions

As to the financial implications of decisions which this Conference may take, the joint meeting of Committee 3 and Working Group 1 of the Plenary is not in a position at this stage to provide Working Group 1 of the Plenary with a comprehensive cost estimate analysis of WRC-97 decisions, some of which are still under consideration by Committees 4 and 5.

After careful consideration of 91 draft new or modified Resolutions and Recommendations, most of which have still to be submitted to the Plenary, and taking into account the WRC-99 draft agenda as proposed by Working Group 1 of the Plenary (Document 235), the following items having potential cost implications on the budget of the Radiocommunication Sector have been identified:

- Draft Resolution **COM4-6** as mentioned in Documents DT/78 and DT/82 (S12.12 and S12.44) on information relevant to the application of Article S12.
- Draft Resolution **COM4-13** (Document DT/97(Corr.1)) on further review and possible revision of the BSS plans for Regions 1 and 3, in particular the establishment of an intersessional group of experts (IGE) and an intersessional supervisory policy group (ISG).
- Draft Resolution **COM4-17** (Document DT/130) on the publication of the Weekly Circular including special sections.
- Draft modified Resolution **339 (Rev.WRC-97)** (Document 184) on coordination of NAVTEX Services. This modified Resolution would have no financial impact taking into consideration the very low volume of activities in this domain.

Other decisions of the 1997 World Radiocommunication Conference might lead to significant additional workload in the Radiocommunication Bureau, in particular issues related to BSS planning/replanning exercise and software development, and due diligence. This list might be updated depending on eventual decisions taken by this Conference which could affect the workload in the Radiocommunication Bureau.

Also, among the above-mentioned 91 draft new or modified Resolutions and Recommendations, including issues related to WRC-99 draft agenda items, 42 are requesting studies to be undertaken by the ITU-R Study Groups. A first estimate of the related workload would lead to an increase of the number of ITU-R Study Group meeting days to be absorbed by the concerned budget as approved by the 1997 session of the Council.

Table 1 gives a first workload estimate and consequent financial implications of the above-mentioned possible additional workload given by WRC-97 to the Radiocommunication Sector.

Table 2 gives an estimate of tasks and related workload that might be required for software modification and development in the field of BSS planning.

TABLE 1

Preliminary estimated additional resources for the WRC-97 post conference work for 1998-1999

Swiss Francs

Description	Resources		Required		Savings		Total
	Staff/month	Grade	Recurrent	One-time	Recurrent	One-time	
Frequencies selection (S12.33)							**443,936**
- 1 engineer*	24	P4	363,936				363,936
- Assistance missions				80,000			80,000
Software development (S12)							**363,280**
Data capture				24,000			24,000
- 1 developer	2	P2/P3					
Propagation calculation							
- 1 developer	3	P2/P3		36,000			36,000
Compatibility							
- 2 engineers**	20	P4		303,280			303,280
Inter-sessional group of experts							**376,774**
- 3 meetings of 5 days with interpretation in 6 languages				376,774			376,774
Weekly Circular***							
Publication of the Weekly Circular on CD-Rom as from 1999 in parallel with the paper, microfiche and disquette edition							
Weekly Circular related software modification and development 1 Junior engineer							
BSS planning							**2,283,624**
- 3 engineers	24	P4		1,091,808			1,091,808
- 1 assistant	24	G5		231,816			231,816
Related software modification and development (Table 2)	80	P2/P3		960,000			960,000
Infrastructure							**74,000**
- Space rental				58,000			58,000
- Information technology equipment				16,000			16,000
Total			363,936	3,177,678			3,541,614

* This additional engineer might be needed depending of the number of requests received by the BR.

** These two additional engineers might be needed in the case Administrations could not assist the BR in this matter.

*** The financial implications will be subject to detailed studies by the BR

TABLE 2

Tasks	Workload Estimates
Modification of SNS/SPS database design taking into account WRC-97 needs:	too early to estimate
Integration of SNS/SPS database:	1staff/month
Completion of the SNS/SPS data capture system and notice forms for Plans (Article 4):	4 staff/months
Modification of SNS/SPS data capture system to incorporate AP30B:	2 staff/months
Completion of conversion from Mspace textfile to SNS/SPS database with adequate creation of groups: appropriate synthesis of existing beams into the database structure:	3 staff/months
There may also be a need for modifying the program to split these overall beams into separate feeder-link and downlink:	1 staff/month
Modification to SNS transaction processing to accommodate Article 4 processing for Space Plans:	6 staff/months
Modification of Mspace in accordance with WRC-97:	too early to estimate
Modification of Mspace to use the SNS/SPS database instead of textfile:	3 staff/months
Optimisation of Mspace in handling reference situation data:	4 staff/months
Conversion of AP29 batch calculations overlap and pfd batch calculations to the new SNS/SPS database on PC:	6 staff/months
Modification of [AP28, AP29,] pfd calculations in accordance with WRC-97:	too early to estimate
Re-examination tool for selected Plan networks:	3 staff/months
Publication system for Plans Special Sections, as part of the global publication system:	6 staff/months
Development of routines for the publication of all or selected calculations results:	3 staff/months
Calculation and publication of the reference situation in a compressed while readable format:	3 staff/months
Extension of SNS-on-line to cover Plan items, such as channels and selected results of the reference situation:	3 staff/months
Extension of SpaceQry to cover Plans items, such as channels and selected results of the reference situation:	3 staff/months
What-if studies for AP29 ($\Delta t/t$) and completion of What-if studies for AP28 on PC and more quality acceptance of the pfd in GIMS-on-PC:	6 staff/months
What-if studies for Mspace on PC (single case & C/I out of Mspace):	4 staff/months
Further extensions required on GIMS on PC: additional projections:	4 staff/months
Further extensions required on GIMS on PC: reports & printings:	3 staff/months
Upgrade and integration of GIMROC with GIMS on PC:	6 staff/months
Better integration of GIMS on PC with SNS/SPS database:	3 staff/months
Transfer (development, testing, etc. from Siemens to the network, abandoning both Siemens and Unix copy:	3 staff/months
TOTAL	80 staff/months

NOTE 1 - In cases where the tasks require knowledge of the specific programme and/or the specific tool, it is assumed that the staff has that knowledge.

It means that any required replacement may extend these estimates.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 315-E
17 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

Nepal

PROPOSALS FOR THE WORK OF THE CONFERENCE

The Kingdom of Nepal is a country that continues to have significant reliance on high-frequency, short-wave, radio broadcasting transmitters to assure Kingdom-wide program reach to its population in the rural and remote areas, taking account also of the peculiarities of the country's well-known topography.

The Kingdom is always interested in seeking access to new service and technology applications. Various satellite services and access have been authorized for important uses including, climbing, tourism and news gathering groups. Many continue to be served also through short-wave transmitters.

HF broadcasting remains the lowest cost means of providing wide area and long-distance broadcasting service access, notwithstanding other technology progress.

Whilst there has been announced potential of digital short-wave, much remains to be done in moving from laboratory tests to wide ranging field trials. Satellite digital audio broadcasting will bring enhanced wide area quality reception.

Meanwhile analogue transmission will continue for many years and this will include for many countries double-sideband (DSB) emissions. Single-sideband (SSB) modulation techniques would enable less congested spectrum use, but the extent to which they can be successfully introduced will depend upon various service and cost factors, including the service life of existing analogue transmitters and receivers which will remain in service for a long time.

Nepal, as a small developing country, will continue to service its service needs through short-wave transmission and the time-frame for introduction of SSB will not be short.

It is not practicable to determine when the Kingdom of Nepal could phase out its current series of transmitters. It would seem that many other countries will be in a similar situation. Further short-wave receivers are widely used. This raises questions of affordability for individual citizens. Whilst ITU-R studies describe transitional measures, the introduction of SSB emissions will involve major cost considerations. Thus SSB can only evolve over a long period.

The Kingdom of Nepal proposes that the precise date of cessation of DSB transmissions should not be before 1 January 2015. Indeed such a major policy matter should be kept under periodic review by competent world radio conferences, taking account of further technology progress and continuing ITU-R studies.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 316-E 19 November 1997 Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

ELEVENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5 TO THE EDITORIAL COMMITTEE

Contrary to the indication given on the covering page, please note that some of the text forwarded with Document 316 was not adopted unanimously.

V. RAWAT
Chairman of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 316-E
17 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

ELEVENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5 TO THE EDITORIAL COMMITTEE

Committee 5 is continuing its consideration of agenda item 1.9.1 with respect to generic MSS allocations between 1 and 3 GHz. As a result of these deliberations, it has unanimously adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

V. RAWAT
Chairman of Committee 5

Annex: 1

1 MSS generic allocation in the 1.5 - 1.6 GHz range

ARTICLE S5

MOD

MHz
1 452 – 1 530

Allocation to Services		
Region 1	Region 2	Region 3
1 525 – 1 530	**1 525 – 1 530**	**1 525 – 1 530**
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)
FIXED	MOBILE-SATELLITE (space-to-Earth)	FIXED
~~MARITIME~~ MOBILE-SATELLITE (space-to-Earth)	Earth Exploration-Satellite	MOBILE-SATELLITE (space-to-Earth)
Earth Exploration-Satellite	Fixed	Earth Exploration-Satellite
Mobile except aeronautical mobile S5.349	Mobile S5.343	Mobile S5.349
~~Land Mobile-Satellite (space-to-Earth) S5.352~~		
S5.341 S5.342 S5.350 S5.351 ADD S5.352A S5.354	S5.341 S5.351 S5.354	S5.341 S5.351 ADD S5.352A S5.354

MOD **MHz**
1 530 – 1 535

Allocation to Services		
Region 1	Region 2	Region 3
1 530 – 1 533 SPACE OPERATION (space-to-Earth) ~~MARITIME~~ MOBILE-SATELLITE (space-to-Earth) ADD S5.353A ~~LAND MOBILE-SATELLITE (space-to-Earth)~~ Earth Exploration-Satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530 – 1 533** SPACE OPERATION (space-to-Earth) ~~MARITIME~~ MOBILE-SATELLITE (space-to-Earth) ADD S5.353A ~~LAND MOBILE-SATELLITE (space-to-Earth)~~ Earth Exploration-Satellite Fixed Mobile S5.343 S5.341 S5.351 ~~S5.353~~ S5.354	

SUP **S5.352**

ADD **S5.352A** In the band 1 525 - 1 530 MHz, ~~mobile earth~~ stations in the mobile-satellite service except stations in the maritime mobile-satellite service shall not cause harmful interference nor claim protection from stations of the fixed service in France and French overseas territories in Region 3, Saudi Arabia, ~~United Arab Emirates~~Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Malta, Morocco, Mauritania, Nigeria, Oman, Pakistan, Philippines, Qatar, Syria ~~and~~, Tanzania, Viet Nam and Yemen notified prior to 1 April 1998.

ARTICLE S5

MOD

MHz
1 530 – 1 535

Allocation to Services		
Region 1	Region 2	Region 3
1 533 – 1 535 SPACE OPERATION (space-to-Earth) ~~MARITIME~~ MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile except aeronautical mobile ~~Land Mobile-Satellite (space-to-Earth) S5.352~~ S5.341 S5.342 S5.351 S5.354	**1 533 – 1 535** SPACE OPERATION (space-to-Earth) ~~MARITIME~~ MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile S5.343 ~~Land Mobile-Satellite (space-to-Earth) S5.352~~ S5.341 S5.351 ~~S5.353~~ S5.354	

MOD

MHz
1 535 – 1 610.6

Allocation to Services		
Region 1	Region 2	Region 3
1 535 – 1 544	~~MARITIME~~ MOBILE-SATELLITE (space-to-Earth) ~~Land Mobile-Satellite (space-to-Earth) S5.352~~ S5.341 S5.351 ~~S5.353~~ADD S5.353A S5.354 S5.355	
1 544 – 1 545	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.354 S5.355 S5.356	
1 545 – 1 555	~~AERONAUTICAL~~ MOBILE-SATELLITE ~~(R)~~ (space-to-Earth) S5.341 S5.351 S5.354 S5.355 S5.357 ~~S5.358~~ S5.359 ADD S5.362A	
1 555 – 1 559	~~LAND~~ MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 S5.354 S5.355 S5.359 ~~S5.360 S5.361 S5.362~~ ADD S5.362B	

SUP **S5.353**

ADD **S5.353A** In applying the procedures of No. **S9.11A** to the mobile-satellite service in the bands 1 530 - 1 544 MHz and 1 626.5 - 1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to nor claim protection from distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (See Resolution [COM5-24].)

NOC **S5.356**

SUP **S5.358**

SUP **S5.360**

SUP **S5.361**

SUP **S5.362**

ADD **S5.362A** In applying the procedures of No. **S9.11A** to the mobile-satellite service in the bands 1 545 - 1 555 MHz and 1 646.5 - 1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service (AMS(R)S), providing transmission of messages with priority 1 to 6 in Article **S44**. AMS(R)S communications with priority 1 to 6 in Article **S44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to nor claim protection from AMS(R)S communications with priority 1 to 6 in Article **S44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (See Resolution [COM5-24].)

ADD **S5.362B** In the United States, ~~in applying the procedures of No. **S9.11A** to the mobile-satellite service~~ in the bands 1 555 - 1 559 MHz and 1 656.5 - 1 660.5 MHz, ~~priority shall be given to accommodating the spectrum requirements of~~ the aeronautical mobile-satellite (R) service (AMS(R)S), ~~providing transmission of messages with priority 1 to 6 in Article **S44**. AMS(R)S communications with priority 1 to 6 in Article **S44**~~ shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to nor claim protection from AMS(R)S communications with priority 1 to 6 in Article **S44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. ~~[(See Resolution [COM5-24].)]~~

ARTICLE S5

MOD

MHz
1 610.6 – 1 631.5

Allocation to Services		
Region 1	Region 2	Region 3
1 626.5 – 1 631.5	**1 626.5 – 1 631.5**	
~~MARITIME~~ MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	
~~Land Mobile Satellite (Earth-to-space) S5.352~~		
S5.341 S5.351 S5.354 S5.355 S5.359 ADD S5.353A	S5.341 S5.351 S5.354 S5.355 S5.359 ~~S5.373A~~ ADD S5.353A	

MOD

MHz
1 631.5 – 1 670

Allocation to Services		
Region 1	Region 2	Region 3
1 631.5 – ~~1 634.5~~1 636.5	~~MARITIME~~ MOBILE-SATELLITE (Earth-to-space) ~~LAND MOBILE-SATELLITE (Earth-to-space)~~ S5.341 S5.351 ~~S5.353~~ S5.354 S5.355 S5.359 MOD S5.374 ADD S5.353A	
~~1 634.5~~1 636.5 – 1 645.5	~~MARITIME~~ MOBILE-SATELLITE (Earth-to-space) ~~Land Mobile-Satellite (Earth-to-space) S5.352~~ S5.341 S5.351 ~~S5.353~~ADD S5.353A S5.354 S5.355 S5.359	
1 645.5 – 1 646.5	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.354 S5.375	
1 646.5 – 1 656.5	~~AERONAUTICAL~~ MOBILE-SATELLITE (Earth-to-space) ADD S5.362A S5.341 S5.351 S5.354 S5.355 ~~S5.358~~ S5.359 S5.376	

Allocation to Services		
Region 1	Region 2	Region 3
1 656.5 – 1 660	~~LAND~~ MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 S5.354 S5.355 S5.359 ~~S5.360 S5.361 S5.362~~ MOD S5.374 ADD S5.362B	
1 660 – 1 660.5	~~LAND~~ MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 ~~S5.360 S5.361 S5.362~~ ADD S5.376A ADD S5.362B	

SUP S5.373A

MOD S5.374 ~~Land earth stations and ship~~Mobile earth stations in the mobile-satellite service operating in the bands 1 631.5 - 1 634.5 MHz and 1 656.5 - 1 660 MHz shall not cause harmful interference to the stations in the fixed service operating in the countries listed in No. **S5.359**.

NOC S5.375

ADD S5.376A Mobile earth stations operating in the 1 660.0 - 1 660.5 MHz band shall not cause harmful interference to stations operating in the radio astronomy service.

DRAFT RESOLUTION [COM5-24]

USE OF THE BANDS 1 525 - 1 559 MHz AND 1 626.5 - 1 660.5 MHz BY THE MOBILE-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 allocated the bands 1 525 - 1 559 MHz (s-E) and 1 626.5 - 1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple mobile-satellite systems in a flexible and efficient manner;

b) that prior to WRC-97 there was a generic allocation by footnote provisions in some countries for the use of the bands 1 530 - 1 544 MHz and 1 631.5 - 1 645.5 MHz by the mobile-satellite service on the condition that maritime mobile-satellite distress and safety communications have priority access over all other communications;

c) that prior to WRC-97, there was a generic allocation by two footnotes for the use of the bands 1 555 - 1 559 MHz and 1 656.5 - 1 660.5 MHz by the mobile-satellite service, where in one of these footnotes in two countries the following conditions applied:

– the aeronautical mobile-satellite (R) service has priority access and immediate availability over all other communications within a network;

– mobile-satellite systems should be interoperable with the aeronautical mobile-satellite (R) service;

– account shall be taken of the priority of safety-related communications in the other mobile-satellite services;

d) that there is at least one global mobile-satellite system that is capable of providing global maritime mobile-satellite distress and safety communications according to Article **S53** and global AMS(R)S communications with priorities 1 to 6 of Article **S44** in accordance with IMO and ICAO requirements;

e) that technical considerations for sharing satellite network resources between MSS (other than AMS(R)S) and AMS(R)S have been developed by the ITU-R (see Recommendation ITU-R **M.[8/17]**);

f) that global and regional mobile-satellite systems are being multilaterally coordinated in the bands 1 525 - 1 559 MHz (s-E) and 1 626.5 - 1 660.5 MHz (E-s) and that the ITU Radio Regulations provide the international framework for multilateral agreements;

g) that in Nos. **S5.362A** and **S5.353A** priority has been given to accommodating the spectrum requirements urgency, distress and safety communications of GMDSS and AMS(R)S communications with priorities 1 to 6 of Article **S44** of AMS(R)S. See No. **S9.11A**, [except No. **S9.13]**,

further considering

a) that the Convention on International Civil Aviation (ICAO SARPS) requires that stations of the AMS(R)S shall be in compliance with the internationally agreed Standards and Recommended Practices and Procedures for Air Navigation Services;

b) that ICAO has developed a global Air Traffic Management system (ATM) which requires interoperability between stations operating in accordance with the ICAO SARPS for those mobile-satellite systems providing AMS(R)S with the priority message structure of Article **S44**;

c) that WRC-97 modified provisions for the operational use of the Global Maritime Distress and Safety System (GMDSS) which is fully defined in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended (see No. MOD **S30.1**).

~~c)~~d) that IMO may also place similar requirements of interoperability of those mobile-satellite systems providing GMDSS communications with the priority message structure of Article ~~**S51**~~**S53**,

recognizing

that Appendix **S15.2** identifies the bands 1 530 - 1 544 MHz (s-E) and 1 626.5 - 1 645.5 MHz (Earth-to-space) for distress and safety purposes in the maritime mobile-satellite service as well as for routine non-safety purposes,

noting

~~that for mobile-satellite systems that are already operating on a generic basis in the bands 1 525 - 1 544 MHz, 1 545 - 1 559 MHz, 1 626.5 - 1 645.5 MHz and 1 646.5 - 1 660.5 MHz, administrations may continue to limit the use of these bands to the national mobile-satellite service or, where agreements of administrations concerned are in place, to provide multinational service,~~

that some countries in Region 2 use the bands 1 525 - 1 544 MHz, 1 545 - 1 559 MHz, 1 626.5 - 1 645.5 MHz and 1 646.5 - 1 660.5 MHz to provide national MSS on a generic basis and, where agreements with other administrations concerned are in place, provide multinational service,

resolves

1 that the future spectrum requirements for the provision of distress, urgency and safety communications in the GMDSS by mobile satellite and AMS(R)S communications with priority 1 to 6 of Article **S44** should take into account internationally agreed assumptions and methodologies and information on GMDSS and AMS(R)S communication actual traffic usage and growth;

2 that the feasibility of prioritization, real time pre-emptive access and, if necessary, interoperability, between different mobile-satellite systems for GMDSS and AMS(R)S, in order to achieve the most flexible and practical use of the generic allocations, should be determined,

requests ITU-R

1 to develop the assumptions and methodologies and information on GMDSS and AMS(R)S communication actual traffic usage and growth to determine the future spectrum requirements for the provision of distress, urgency and safety communications in the GMDSS by mobile satellite and AMS(R)S communications with priority 1 to 6 of Article **S44**;

2 to determine the feasibility of prioritization, and real time pre-emptive access and, if necessary, interoperability between different mobile-satellite systems for GMDSS and AMS(R)S, in order to achieve the most flexible and practical use of the generic allocations;

3 to complete and report the results of studies called for in *resolves* 1 and 2 above by [WRC-99 or a future competent conference],

requests the next competent WRC

to take into account the outcome of ITU-R studies and take appropriate action on this subject,

invites

ICAO, IMO, IALA, administrations and other concerned organizations to participate in the studies identified in *requests ITU-R* 1 and 2 above.

RESOLUTION [COM5-10]

FREQUENCY SHARING IN THE BANDS 1 610.6 - 1 613.8 MHz AND 1 660 - 1 660.5 MHz BETWEEN THE MOBILE-SATELLITE SERVICE AND THE RADIO ASTRONOMY SERVICE

The World Radiocommunication Conference (Geneva, 1997),

with a view

to allow the most efficient use of frequency bands allocated to the mobile-satellite service (MSS) and the radio astronomy service by these services, and with due regard to the other services to which those bands are also allocated,

considering

a) that the band 1 610.6 - 1 613.8 MHz is allocated to the radio astronomy service and the mobile-satellite service (Earth-to-space) on a shared, primary basis, and that the band 1 660 - 1 660.5 MHz is allocated to the radio astronomy service and the ~~land~~ mobile-satellite service (Earth-to-space) on a shared, primary basis;

b) that No. **[733E] S5.372** of the Radio Regulations states that "harmful interference shall not be caused to stations of the radio astronomy service using the band 1 610.6 - 1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services ([No. **2904**] **S29.13** applies)"; and that Article **[36] S29** also points out that emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service;

c) that the nature of objects studied by the radio astronomy service in the bands 1 610.6 - 1613.8 MHz and 1 660 - 1 660.5 MHz demands maximum flexibility in the planning of observation frequencies;

d) that in the bands 1 610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz, which are shared between the radio astronomy service and the mobile-satellite service, operational constraints are necessary for mobile earth stations of the mobile-satellite service;

e) that a former Recommendation of the ITU-R ~~M.829-1~~, ~~which~~ relate~~s~~d to sharing between the mobile-satellite service and the radio astronomy service in the band 1 660 - 1 660.5 MHz, ~~notes~~noted that further studies are required, particularly in the areas of propagation models and assumptions used for the determination of separation distances;

f) that Recommendation ITU-R M.1316 may be used in order to facilitate coordination between the mobile earth stations and radio astronomy stations in the bands 1 610.6 - 1 613.8 and 1 660 - 1 660.5 MHz;

g) that no experience could be gained up to now with the use of the Recommendation mentioned in *considering* f);

h) that the threshold levels of interference detrimental to the radio astronomy service are given in Recommendation ITU-R RA.769-1,

resolves

that a future competent conference ~~shall~~should evaluate the frequency sharing in the bands 1 610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz between the mobile-satellite service (MSS) and the radio astronomy service, based upon the experience gained with the use of ITU-R M.1316 and other relevant ITU-R Recommendations,

invites ITU-R

to submit a report to such a future conference on evaluating the effectiveness of recommendations aiming to facilitate sharing between the mobile-satellite service and the radio astronomy service,

urges administrations

to participate actively in this evaluation.

SUP RESOLUTION 115 (WRC-95)

CALCULATION OF THE POWER FLUX-DENSITY AT THE GEOSTATIONARY-SATELLITE ORBIT IN THE BAND 6 700 - 7 075 MHz USED FOR FEEDER LINKS OF NON-GEOSTATIONARY-SATELLITE SYSTEMS IN THE MOBILE-SATELLITE SERVICE IN THE SPACE-TO-EARTH DIRECTION

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 317-E
17 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 5

Bahrain, United Arab Emirates, Kuwait, Oman, Qatar

PROPOSALS FOR THE WORK OF THE CONFERENCE

Introduction

The Administrations of Bahrain, United Arab Emirates, Kuwait, Oman and Qatar would like to add their names into the list of countries in footnote S5.316 in the range 790 - 862 MHz as follows:

BHR/UAE/KWT/OMA/QAT/317/1

MOD S5.316 *Additional allocation:* in Germany, Bahrain, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, United Arab Emirates, Finland, Israel, Kenya, Kuwait, Oman, Qatar, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Monaco, Norway, the Netherlands, Portugal, Sweden, Switzerland and Yugoslavia, the band 790 - 830 MHz, and in these same countries and in Spain, France, Gabon, Malta and Syria, the band 830 - 862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 318-E
17 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

NOTE BY THE SECRETARY-GENERAL

RESULTS OF COMPATIBILITY STUDIES FOR THE DRAFT REVISED APPENDICES 30/30A REGIONS 1 AND 3 PLAN FOR OTHER SERVICES AND THE REGION 2 PLAN

1 Introduction

Annex 1 of this document provides results of further compatibility analyses performed by the Radiocommunication Bureau for proposed new and revised BSS assignments in the Appendices 30 and 30A Plans for Regions 1 and 3. These further analyses comprise both:

- compatibility studies from proposed Regions 1 and 3 BSS "new" country assignments, or current assignments whose characteristics have been changed, into other services or into Region 2 BSS; and
- compatibility studies into the Regions 1/3 BSS Plan "new" country assignments, or current assignments whose characteristics have been changed, from other services or from Region 2 BSS.

Both feeder link and downlink conditions have been investigated.

The input data used for the compatibility analyses is the same as that which was used to produce the BSS-BSS compatibility results that are reported in Conference Document 273. The details of the calculation basis for each compatibility condition are explained in detail for each compatibility condition in Conference Document 56 Addendum 2. However, it is noted that in all cases they have been derived from criteria contained in Appendix 30 or 30A and those referred to in the Rules of Procedure.

In the calculations the satellite systems data used was the data that was registered in SNS at the time the calculations were performed during WRC-97.

ANNEX 1

Feeder link causing interference

2.1.1 Administrations which have FSS earth stations affected by the proposed new or changed feeder link channels (Section 4.2.1.2 of Article 4 of Appendix 30A)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	24, 28, 32, 36, 40	none
BFA10700	21, 25, 29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none
CPV30100	2, 4, 6, 8, 12	none
CTI23700	22, 26, 30, 34, 38	none
E 12900	1, 5, 9, 13, 17	none
G UKDBS	22, 26, 30, 34, 38	none
G 02700	4, 8, 12, 16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	21, 23, 25, 27, 29, 31, 33, 35, 37, 39	none
IRL21100	2, 6, 10, 14, 18	none
ISL04900	21, 25, 29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18	none
KRE28600	20, 22	J
LBR24400	3, 7, 11, 15	none
MLA2280A	10	none
POR13300	3, 7, 11, 15, 19	none
ROU13600	3, 7, 11, 15, 19	none
SRL25900	23, 27, 31, 35, 39	none
VTN32500	3, 7, 11, 15	none

"Step 2"

Beam name	Channels	Affected administrations
ARM06400	24, 28, 32, 36, 40	none
AUS0040A	3, 7, 11, 15, 19, 23	none
AUS0040B	3, 7, 11, 15, 19, 23	none
AUS0040C	3, 7, 11, 15, 19, 23	none
AUS0070A	3, 7, 11, 15, 19, 23	none
AUS0090A	25, 27, 29, 31, 35, 39	none
AUS0090B	25, 27, 29, 31, 35, 39	none
AZE06400	4, 8, 12, 16, 20	none
BHR2550A	23	none
BIH14800	2, 6, 10, 14, 18	none
BLR06200	1, 5, 9, 13, 17	none
BRU3300A	3, 7, 11, 15	none
BTN03100	5, 9, 13, 17	none
CHN19000	1, 5, 9, 13	none
COM2070A	19	none
CZE14400	23, 27, 31, 35, 39	none
D 08700	2, 6, 10, 14, 18	none
D2-21600	21, 25, 29, 33, 37	none
ERI09200	23, 27, 31, 35, 39	none
EST06100	1, 5, 9, 13, 17	none
ETH09200	2, 6, 8, 10, 12	none
FJI1930A	13	none
FSM00000	3, 7, 11, 15, 19	none
GEO06400	22, 26, 30, 34, 38	none
HRV14800	1, 5, 9, 13, 17	none
ISR1100A	7	none
KAZ06600	24, 28, 32, 36, 40	none
KGZ07000	22, 26, 30, 34, 38	none
KIR00001	3, 7, 11	none
KIR00002	15, 19, 23	none
LBR2440A	19	none
LTU06100	3, 7, 11, 15, 19	none

LVA06100	21, 25, 29, 33, 37	none
MDA06300	4, 8, 12, 16, 20	none
MHL00000	2, 6, 10, 14, 18	none
MKD14800	2, 6, 10, 14, 18	none
MLD3060A	4, 8	none
MLT1470A	20	none
NMB0250A	11	none
NPL1220A	23	none
PLW00000	4, 8, 12, 16, 20	none
RUS00400	25, 27, 31, 35, 39	J
SLM00000	1, 5, 9, 13	none
SVK14400	3, 7, 11, 15, 19	none
SVN14800	4, 8, 12, 16	none
SVN14800	20	none
TJK06900	1, 5, 9, 13, 17	none
TKM06800	23, 27, 31, 35, 39	none
TUV00000	2, 6, 10, 14	none
UKR06300	3, 7, 11, 15, 19	none
UZB07100	3, 7, 11, 15, 19	none
YEM26600	2, 6, 10, 14, 18	none
YEM26700	1, 3, 5, 7, 9	none
YUG14800	1, 5, 9, 13, 17	none
YYY00001	1, 5, 9, 13, 17	none

According to the decision of Committee 4 (Document 269, item 1.1), only those FSS assignments that are recorded in the MIFR with a favourable finding, or those which were received before [27 October 1997] and which subsequently enter the MIFR with a favourable finding, shall be considered in this compatibility assessment. Therefore, the above list is provisional because it is based on those assignments that were included in the MIFR at the time of the examination. This listing will be revised following the completion of processing of submissions for FSS earth station assignments which were received prior to 27 October 1997. The results of the Bureau's analysis together with a revised listing of the revised Regions 1 and 3 BSS Plan which includes these results in a revised remarks column shall be conveyed to all administrations by means of a circular letter.

2.1.2 Administrations which have terrestrial services in use, or intended to be brought into use in three years, affected by the proposed new or changed feeder link channels (Section 4.2.1.3 of Article 4 of Appendix 30A)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	24, 28, 32, 36, 40	none
BFA10700	21, 25, 29, 33, 37	BEN CTI GHA MLI NGR NIG TGO
CNR13000	23, 27, 31, 35, 39	AOE POR/MDR MRC MTN
CPV30100	2, 4, 6, 8, 12	AOE GMB GNB MTN SEN
CTI23700	22, 26, 30, 34, 38	BFA GHA GUI LBR MLI
E 12900	1, 5, 9, 13, 17	none
G UKDBS	22, 26, 30, 34, 38	BEL D DNK E F DNK/FRO HOL IRL LUX NOR
G 02700	4, 8, 12, 16	none
G 02700	20	BEL D DNK E F DNK/FRO HOL IRL LUX NOR
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	21, 23, 25, 27, 29, 31, 33, 35, 37, 39	ALG AND F G G/GIB I MCO MRC POR TUN
IRL21100	2, 6, 10, 14, 18	none
ISL04900	21, 25, 29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	CHN J KRE RUS
KO11201D	2, 4, 6, 8, 10, 12	CHN J KRE RUS
KRE28600	14, 16, 18	none
KRE28600	20, 22	CHN J KOR RUS
LBR24400	3, 7, 11, 15	none
MLA2280A	10	none
POR13300	3, 7, 11, 15, 19	none
ROU13600	3, 7, 11, 15, 19	none
SRL25900	23, 27, 31, 35, 39	CTI GNB GUI LBR MLI SEN
VTN32500	3, 7, 11, 15	none

"Step 2"

Beam name	Channels	Affected administrations
ARM06400	24, 28, 32, 36, 40	AZE GEO IRN IRQ RUS SYR TUR
AUS0040A	3, 7, 11, 15, 19	none
AUS0040A	23	INS PNG POR/TMP
AUS0040B	3, 7, 11, 15, 19	none
AUS0040B	23	INS PNG POR/TMP
AUS0040C	3, 7, 11, 15, 19	none
AUS0040C	23	INS PNG POR/TMP
AUS0070A	3, 7, 11, 15, 19	none
AUS0070A	23	INS PNG POR/TMP
AUS0090A	25, 27, 29, 31, 35, 39	INS PNG POR/TMP
AUS0090B	25, 27, 29, 31, 35, 39	INS PNG POR/TMP
AZE06400	4, 8, 12, 16	none
AZE06400	20	ARM GEO IRN IRQ KAZ RUS SYR TKM TUR
BHR2550A	23	ARS IRN IRQ KWT OMA QAT UAE
BIH14800	2, 6, 10, 14, 18	none
BLR06200	1, 5, 9, 13, 17	none
BRU3300A	3, 7, 11, 15	none
BTN03100	5, 9, 13, 17	none
CHN19000	1, 5, 9, 13	none
COM2070A	19	none
CZE14400	23, 27, 31, 35, 39	AUT BIH D F HNG HRV I LIE POL ROU SUI SVK SVN UKR YUG
D 08700	2, 6, 10, 14, 18	none
D2-21600	21, 25, 29, 33, 37	AUT BEL CZE DNK EST F HNG HOL I LTU LUX LVA NOR POL RUS S SVK
ERI09200	23, 27, 31, 35, 39	ARS DJI ETH SDN SOM YEM
EST06100	1, 5, 9, 13, 17	none
ETH09200	2, 6, 8, 10, 12	ARS DJI ERI KEN SDN SOM UGA YEM
FJI1930A	13	none
FSM00000	3, 7, 11, 15, 19	none

GEO06400	22, 26, 30, 34, 38	ARM AZE IRN RUS TUR UKR
HRV14800	1, 5, 9, 13, 17	none
ISR1100A	7	ARS CYP EGY GRC JOR LBN SYR TUR
KAZ06600	24, 28, 32, 36, 40	AFG AZE CHN IRN KGZ MNG RUS TJK TKM UZB
KGZ07000	22, 26, 30, 34, 38	AFG CHN KAZ PAK TJK TKM UZB
KIR00001	3, 7, 11	none
KIR00002	15, 19, 23	none
LBR2440A	19	none
LTU06100	3, 7, 11, 15, 19	none
LVA06100	21, 25, 29, 33, 37	BLR D DNK EST FIN LTU POL RUS S
MDA06300	4, 8, 12, 16	none
MDA06300	20	BUL HNG POL ROU SVK UKR
MHL00000	2, 6, 10, 14, 18	none
MKD14800	2, 6, 10, 14, 18	none
MLD3060A	4, 8	none
MLT1470A	20	GRC I LBY TUN
NMB0250A	11	AFS AGL BOT ZMB ZWE
NPL1220A	23	BGD BTN CHN IND
PLW00000	4, 8, 12, 16	none
PLW00000	20	FSM INS
RUS00400	25, 27, 31, 35, 39	USA/ALS CHN J KAZ KOR KRE MNG
SLM00000	1, 5, 9, 13	none
SVK14400	3, 7, 11, 15, 19	none
SVN14800	4, 8, 12, 16	none
SVN14800	20	AUT BIH CZE D HNG HRV I LIE POL ROU SMR SUI SVK YUG
TJK06900	1, 5, 9, 13, 17	none
TKM06800	23, 27, 31, 35, 39	AFG AZE IRN KAZ KGZ RUS TJK UZB
TUV00000	2, 6, 10, 14	none
UKR06300	3, 7, 11, 15, 19	none
UZB07100	3, 7, 11, 15, 19	none

YEM26600	2, 6, 10, 14, 18	none
YEM26700	1, 3, 5, 7, 9	ARS DJI ERI ETH OMA SDN SOM
YUG14800	1, 5, 9, 13, 17	none
YYY00001	1, 5, 9, 13, 17	none

According to the decision of Committee 4 (Document 269, item 1.2), only those terrestrial services assignments that are recorded in the MIFR with a favourable finding, or those which were received before [27 October 1997] and which subsequently enter the MIFR with a favourable finding, shall be considered in this compatibility assessment. Therefore, the above list is provisional because it is based on identification of affected territory. This listing will be revised following the completion of processing of submissions for terrestrial assignments which were received prior to 27 October 1997. The results of the Bureau's analysis together with a revised listing of the revised Regions 1 and 3 BSS Plan which includes these results in a revised remarks column shall be conveyed to all administrations by means of a circular letter.

2.1.3 Administrations which have Region 2 BSS feeder link Plan assignments affected by the proposed new or changed feeder link channels (Section 4.2.1.4 of Article 4 of Appendix 30A)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	24, 28, 32, 36, 40	none
BFA10700	21, 25, 29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none
CPV30100	2, 4, 6, 8, 12	none
CTI23700	22, 26, 30, 34, 38	none
E 12900	1, 5, 9, 13, 17	none
G UKDBS	22, 26, 30, 34, 38	none
G 02700	4, 8, 12	GUY JMC
G 02700	16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	21, 23, 25, 27, 29, 31, 33, 35, 37, 39	none
IRL21100	2, 10	GUY JMC
IRL21100	6	JMC
IRL21100	14, 18	none
ISL04900	21, 25, 29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none

KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none
LBR24400	3	JMC
LBR24400	7, 11	GUY JMC
LBR24400	15	none
MLA2280A	10	none
POR13300	3, 7, 11, 15, 19	none
ROU13600	3, 7, 11, 15, 19	none
SRL25900	23, 27, 31, 35, 39	none
VTN32500	3, 7, 11, 15	none

"Step 2"

No affected administrations.

Downlink causing interference

2.2.1 Administrations which have Region 2 BSS Plan assignments that may be affected by the proposed new or changed downlink channels (Section 4.3.1.2 of Article 4 of Appendix 30)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	21, 25, 29	none
AZR13400	33, 37	G
BFA10700	21, 25, 29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none
CPV30100	24, 28, 32, 36, 40	none
CTI23700	22, 26, 30, 34, 38	none
E 12900	23, 27, 31, 35, 39	none
G UKDBS	22, 26	none
G UKDBS	30, 34, 38	GUY JMC
G 02700	4, 8, 12, 16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	none
IRL21100	2, 6, 10, 14, 18	none
ISL04900	21, 25	none

ISL04900	29	JMC
ISL04900	33, 37	GUY JMC
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none
LBR24400	3, 7, 11, 15	none
MLA2280A	10	none
POR13300	21, 25, 29, 33, 37	none
ROU13600	3, 7, 11, 15, 19	none
SRL25900	23, 27, 31, 35, 39	none
VTN32500	3, 7, 11, 15	none

"Step 2"

No affected administrations.

2.2.2 Administrations which may have terrestrial services that may be affected by the proposed new or changed downlink channels (Section 4.3.1.4 of Article 4 of Appendix 30)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	21, 25, 29, 33, 37	none
BFA10700	21, 25, 29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none
CPV30100	24, 28, 32, 36, 40	none
CTI23700	22, 26, 30, 34, 38	none
E 12900	23, 27, 31, 35, 39	none
G UKDBS	22	BLR 0.3, EST 1.5, LTU 1.5, LVA 1.5, POL 0.6, RUS 0.4
G UKDBS	26, 30, 34, 38	BLR 0.3, EST 1.5, LTU 1.5, LVA 1.5, POL 0.6
G 02700	4, 8, 12, 16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	KAZ 12.0
IRL21100	2, 6, 10, 14, 18	none

ISL04900	21, 25, 29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none
LBR24400	3, 7, 11, 15	none
MLA2280A	10	BRU 7.2 INS 6.0 PHL 1.5
POR13300	21, 25	E 5.9
POR13300	29	E 6.0
POR13300	33, 37	E 6.1
ROU13600	3	ALB 1.0 BIH 3.3 BLR 1.4 BUL 6.3 CZE 1.2 HNG 5.6 HRV 3.1 MDA 6.1 MKD 3.5 POL 4.1 TUR 3.7 YUG 5.9
ROU13600	7, 11	ALB 1.1 BIH 3.4 BLR 1.5 BUL 6.4 CZE 1.3 HNG 5.7 HRV 3.2 MDA 6.2 MKD 3.6 POL 4.2 TUR 3.8 YUG 6.0
ROU13600	15, 19	ALB 1.2 BIH 3.5 BLR 1.6 BUL 6.5 CZE 1.4 HNG 5.8 HRV 3.3 MDA 6.3 MKD 3.7 POL 4.3 TUR 3.9 YUG 6.1
SRL25900	23, 27, 31, 35, 39	none
VTN32500	3, 7, 11, 15	none

NOTE - Number following country symbol indicates the amount of power flux-density excess (dBW/m^2).

"Step 2"

Beam name	Channels	Affected administrations
ARM06400	24	AZE 7.3 GEO 6.4 IRN 7.3 RUS 5.4 TUR 6.9
ARM06400	28, 32, 36, 40	AZE 7.3 GEO 6.4 IRN 7.3 TUR 6.9
AUS0040A	3, 7, 11, 15, 19, 23	none
AUS0040B	3, 7, 11, 15, 19, 23	none
AUS0040C	3, 7, 11, 15, 19, 23	none
AUS0070A	3, 7, 11, 15, 19, 23	none
AUS0090A	1, 5, 9, 13, 17, 21	none
AUS0090B	1, 5, 9, 13, 17, 21	none
AZE06400	4, 8, 12, 16, 20	ARM 6.5 GEO 6.7 IRN 6.5 RUS 6.4 TUR 4.5

BHR2550A	23	QAT 4.0 UAE 0.9
BIH14800	2, 6, 10, 14, 18	ALB 5.5 AUT 4.8 CZE 0.7 GRC 0.6 HNG 5.0 HRV 7.0 I 0.9 ROU 2.0 SVK 2.5 SVN 5.0 YUG 6.5
BLR06200	1, 5, 9, 13, 17	LTU 6.4 LVA 5.7 MDA 2.1 RUS 4.7 SVK 1.0 UKR 6.7
BRU3300A	12	INS 2.8 MLA 5.7
BRU3300A	14, 16, 18	INS 2.9 MLA 5.8
BTN03100	5, 9, 13	BGD 6.8 IND 6.8 NPL 4.2
BTN03100	17	BGD 6.8 CHN 6.6 IND 6.8
CHN19000	1, 5, 9, 13	POR/MAC 6.2
COM2070A	19	F/MYT 6.4
CZE14400	23, 31, 39	AUT 6.7 BIH 0.9 D 6.4 DNK 1.0 HNG 5.0 HRV 4.1 I 2.8 POL 6.8 SVK 6.4 SVN 4.7
CZE14400	27, 35	AUT 6.7 BIH 0.9 D 6.4 DNK 0.4 HNG 5.0 HRV 4.1 I 2.8 POL 6.8 SVK 6.4 SVN 4.7
D 08700	2, 6, 10, 14, 18	none
D2-21600	21, 25, 29, 33, 37	none
ERI09200	23, 27, 31, 35, 39	ARS 0.5 DJI 5.1 ETH 7.4 SDN 6.7 SOM 3.9 YEM 4.8
EST06100	1, 5, 9, 13, 17	FIN 5.9 LTU 6.1 LVA 6.9 NOR 9.2 RUS 8.3 S 3.7
ETH09200	22, 26, 30, 34, 38	none
FJI1930A	13	F/WAL 1.2
FSM00000	3, 7, 11, 15	KIR 2.8 MHL 2.0 F/OCE 1.4 PLW 3.5
FSM00000	19	KIR 2.8 MHL 2.0 NRU 3.6 F/OCE 1.4 PLW 3.5
GEO06400	22	ARM 6.9 AZE 6.6 IRN 4.8 RUS 6.5 TUR 6.9
GEO06400	26, 30, 34, 38	ARM 6.9 AZE 6.6 IRN 4.8 TUR 6.9
HRV14800	1, 5, 9, 13, 17	ALB 5.0 AUT 5.5 BIH 7.1 BUL 0.2 CZE 2.5 D 2.5 GRC 0.9 HNG 5.6 I 4.8 MKD 3.1 ROU 3.2 SUI 0.5 SVK 3.6 SVN 6.7 YUG 6.0
ISR1100A	21	ARS 5.7 AZE 0.2 EGY 5.8 IRN 1.1 IRQ 4.2 JOR 7.0 LBN 6.2 SYR 6.6 TKM 3.9

KAZ06600	24, 28, 32, 36, 40	none
KGZ07000	22	none
KGZ07000	26, 30, 34, 38	AFG 0.8 CHN 6.0 KAZ 6.2 MNG 2.8 RUS 2.2 TJK 6.3 TKM 0.4 UZB 7.1
KIR00001	3, 7, 11	USA/HWL 4.5 MHL 2.6 NZL/TKL 0.9 TUV 2.0
KIR00002	15, 19, 23	USA/JAR 4.5 F/OCE 0.5 USA/PLM 1.9
LBR2440A	19	CTI 6.4 GUI 6.1 SRL 6.4
LTU06100	3, 7, 11, 15, 19	none
LVA06100	21	BLR 6.1 EST 6.5 FIN 3.8 LTU 7.0 NOR 3.2 POL 5.6 RUS 5.9
LVA06100	25, 29, 33, 37	BLR 6.1 EST 6.5 FIN 3.8 LTU 7.0 NOR 3.2 POL 5.6
MDA06300	4, 8, 12, 16, 20	ROU 6.9 UKR 6.4
MHL00000	2, 6, 10, 14, 18	none
MKD14800	2, 6, 10, 14, 18	ALB 6.9 BUL 6.7 GRC 6.9 HRV 2.0 ROU 1.6 YUG 6.8
MLD3060A	4, 8	none
MLT1470A	20	I 2.7 TUN 0.4
NMB0250A	21	AGL 7.3 BOT 7.9 F/CRO 5.9 LSO 3.2 MAU 10.5 MDG 3.5 MOZ 2.2 F/REU 11.2 SWZ 2.8 ZMB 5.0 ZWE 5.1
NPL1220A	23	BGD 5.9 BTN 6.1 CHN 7.7 IND 7.5
PLW00000	4, 8, 12, 16, 20	none
RUS00400	25	CHN 1.0 J 0.1 KRE 1.0
RUS00400	27, 31, 35, 39	J 0.1 KRE 1.0
SLM00000	1, 5, 9, 13	none
SVK14400	3, 7, 11, 15, 19	none
SVN14800	4, 8, 12, 16, 20	BIH 6.8 CZE 5.1 D 5.1 HNG 5.9 HRV 6.8 I 6.2 SMR 0.3 SVK 2.8 YUG 1.5
TJK06900	1, 5, 9, 13, 17	AFG 6.5 CHN 6.0 KAZ 3.0 KGZ 6.9 PAK 2.9 TKM 4.3 UZB 5.7
TKM06800	23	AFG 4.6 AZE 3.9 GEO 0.4 IRN 6.5 KAZ 5.0 KGZ 2.5 RUS 1.4 TJK 4.1 UZB 5.9
TKM06800	27, 31, 35, 39	AFG 4.6 AZE 3.9 GEO 0.4 IRN 6.5 KAZ 5.0 KGZ 2.5 TJK 4.1 UZB 5.9

TUV00000	2, 6, 10, 14	none
UKR06300	3, 7, 11, 15, 19	AUT 1.5 BLR 5.6 BUL 3.9 CZE 2.5 DNK/FRO 1.2 GEO 2.9 HNG 4.8 HRV 0.7 ISL 4.2 LVA 1.8 MDA 7.0 NOR 0.8 POL 4.9 RUS 5.0 TUR 1.0 YUG 2.0
UZB07100	3, 7, 11, 15	AFG 2.1 CHN 4.4 KAZ 6.7 KGZ 6.3 PAK 1.0 TJK 6.6 TKM 6.6
UZB07100	19	AFG 5.2 CHN 4.4 KAZ 6.7 KGZ 6.3 PAK 1.0 TJK 6.6 TKM 6.6
YEM26600	2, 6, 10, 14, 18	none
YEM26700	1, 5, 9, 13, 17	none
YUG14800	23, 27, 31, 35, 39	none
YYY00001	1, 5, 9, 13, 17	ARS 3.0 EGY 5.5 ISR 7.0 JOR 7.2 LBN 6.4 SYR 6.9

NOTE - Number following country symbol indicates the amount of power flux-density excess (dBW/m^2).

According to the decision of Committee 4 (Document 269, item 1.5), only those terrestrial services assignments that are recorded in the MIFR with a favourable finding, or those which were received before [27 October 1997] and which subsequently enter the MIFR with a favourable finding, shall be considered in this compatibility assessment. Therefore, the above list is provisional because it is based on identification of affected territory. This listing will be revised following the completion of processing of submissions for terrestrial assignments received prior to 27 October 1997. The results of the Bureau's analysis together with a revised listing of the revised Regions 1 and 3 BSS Plan which includes these results in a revised remarks column shall be conveyed to all administrations by means of a circular letter.

2.2.3 Administrations which have FSS space stations that may be affected by the proposed new or changed downlink channels (Section 4.3.1.5 of Article 4 of Appendix 30)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	21	CAN E MLA USA VEN/ASA
AZR13400	25, 29, 33, 37	none
BFA10700	21, 25, 29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none
CPV30100	24	MLA
CPV30100	28, 32, 36, 40	none
CTI23700	22, 26, 30, 34, 38	none
E 12900	23, 27, 31, 35, 39	none

G UKDBS	22	CAN USA
G UKDBS	26, 30, 34, 38	none
G 02700	4, 8, 12, 16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	none
IRL21100	2, 6, 10, 14, 18	none
ISL04900	21, 25, 29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none
LBR24400	3, 7, 11, 15	none
MLA2280A	10	none
POR13300	21, 25, 29, 33, 37	none
ROU13600	3, 7, 11	USA/IT
ROU13600	15, 19	none
SRL25900	23, 27, 31, 35, 39	none
VTN32500	3, 7, 11, 15	none

"Step 2"

Beam name	Channels	Affected administrations
ARM06400	24	none
ARM06400	28, 32, 36, 40	CHN INS J PAK SNG THA TON UAE
AUS0040A	3, 7, 11, 15, 19, 23	none
AUS0040B	3, 7, 11, 15, 19, 23	none
AUS0040C	3, 7, 11, 15, 19, 23	none
AUS0070A	3, 7, 11, 15, 19, 23	none
AUS0090A	1, 5, 9, 13, 17, 21	none
AUS0090B	1, 5, 9, 13, 17, 21	none
AZE06400	4, 8, 12, 16, 20	none
BHR2550A	23	none
BIH14800	2, 6, 10, 14, 18	none
BLR06200	1, 5, 9, 13, 17	none

BRU3300A	12, 14, 16, 18	none
BTN03100	5, 9, 13, 17	none
CHN19000	1, 5, 9, 13	none
COM2070A	19	none
CZE14400	23	none
CZE14400	27, 31, 35, 39	UAE
D 08700	2, 6, 10, 14, 18	none
D2-21600	21, 25, 29, 33, 37	none
ERI09200	23	none
ERI09200	27	INS J MLA PAK SNG TON UAE
ERI09200	31, 35, 39	CHN INS J KOR MLA PAK SNG THA TON UAE USA
EST06100	1, 5, 9, 13	USA/IT
EST06100	17	none
ETH09200	22, 26, 30, 34, 38	none
FJI1930A	13	none
FSM00000	3, 7, 11, 15, 19	ARG J MHL MLA USA/IT USA VEN/ASA
GEO06400	22	none
GEO06400	26	J MLA PAK SNG TON UAE
GEO06400	30, 34, 38	CHN INS J KOR MLA PAK PNG SNG THA TON UAE USA
HRV14800	1, 5, 9, 13, 17	none
ISR1100A	21	none
KAZ06600	24, 28, 32, 36, 40	none
KGZ07000	22	none
KGZ07000	26	INS J MLA PAK SNG TON UAE
KGZ07000	30, 34, 38	CHN INS J KOR MLA PAK PNG SNG THA TON UAE USA
KIR00001	3, 7, 11	ARG J MHL MLA USA/IT USA VEN/ASA
KIR00002	15, 19	ARG CAN J MHL MLA USA USA/IT VEN/ASA
KIR00002	23	ARG CAN J MHL MLA USA/IT USA VEN/ASA
LBR2440A	19	ARG USA
LTU06100	3, 7, 11, 15, 19	none

LVA06100	21, 25	none
LVA06100	29, 33, 37	UAE
MDA06300	4, 8, 12, 16, 20	none
MHL00000	2, 6, 10, 14, 18	none
MKD14800	2, 6, 10, 14, 18	none
MLD3060A	4, 8	none
MLT1470A	20	none
NMB0250A	21	ARG E MEX MLA USA VEN/ASA
NPL1220A	23	none
PLW00000	4, 8, 12, 16, 20	none
RUS00400	25	G J MLA PAK SNG TON
RUS00400	27	CHN G INS J PNG SNG THA TON
RUS00400	31, 35	CHN G INS J KOR LAO PNG SNG THA TON USA
RUS00400	39	CHN G INS J KOR LAO PNG SNG THA TON
SLM00000	1, 5, 9, 13	USA/IT
SVK14400	3, 7, 11, 15, 19	none
SVN14800	4, 8, 12, 16, 20	none
TJK06900	1, 5, 9, 13, 17	none
TKM06800	23	none
TKM06800	27	INS J MLA PAK PNG SNG TON UAE
TKM06800	31, 35, 39	CHN INS J KOR MLA PAK PNG SNG THA TON UAE USA
TUV00000	2, 6, 10, 14	none
UKR06300	3, 7, 11, 15, 19	none
UZB07100	3, 7, 11, 15, 19	none
YEM26600	2, 6, 10, 14, 18	none
YEM26700	1, 5, 9, 13, 17	none
YUG14800	23, 27, 31, 35, 39	none
YYY00001	1, 5, 9, 13, 17	none

According to the decision of [Working Group 4D], only those FSS service assignments that are recorded in the Master Register with a favourable finding; or those which have been coordinated under the provisions of No. **1060** of the Radio Regulations or paragraph 7.2.1 of Appendix 30; or

those that are in process of coordination under the provisions of No. **1060** of the Radio Regulations or paragraph 7.2.1 of Appendix 30 prior to 27 October 1997, shall be considered in this compatibility assessment. Therefore, the above list is provisional because it is based on those assignments that were included in the satellite network system database of the Bureau at the time of the examination. The results of the Bureau's analysis together with a revised listing of the revised Regions 1 and 3 BSS Plan which includes these results in a revised remarks column shall be conveyed to all administrations by means of a circular letter.

Feeder link receiving interference

3.1.1 Administrations which have Region 2 BSS feeder link Plan assignments that may affect the proposed new or changed feeder link channels (Section 4.2.3.4 of Article 4 of Appendix 30A)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	24, 28, 32, 36, 40	none
BFA10700	21, 25, 29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none
CPV30100	2, 4, 6, 8, 12	none
CTI23700	22, 26, 30, 34, 38	none
E 12900	1, 5, 9, 13, 17	none
G UKDBS	22, 26, 30, 34, 38	none
G 02700	4, 8, 12	GUY JMC
G 02700	16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	21, 23, 25, 27, 29, 31, 33, 35, 37, 39	none
IRL21100	2, 10	GUY JMC
IRL21100	6	JMC
IRL21100	14, 18	none
ISL04900	21, 25, 29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none
LBR24400	3	JMC
LBR24400	7, 11	GUY JMC
LBR24400	15	none

MLA2280A	10	none
POR13300	3, 7, 11, 15, 19	none
ROU13600	3, 7, 11, 15, 19	none
SRL25900	23, 27, 31, 35, 39	none
VTN32500	3, 7, 11, 15	none

"Step 2"

No affected administrations.

3.1.2 Administrations which have Regions 1 or 3 FSS space stations that may affect the proposed new or changed feeder link channels (Section 7.1 of Article 7 of Appendix 30A)

"Step 1"

Beam name	Channels	Affected administrations
AZR13400	24, 32	none
AZR13400	28, 36, 40	USA
BFA10700	21, 25, 33	none
BFA10700	29, 37	USA
CNR13000	23, 31, 35	none
CNR13000	27, 39	USA
CPV30100	2, 4, 6, 8, 12	none
CTI23700	22, 30, 34	none
CTI23700	26, 38	USA
E 12900	1, 5, 9, 13, 17	none
G UKDBS	22, 26, 30, 34, 38	none
G 02700	4, 8, 12, 16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	21, 23, 25, 31, 33, 35	none
HISPASA2	27, 29, 37, 39	USA
IRL21100	2, 6, 10, 14, 18	none
ISL04900	21, 25, 29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none

LBR24400	3, 7, 11, 15	none
MLA2280A	10	none
POR13300	3, 7, 11, 15, 19	none
ROU13600	3, 7, 11, 15, 19	none
SRL25900	23, 27, 31, 35, 39	none
VTN32500	3, 7, 11, 15	none

"Step 2"

Beam name	Channels	Affected administrations
ARM06400	24, 28, 32, 36, 40	none
AUS0040A	3, 7, 11, 15, 19, 23	none
AUS0040B	3, 7, 11, 15, 19, 23	none
AUS0040C	3, 7, 11, 15, 19, 23	none
AUS0070A	3, 7, 11, 15, 19, 23	none
AUS0090A	25, 27, 29, 31, 35, 39	none
AUS0090B	25, 27, 29, 31, 35, 39	none
AZE06400	4, 8, 12, 16, 20	none
BHR2550A	23	none
BIH14800	2, 6, 10, 14, 18	none
BLR06200	1, 5, 9, 13, 17	none
BRU3300A	3, 7, 11, 15	none
BTN03100	5, 9, 13, 17	none
CHN19000	1, 5, 9, 13	none
COM2070A	19	none
CZE14400	23, 27, 31, 35, 39	none
D 08700	2, 6, 10, 14, 18	none
D2-21600	21, 25, 29, 33, 37	USA/IT
ERI09200	23, 27, 31, 35, 39	none
EST06100	1, 5, 9, 13, 17	none
ETH09200	2, 6, 8, 10, 12	none
FJI1930A	13	none
FSM00000	3, 7, 11, 15, 19	none
GEO06400	22, 26, 30, 34, 38	none
HRV14800	1, 5, 9, 13, 17	none

ISR1100A	7	none
KAZ06600	24, 32	F/EUT
KAZ06600	28, 36, 40	F/EUT USA
KGZ07000	22, 30, 34	F/EUT
KGZ07000	26, 38	F/EUT USA
KIR00001	3, 7, 11	none
KIR00002	15, 19, 23	none
LBR2440A	19	none
LTU06100	3, 7, 11, 15, 19	none
LVA06100	21, 25, 29, 33, 37	none
MDA06300	4, 8, 12, 16	none
MDA06300	20	G PAK
MHL00000	2, 6, 10, 14, 18	none
MKD14800	2, 6, 10, 14, 18	none
MLD3060A	4, 8	none
MLT1470A	20	F/EUT IND
NMB0250A	11	none
NPL1220A	23	IND
PLW00000	4, 8, 12, 16, 20	none
RUS00400	25, 27, 31, 35	none
RUS00400	39	USA
SLM00000	1, 5, 9, 13	none
SVK14400	3, 7, 11, 15, 19	none
SVN14800	4, 8, 12, 16, 20	none
TJK06900	1, 5, 9, 13, 17	none
TKM06800	23, 27, 31, 35	F/EUT
TKM06800	39	F/EUT USA
TUV00000	2, 6, 10, 14	none
UKR06300	3, 7, 11, 15, 19	none
UZB07100	3, 7, 11, 15, 19	none
YEM26600	2, 6, 10, 14, 18	none
YEM26700	1, 3, 5, 7, 9	none
YUG14800	1, 5, 9, 13, 17	none
YYY00001	1, 5, 9, 13, 17	none

According to the decision of [Working Group 4D], only those FSS service assignments that are recorded in the MIFR with a favourable finding shall be considered in this compatibility assessment. Therefore, the above list is provisional because it is based on those assignments that were included in the satellite network system database, which includes both networks which are in the MIFR with a favourable finding and those which are in process of coordination at the time of the examination. The results of the Bureau's analysis together with a revised listing of the revised Regions 1 and 3 BSS Plan which includes these results in a revised remarks column shall be conveyed to all administrations by means of a circular letter.

3.1.3 Administrations which may have Region 2 BSS space stations that may affect the proposed new or changed feeder link channels (Section 7.1 of Article 7 of Appendix 30A)

"Step 1"

No affected administrations.

"Step 2"

No affected administrations.

Downlink receiving interference

3.2.1 Administrations which have Region 2 BSS Plan assignments that may affect the proposed new or changed downlink channels (Section 4.3.3.2 of Article 4 of Appendix 30)

"Step 1"

Beam name	Channels	Affecting administrations
AZR13400	21, 25, 29, 33, 37	none
BFA10700	21, 25, 29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none
CPV30100	24, 28, 32, 36, 40	none
CTI23700	22, 26, 30, 34, 38	none
E 12900	23, 27, 31, 35, 39	none
G UKDBS	22, 26	none
G UKDBS	30, 34, 38	GUY JMC
G 02700	4, 8, 12, 16, 20	none
GNB30400	2, 6, 10, 14, 18	none
HISPASA2	1, 3, 5, 7, 9, 11, 13, 15, 17, 19	none
IRL21100	2, 6, 10, 14, 18	none
ISL04900	21, 25	none

ISL04900	29	JMC
ISL04900	33, 37	GUY JMC
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none
LBR24400	3, 7, 11, 15	none
MLA2280A	10	none
POR13300	21, 25, 29, 33, 37	none
ROU13600	3, 7, 11, 15, 19	none
SRL25900	23	none
SRL25900	27	GUY
SRL25900	31, 35	GUY JMC
SRL25900	39	JMC
VTN32500	3, 7, 11, 15	none

"Step 2"

No affected administrations.

3.2.2 Administrations which may have terrestrial services that may affect the proposed new or changed downlink channels (Section 6.1.1 of Article 6 of Appendix 30)

"Step 1"

No affected administrations.

"Step 2"

No affected administrations.

3.2.3 Administrations which have FSS space stations that may affect the proposed new or changed downlink channels (Section 7.2.1 of Article 7 of Appendix 30)

"Step 1"

Beam name	Channels	Affecting administrations
AZR13400	21, 25	E
AZR13400	29, 33, 37	none
BFA10700	21, 25	E
BFA10700	29, 33, 37	none
CNR13000	23, 27, 31, 35, 39	none

CPV30100	24	E USA/IT
CPV30100	28, 32, 36, 40	none
CTI23700	22	E
CTI23700	26, 30, 34, 38	none
E 12900	23, 27, 31, 35, 39	none
G UKDBS	22, 26	USA/IT
G UKDBS	30, 34, 38	none
G 02700	4, 8, 12, 16, 20	USA/IT
GNB30400	2, 6, 10	USA/IT
GNB30400	14, 18	E USA/IT
HISPASA2	1, 3, 5, 7, 9, 11, 13	USA/IT
HISPASA2	15, 17, 19	none
IRL21100	2, 6, 10, 14, 18	USA/IT
ISL04900	21, 25	USA/IT
ISL04900	29, 33, 37	none
KOR11200	2, 4, 6, 8, 10, 12	none
KOR11201	2, 4, 6, 8, 10, 12	none
KO11201D	2, 4, 6, 8, 10, 12	none
KRE28600	14, 16, 18, 20, 22	none
LBR24400	3, 7, 11, 15	USA/IT
MLA2280A	10	USA/IT
POR13300	21, 25	E
POR13300	29, 33, 37	none
ROU13600	3, 7, 11	USA/IT
ROU13600	15, 19	none
SRL25900	23	USA/IT
SRL25900	27, 31, 35, 39	none
VTN32500	3, 7, 11	USA/IT
VTN32500	15	none

"Step 2"

Beam name	Channels	Affecting administrations
ARM06400	24	none
ARM06400	28, 32, 36, 40	PAK
AUS0040A	3, 7, 11	USA/IT
AUS0040A	15, 19, 23	none
AUS0040B	3, 7, 11	USA/IT
AUS0040B	15, 19, 23	none
AUS0040C	3, 7, 11	USA/IT
AUS0040C	15, 19, 23	none
AUS0070A	3, 7, 11	J USA/IT
AUS0070A	15, 19, 23	J
AUS0090A	1, 5, 9, 13	J USA/IT
AUS0090A	17, 21	J
AUS0090B	1, 5, 9, 13	J USA/IT
AUS0090B	17, 21	J
AZE06400	4, 8, 12	USA/IT
AZE06400	16, 20	none
BHR2550A	23	none
BIH14800	2, 6, 10	USA/IT
BIH14800	14, 18	none
BLR06200	1, 5, 9	USA/IT
BLR06200	13, 17	none
BRU3300A	12	USA/IT
BRU3300A	14, 16, 18	none
BTN03100	5, 9	USA/IT
BTN03100	13, 17	none
CHN19000	1, 5, 9, 13	none
COM2070A	19	none
CZE14400	23, 27, 31, 35, 39	none
D 08700	2, 6, 10	USA/IT
D 08700	14, 18	none
D2-21600	21, 25, 29, 33, 37	none
ERI09200	23, 27, 31, 35, 39	none
EST06100	1, 5, 9	USA/IT

EST06100	13, 17	none
ETH09200	22, 26, 30, 34, 38	none
FJI1930A	13	USA/IT
FSM00000	3, 7, 15, 19	J MHL
FSM00000	11	J MHL USA/IT
GEO06400	22	none
GEO06400	26, 30, 34, 38	PAK
HRV14800	1, 5, 9	USA/IT
HRV14800	13, 17	none
ISR1100A	21	USA
KAZ06600	24	none
KAZ06600	28, 32, 36, 40	THA UAE
KGZ07000	22	none
KGZ07000	26	UAE
KGZ07000	30, 34, 38	THA UAE
KIR00001	3, 7, 11	USA/IT
KIR00002	15, 19, 23	none
LBR2440A	19	E USA/IT
LTU06100	3, 7, 11	USA/IT
LTU06100	15, 19	none
LVA06100	21, 25, 29, 33, 37	none
MDA06300	4, 8, 12	USA/IT
MDA06300	16, 20	none
MHL00000	2, 6, 14, 18	J
MHL00000	10	J USA/IT
MKD14800	2, 6, 10	USA/IT
MKD14800	14, 18	none
MLD3060A	4, 8	USA/IT
MLT1470A	20	USA
NMB0250A	21	none
NPL1220A	23	none
PLW00000	4, 16, 20	J MHL
PLW00000	8, 12	J MHL USA/IT
RUS00400	25	J

RUS00400	27	CHN J SNG
RUS00400	31, 35	CHN G J SNG
RUS00400	39	CHN G J
SLM00000	1, 5	J MHL
SLM00000	9, 13	J MHL USA/IT
SVK14400	3, 7, 11, 15, 19	none
SVN14800	4, 8, 12	USA/IT
SVN14800	16, 20	none
TJK06900	1, 5, 9	USA/IT
TJK06900	13, 17	none
TKM06800	23, 27, 31, 35, 39	none
TUV00000	2, 6, 10	USA/IT
TUV00000	14	none
UKR06300	3, 7, 11	USA/IT
UKR06300	15, 19	none
UZB07100	3, 7, 11	USA/IT
UZB07100	15, 19	none
YEM26600	2, 6, 10	USA/IT
YEM26600	14, 18	none
YEM26700	1, 5, 9, 13	USA/IT
YEM26700	17	none
YUG14800	23, 27, 31, 35, 39	none
YYY00001	1, 5, 9, 13	USA/IT
YYY00001	17	none

According to the decision of [Working Group 4D], only those FSS service assignments that are recorded in the MIFR with a favourable finding shall be considered in this compatibility assessment. Therefore, the above list is provisional because it is based on those assignments that were included in the satellite network system database, which includes both networks which are in the MIFR with a favourable finding and those which are in process of coordination at the time of the examination. The results of the Bureau's analysis together with a revised listing of the revised Regions 1 and 3 BSS Plan which includes these results in a revised remarks column shall be conveyed to all administrations by means of a circular letter.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

CHAIRMAN OF WORKING GROUP 4A

SEVENTH AND LAST REPORT FROM WORKING GROUP 4A TO COMMITTEE 4

1 The Working Group reviewed the text of Appendices S4 (Annexes 2A and 2B) and S5 of the Simplified Radio Regulations, from the point of view of the consistency of their provisions with other provisions of the Radio Regulations, based on the decisions taken at the ninth meeting of Committee 4 concerning the methodology to be followed in this respect (Document 284 refers). The approved texts also reflects some of the decisions taken by WG PL2. The approved text, as reproduced in Attachments 1 and 2, respectively, are submitted to Committee 4 for consideration.

2 The Working Group also reviewed provisions Nos. S13.1 to S13.4, as instructed by Committee 4 (Document 284 refers). The proposed modification to these provisions is contained in Attachment 3.

3 Working Group 4A reviewed Resolutions 33, 46 (Rev.WRC-95) and 48 (WRC-95); and proposes:

- to modify Resolution 33, as indicated in Attachment 4;
- to suppress Resolution 48 (WRC-95);
- to abrogate Resolution 46 (Rev.WRC-95) as of the date of the provisional application of the Radio Regulations as revised by WRC-97. Until that date, a revised version of Resolution 46, as approved by Committee 5, will continue to apply.

4 Working Group 4A also considered Resolution 27 (WRC-95). The revised version, as approved by WG 4A, is attached in Attachment 5. The delegation of Syria reserved its position with respect to the mention of "ITU-T Recommendations" in this revised Resolution. Another resolution on the publication of the Weekly Circular including Special Sections was also approved (Attachment 6).

5 The Working Group considered the issue of provisional application of the Radio Regulations, as revised by WRC-97, as well as the related transitional arrangements. The necessary texts (proposed modification to Article S59, as well as the draft new Resolution [COM4-18]) are contained in Attachment 7. The delegations of ALG, ARS, IRN and TON reserved their positions in this regard.

6 Concerning the study of regulatory/procedural matters in the preparation for WRC-99, WG 4A is of the opinion that the amount of expected work in this regard does justify the activating of the Special Committee on Regulatory/Procedural Matters (Resolution ITU-R 38-1 refers).

Attachments: 7

ATTACHMENT 1

ANNEX 2A

(to Appendix **S4**)

Characteristics of Satellite Networks or Earth or Radio Astronomy Stations[1]

ADD **A.13 As appropriate, reference to the Bureau's Weekly Circular Special Section**

ADD a) providing the advance publication information required in accordance with No. **S9.1**;

ADD b) providing the coordination information required in accordance with No. **S9.7**;

ADD c) providing the information required in accordance with No. **S9.21**;

ADD d) providing the coordination information required in accordance with No. **S9.8**;

ADD e) providing the coordination information required in accordance with No. **S9.9**;

ADD f) providing the coordination information required in accordance with No. **S9.11**;

ADD g) providing the coordination information required in accordance with No. **S9.11A**;

ADD h) providing the information required in accordance with Article 6 of Appendix **30B (S30B)**.

...

B.4 Non-geostationary space station antenna characteristics

a) The isotropic gain of the antenna in the direction of maximum radiation (dBi) and the antenna radiation pattern.

b) In the case of a space station submitted in accordance with Resolution **46 (Rev.WRC-95)/** No. **S9.11A**:

– orientation of the satellite transmitting and receiving antenna beams and their radiation pattern;

– the satellite antenna gain $G(\theta_e)$ as a function of elevation angle at a fixed point on the Earth;

– the spreading loss (for a non-GSO satellite) as a function of elevation angle (to be determined by equations or provided in graphical format);

– maximum and average beam peak e.i.r.p./4 kHz and e.i.r.p./1 MHz for each beam~~.~~;

– for the fixed-satellite service (space-to-Earth) in the band 6 700 - 7 075 MHz, calculated peak value of power flux-density produced within ±5 degrees inclination of the geostationary-satellite orbit.

APPENDIX S4

Consolidated List and Tables of Characteristics for Use in the Application of the Procedures of Chapter SIII

ANNEX 2B (TO APPENDIX **S4**)

Table of characteristics to be submitted for space and radio astronomy services
A. General characteristics of the satellite network or the earth station

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30**	Notice for feeder-link stations under Appendix **S30A**	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.1.a	X	X	X	X	X		X	X	X	A.1.a	
A.1.b							X			A.1.b	
A.1.c								X		A.1.c	
A.1.d									X	A.1.d	
A.1.e.1						X				A.1.e.1	
A.1.e.2						X				A.1.e.2	X
A.1.e.3						X				A.1.e.3	
A.1.e.4										A.1.e.4	X
A.1.f	X	X	X	X	X	X	X	X	X	A.1.f	X
A.2.a	X	X	X	X	X	X	X	X	X	A.2.a	
A.2.b	X			X						A.2.b	
A.2.c										A.2.c	X
A.3	~~X~~		X	X	X	X	X	X		A.3	X
A.4.a.1	X			X			X	X	X	A.4.a.1	
A.4.a.2	~~X~~			X			X	X		A.4.a.2	
A.4.a.3	~~X~~			X						A.4.a.3	
A.4.a.4	~~X~~			X						A.4.a.4	
A.4.a.5	~~X~~			X						A.4.a.5	
~~A.4.b~~			~~X~~		~~X~~					~~A.4.b~~	
A.4.b.1		X	X		X					A.4.b.1	
A.4.b.2		X	X		X					A.4.b.2	
A.4.b.3		X	X		X					A.4.b.3	
A.4.b.4		X	X		X					A.4.b.4	
A.4.b.5					X					A.4.b.5	
A.4.c						X				A.4.c	
A.5				X	X	X	X	X	X	A.5	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30**	Notice for feeder-link stations under Appendix **S30A**	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.6				X	X	X	X	X	X	A.6	
A.7.a						X		X		A.7.a	
A.7.b						X		X		A.7.b	
A.7.c						X				A.7.c	
A.7.d						X		X		A.7.d	
A.8							X			A.8	
A.9							X			A.9	
A.10						X				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				**X**	**X**					A.13	

B. Characteristics to be provided for each satellite antenna beam and for each earth station antenna

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network	Advanced publication of a non-geostationary-satellite network not subject to coordination	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30**	Notice for feeder-link stations under Appendix **S30A**	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
B.1	~~X~~		X	X	X	X	X	X	X	B.1	
B.2	~~X~~		X	X	X	X			X	B.2	
B.3.a	~~X~~			X						B.3.a	
B.3.b.1	~~X~~			X						B.3.b.1	
B.3.b.2	~~X~~			X						B.3.b.2	
B.3.c	~~O~~			C						B.3.c	
B.3.d	~~O~~			X			X	X	X	B.3.d	
B.3.e	~~X~~			X						B.3.e	
B.3.f	~~X~~			X				X		B.3.f	
B.3.g.1							X	X	X	B.3.g.1	
B.3.g.2							X	X	X	B.3.g.2	
B.3.g.3							X	X	X[9)]	B.3.g.3	
B.3.g.4							X	X	X[9)]	B.3.g.4	
B.3.g.5							X	X	X[9)]	B.3.g.5	
B.3.g.6								X		B.3.g.6	
B.3.g.7							X			B.3.g.7	
B.4.a			X		X					B.4.a	
B.4.b			X		X					B.4.b	
B.5.a						X				B.5.a	
B.5.b						X				B.5.b	
B.5.c						X				B.5.c	
B.6										B.6	X

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

9) Only information on co-polar antenna characteristics is required.

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network	Advanced publication of a non-geostationary-satellite network not subject to coordination	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30**	Notice for feeder-link stations under Appendix **S30A**	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.1	X	X	X						X	C.1	
C.2.a				X	X	X	X	X		C.2.a	
C.2.b										C.2.b	X
C.3.a				X	X	X		X		C.3.a	
C.3.b										C.3.b	X
C.4	X	X	X	X	X	X	X	X		C.4	X
C.5.a	~~X~~		X	X	X			X	X	C.5.a	
C.5.b						X				C.5.b	
C.5.c										C.5.c	X
C.6	~~X~~		X	X	X	X	X	X		C.6	
C.7.a	~~O~~		O	X	X	X	X	X		C.7.a	
C.7.b	~~O~~		O	C	C	`C				C.7.b	
C.7.c	~~O~~		O	C	C	C				C.7.c	
C.7.d	~~O~~		O	C	C	C				C.7.d	
C.8.a	~~X~~[1), 7)]		X[1), 7)]	X[7)]	X[7)]	C[8)]				C.8.a	
C.8.b	~~X~~[1), 7)]		X[1), 7)]	X[7)]	X[7)]	X				C.8.b	
C.8.c	~~O~~		O	X[6)]	X[6)]	X[6)]				C.8.c	
C.8.d				X[2)]	X[2)]					C.8.d	
C.8.e	~~O~~		O	X[6)]	X[6)]	X[6)]				C.8.e	
C.8.f	~~X~~[3)]		X[3)]							C.8.f	
C.8.g				C[4)]	C[4)]	C[4), 5)]				C.8.g	
C.8.h							X			C.8.h	
C.8.i								X		C.8.i	
C.8.j									X	C.8.j	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

1) Only the value of maximum power density is mandatory.

2) For transmission from the space station only.

3) For space-to-space relay only.

4) For transmission from the earth station only.

5) Not required for coordination under No.**S9.15**, **S9.17** or **S9.17A**.

6) Required, if applicable, for the type of transmission. If not applicable, a reason why it is not applicable is required.

7) One or the other of C.8.a or C.8.b is mandatory, but not both.

8) Only the value of total peak envelope power is required for coordination under No.**S9.15, S9.17** or **S9.17A**.

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna *(end)*

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network	Advanced publication of a non-geostationary-satellite network not subject to coordination	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30**	Notice for feeder-link stations under Appendix **S30A**	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.9.a	~~O~~		O	C	C					C.9.a	
C.9.b							X	X		C.9.b	
C.9.c			X		X					C.9.c	
C.10.a	~~X~~		X	X	X					C.10.a	
C.10.b	~~X~~		X	X	X			X		C.10.b	
C.10.c.1	~~X~~		X	X	X			X	X	C.10.c.1	
C.10.c.2	~~X~~		X	X	X			X	X	C.10.c.2	
C.10.c.3	~~O~~		O	X	X			X	X	C.10.c.3	
C.10.c.4	~~X~~		X	X	X			X	X	C.10.c.4	
C.10.c.5	~~X~~		X	X	X				X	C.10.c.5	
C.10.c.6								X		C.10.c.6	
C.11.a	~~X~~[10]	X[10]	X	X	X					C.11.a	
C.11.b								X		C.11.b	
C.11.c							X		X	C.11.c	
C.11.d			~~X~~		X					C.11.d	
C.12									X	C.12	
C.13										C.13	X
C.14							X			C.14	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

[10] Only the list of country or geographic designators or a narrative description of the service area shall be supplied.

D. Overall Link Characteristics

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network	Advanced publication of a non-geostationary-satellite network not subject to coordination	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30**	Notice for feeder-link stations under Appendix **S30A**	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
D.1	~~X~~			X						D.1	
D.2.a	~~X~~			X						D.2.a	
D.2.b	~~X~~			X						D.2.b.	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

ATTACHMENT 2

Working Group 4A agreed to the attached modifications to Appendix S5; however, it should be noted that:

– the date shown in the date of entry into force column in Table S5-2 (S5-1A in Document 2) for the band 2 170 - 2 200 MHz should be corrected to 01.01.2000;

– there is at least one error in the RR footnote column of Table S5-2, and this column should be reviewed by the Bureau in light of the renumbering of some footnote provisions; and

– Table S5-2 was not updated to reflect additional "other space services" that are included in the Rules of Procedure.

APPENDIX S5

Identification of Administrations with Which Coordination Is to Be Effected or Agreement Sought Under the Provisions of Article S9

NOC 1. For the purpose of effecting coordination under Article **S9**, except in the case under No. **S9.21**, and for identifying the administrations with which coordination is to be effected, the frequency assignments to be taken into account are those in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category[1] of allocation, which might affect or be affected, as appropriate, and which are:

a) in conformity with No. **S11.31**[3]; and

b) either recorded in the Master Register with a favourable finding with respect to No. **S11.32**; or

c) recorded in the Master Register with an unfavourable finding with respect to No. **S11.32** and a favourable finding with respect to No. **S11.32A** or No. **S11.33**, as appropriate; or

d) coordinated under the provisions of Article **S9**; or

MOD *e)* included in the coordination procedure with effect from the date of receipt[3] by the Bureau, in accordance with No. **S9.34**, of ~~the basic~~those characteristics ~~as~~ specified in Appendix **S4** as mandatory or required, or from the date of dispatch, in accordance with No. **S9.29** of the appropriate information listed in Appendix **S4**; or

ADD *ebis)* where appropriate, in conformity with a world or regional allotment or assignment plan and the associated provisions;

MOD *f)* for terrestrial radiocommunication stations or earth stations operating in the opposite direction of transmission[4], in addition, operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years from the date of dispatch of coordination data under

No. **S9.29**, whichever is the longer, or from the date of the publication referred to in No. **S9.38**, as appropriate.

MOD

2. For the application of No. **S9.21**, the agreement of an administration may be required with respect to the frequency assignments in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category of allocation, which ~~may be affected~~may affect or be affected, as appropriate, and:

a) in cases involving a station in a space radiocommunication ~~station~~service with respect to ~~another space radiocommunication station~~any other station or involving a terrestrial radiocommunication station with respect to an earth station:

i) which are in conformity with No. **S11.31**, and comply with the relevant conditions listed in Section 1, paragraphs *b)* to *f)*; or

~~– are recorded in the Master Register, or~~

~~– are notified to the Bureau, or~~

~~– for which information under No. **S9.34** has been received by the Bureau; or~~

ii) for which the procedure under No. **S9.21** has been initiated, with effect from the date of receipt by the Bureau, in accordance with No. **S9.34**, of the basic characteristics as specified in Appendix **S4**; or

~~*b) for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years, whichever is the longer; or*~~

~~*c*~~*b)* for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the other terrestrial station assignment into service, or within the next three months, whichever is the longer;

MOD

3. For each of the frequency assignments to ~~an individual~~a station ~~or to a satellite network~~of a terrestrial or space radiocommunication service mentioned in paragraphs 1 and 2 above, the level of interference shall be determined using the method referred to in Table S5-1 which is appropriate to the particular case.

MOD

4. The assignment is considered to ~~cause or suffer interference~~affect or be affected, as appropriate, and coordination must be sought under the procedure of Article **S9**, if:

MOD

a) the ~~interference level exceeds the~~ threshold levels given in Table S5-1 are exceeded; ~~or~~and

b) the condition specified in Table S5-1 is applicable.

5. Threshold values to determine whether coordination under No. **S9.11A** is required are given in Table S5-2.

6. No coordination is required:

MOD *a)* when the use of a new frequency assignment will not cause or suffer, as appropriate, in respect of any service of another administration, an increase in the level of interference above the threshold calculated in accordance with the method referred to in Tables S5-1 and S5-2; or

TABLE S5-1

Technical conditions for coordination
(see Article **S9**)

MOD

MOD

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/Condition	Calculation method	Remarks
No. **S9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, ~~for~~ in any space radiocommunication service in a frequency band and in a region where this service is not subject to a Plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	Any frequency band allocated to a space service, where this service is not subject to a Plan,~~except those mentioned in the plans of Appendices **S30, S30A** and **S30B**~~	Value of $\Delta T/T$ exceeds 6%	Appendix **S8**	[For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.7** have to be taken into account.]

MOD

No. **S9.8** GSO/GSO	A transmitting space station of the fixed-satellite service (FSS) using the geostationary-satellite orbit in a frequency band shared with the BSS on an equal primary basis, in respect of space stations of the latter service which are subject to the plan in Appendix **S30**	11.7 - 12.2 GHz (R2) 12.2 - 12.7 GHz (R3) 12.5 - 12.7 GHz (R1)	i) There is an overlap in the necessary bandwidths of the space stations of FSS and BSS; and ii) the power flux-density (pfd) of the space station of the FSS exceeds the value given in Annex 4 of Appendix **S30** on the territory of another administration located in another region	Check by using the assigned frequencies and bandwidths;	See also Article 7 of Appendix **S30**. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD

No. **S9.9** GSO/GSO	A station of the FSS in a frequency band shared on an equal primary basis with the feeder links of the BSS, which are subject to the plan in Appendix **S30A**	17.7 - 18.1 GHz (R1) 17.7 - 18.1 GHz (R3) 17.7 - 17.8 GHz (R2)	i) Value of $\Delta T_S/T_S$ exceeds 4% (see Section I of Annex 4 of Appendix **S30A**); and ii) geocentric inter-satellite angular separation is less than 3° or greater than 150°	i) Case II of Appendix **S8** ii) Annex 1 of Appendix **S8**	The threshold/conditions do not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -137 dB (W/m^2/MHz) on the surface of the Earth at the equatorial limb. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD	No. **S9.11** GSO/terrestrial	A space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and ~~in which there is no plan for~~where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services~~;~~	620 - 790 MHz 1 452 - 1 492 MHz 2 310 - 2 360 MHz 2 520 - 2 655 MHz 2 655 - 2 670 MHz 12.5 - 12.75 GHz (R3) 17.~~3~~7 - 17.8 GHz (R2) 21.4 - 22 GHz (R1, R3) 40.5 - 42.5 GHz 84 - 86 GHz	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
(MOD)	No. **S9.12** 1) Non-GSO/ Non-GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit	See Table S5-~~1A~~2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	[For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.12** 1) have to be taken into account.]
(MOD)	No. **S9.12** 2) Non-GSO/GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to **S9.11A** in respect of any other satellite network using the geostationary-satellite orbit	See Table S5-~~1A~~2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	[For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.13** have to be taken into account.]

(MOD)	No. **S9.13** GSO/Non-GSO	A station in a satellite network using the geostationary-satellite orbit in the frequency bands for which a footnote refers to **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-~~1A~~2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	[For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.12** have to be taken into account.]
MOD	No. **S9.14** Non-GSO/terrestrial, GSO/terrestrial	For a space station in a satellite network in the frequency bands for which a footnote refers to **S9.11A** in respect of stations of terrestrial services where threshold(s) is (are) exceeded	See Table S5-~~1A~~2	~~For a non-GSO space station:~~ See ~~Table **S5-2**~~**Section 1 of Annex 1**	See ~~Table **S5-2**~~**Section 1 of Annex 1**	
(MOD)	No. **S9.15** Non-GSO/terrestrial	A specific earth station or a typical earth station in respect of terrestrial stations in frequency bands for which a footnote refers to **S9.11A** allocated with equal rights to space and terrestrial services, where the coordination area of the earth station includes the territory of another country	See Table S5-~~1A~~2	The coordination area of the earth station covers the territory of another administration	See Section 2 of Annex 1	[For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.16** have to be taken into account.]

MOD	No. **S9.16** terrestrial/ non-GSO	A transmitting station of a terrestrial service within the coordination area of an earth station in a non-geostationary-satellite network in frequency bands for which a footnote refers to **S9.11A**	See Table S5~~-1A~~2	Transmitting terrestrial station is situated within the coordination area of a receiving earth station ~~which has already been coordinated~~	See Section 2 of Annex 1	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.15** [For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.15** have to be taken into account.]
MOD	No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services in ~~relation to~~ respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country with the exception of the coordination under No. **S9.15**	Any frequency band allocated to a space service, except those mentioned in the plans of Appendix **S30A**	The coordination area of the earth station covers the territory of another administration	Appendix **S7** (For earth stations in the radiodetermination-satellite service (RDSS) in the bands 1 610 - 1 626.5, 2 483.5 - 2 500 and 2 500 - 2 516.5 MHz, see Remarks column) 1) The coordination area of aircraft earth stations is determined by increasing the service area by 1 000 km with respect to the aeronautical mobile service (terrestrial) or 500 km with respect to terrestrial services other than the aeronautical mobile service.	NOTE - For RDSS earth stations, a uniform coordination distance of 400 km corresponding to an airborne earth station shall be used. In cases where the earth stations are all ground-based, a coordination distance of 100 km shall be used.

No. **S9.17** GSO, non-GSO/ terrestrial (cont.)				2) For receiving earth stations in the meteorological-satellite service in frequency bands shared with the meteorological aids service, the coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above mean sea level, assuming 4/3 Earth radius.	~~The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendix **30A** is suspended pending the decision of WRC-97 on revision of Appendix **30A**~~. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices. [For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.18**, if the earth station applying **S9.17** is not a BSS one, have to be taken into account.] [For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.19**, if the earth station applying **S9.17** is a BSS one, have to be taken into account.]

MOD	No. **S9.17A** GSO, non-GSO/ GSO, non-GSO	A specific earth station in respect of other earth stations operating in the opposite direction of transmission in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station, with the exception of the frequency bands subject to Appendix **S30A** Plans	Any frequency band allocated to a space service	The coordination area of the earth station covers the territory of another administration or the earth station is located within the coordination area of an ~~coordinated~~ earth station	i) For bands in Table S5~~.1A~~ 2, see Section 2 of Annex 1 ii) See Recommendations ITU-R IS.847, IS.848 and IS.849	~~The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decision of WRC-97 on revision of Appendices **30** and **30A.**~~ [For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.17A** have to be taken into account.]
MOD	No. **S9.18** terrestrial/GSO, non-GSO	Any transmitting station of a terrestrial service in the bands mentioned in No. **S9.17** within the coordination area of an earth station, in respect of this earth station with the exception of the coordination under Nos. **S9.16** and **S9.19**	Any frequency band allocated to a space service~~, except those mentioned in Appendices **S30** and **S30A.**~~	Transmitting terrestrial station is situated within the coordination area of a~~n already coordinated~~ receiving earth station	See remarks	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.17** [For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.17** have to be taken into account.]

MOD

No. **S9.19** terrestrial/GSO	A transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the BSS, except where the service is subject to the Appendix **S30** Plan	~~11.7 - 12.2 GHz (R3)~~ ~~11.7 - 12.5 GHz (R1)~~ ~~12.2 - 12.7 GHz (R2)~~ ~~and the~~ bands listed in No. **S9.11**	i) Necessary bandwidths overlap; and ii) the pfd of the terrestrial station at the edge of the ~~BSS~~broadcasting-satellite service area exceeds the permissible level	i) Check by using the assigned frequencies and bandwidths ii) ~~Annex 3 to Appendix **S30** for bands covered by that Appendix~~	~~See also Article **6** of Appendix **S30**~~ ~~The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decision of WRC 97 on revision of Appendices **30** and **30A**.~~ Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices. [For the application of this coordination procedure in respect of assignments coordinated or included in the coordination, only those involved in coordination under **S9.17** have to be taken into account.]

ATTACHMENT 3

ARTICLE S13

Instructions to the Bureau

Section I. Assistance to Administrations by the Bureau

MOD S13.1 When an administration has difficulty in applying the procedures of Articles **S9** and **S11** and Appendices **S30**, **S30A** and **S30B** the Bureau shall, upon request, endeavour to assist in such cases ~~where:~~.

SUP S13.2

SUP S13.3

SUP S13.4

ATTACHMENT 4

RESOLUTION No. 33 (Rev.WRC-97)

RELATING TO THE BRINGING INTO USE OF SPACE STATIONS IN THE BROADCASTING-SATELLITE SERVICE, PRIOR TO THE ENTRY INTO FORCE OF AGREEMENTS AND ASSOCIATED PLANS FOR THE BROADCASTING-SATELLITE SERVICE[1]

The World ~~Administrative Radio~~ Radiocommunication Conference (Geneva ~~1979~~, 1997),

considering

a) that while Resolution **507** envisages plans for the broadcasting-satellite service, some administrations might nevertheless feel the need to bring stations in that service into use prior to such plans being established;

b) that administrations should, as far as possible, avoid proliferation of space stations in the broadcasting-satellite service before such plans have been established;

c) that a space station in the broadcasting-satellite service may cause harmful interference to terrestrial stations operating in the same frequency band, even if the latter are outside the service area of the space station;

d) that the procedures specified in Articles **S9** to **S14**~~11~~ and Appendix **S5** of the Radio Regulations contain ~~no~~ provisions for coordination between ~~space~~ stations in the broadcasting-satellite service and terrestrial stations ~~and~~ between space systems ~~stations~~ in that service and space systems of other administrations;

resolves

1. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, the ~~following~~ procedures of Articles **S9** to **S14** shall be applied for the coordination and notification of stations in the broadcasting-satellite service and coordination and notification of other services in respect of that service~~:~~.

SUP **Section A. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Terrestrial Stations**

[1] ~~Replaces Resolution No **Spa2** – 3 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.~~

SUP **Section B. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Space Systems of Other Administrations**

SUP **Section C.**

ATTACHMENT 5

MOD

RESOLUTION 27 (Rev.WRC-~~95~~97)

REFERENCES TO ITU-R AND ITU-T RECOMMENDATIONS IN THE RADIO REGULATIONS

The World Radiocommunication Conference (Geneva, 199~~5~~7),

considering

a) that the principles of incorporation by reference ~~were~~have been adopted by the 1995 World Radiocommunication~~this~~ Conference and have been revised by this Conference (see Annex 1 to this Resolution~~hereto~~);

b) that there are provisions of the Radio Regulations which employ mandatory incorporation by reference but fail to make explicit reference to the ITU-R or ITU-T Recommendations incorporated;

c) that the 1997 Conference Preparatory Meeting for this Conference urged administrations to give further consideration to the status of material incorporated by reference~~, by Resolution ITU-R **38**, the 1995 Radiocommunication Assembly established a special committee to address the review of regulatory/procedural matters~~,:

– using the initial assessment provided by the Bureau in the CPM Report and the set of principles given in Annex 1 to this Resolution;

– noting that mandatory references shall be explicit and use the appropriate regulatory language;

– taking into account the factors contained in Annex 2 to this Resolution;

d) that the Director of the Bureau has developed a list (see Annex 1 to the Report of the Conference Preparatory Meeting to this Conference) of the provisions of the Radio Regulations using incorporation by reference, which provides an initial assessment of the status of each reference and forms the basis for the work on appropriate referencing, examples of which are contained in Annex 3 to this Resolution;

e) that the Radiocommunication Bureau has developed a list, contained in Annex 4 to this Resolution, of the ITU-R Recommendations to which explicit reference is made in the Radio Regulations,

resolves

that ITU-R and ITU-T Recommendations~~, in view of *considering b)*, the provisions of the Radio Regulations which use mandatory incorporation by reference should be studied in order to determine whether they require modification pursuant to the principles adopted by this Conference~~ incorporated or proposed for incorporation by reference in the provisions of the Radio Regulations be identified and examined at WRC-99, with a view to establishing the correct method of reference in accordance with the principles set out in Annex 1 to this Resolution and taking into account the factors listed in Annex 2 to this Resolution, in order to complete the simplification of the Radio Regulations in respect of incorporation by reference,

instructs the Director of the Radiocommunication Bureau

to arrange a review of the provisions of the Radio Regulations containing references to ITU-R or ITU-T Recommendations and propose suitable recommendations to the Conference Preparatory Meeting for inclusion in its report to WRC-99 using the list of provisions contained in Annex 3 to this Resolution together with the guidance contained in Annexes 1 and 2 to this Resolution, and taking into account the list of ITU-R Recommendations contained in Annex 4 to this Resolution,

urges administrations

to use the Report of the Conference Preparatory Meeting to WRC-99 in order to prepare their proposals on incorporation by reference to that Conference.

~~*urges administrations*~~

~~to review the ITU-R Recommendations and the provisions of the Radio Regulations employing incorporation by reference in light of *resolves* above,~~

~~*instructs the Director of the Radiocommunication Bureau*~~

~~to arrange for appropriate studies to be conducted by the new special committee established by the 1995 Radiocommunication Assembly to address the review of regulatory/procedural matters and for the committee to report the results of those studies to the 1997 Conference Preparatory Meeting.~~

MOD

ANNEX 1 TO RESOLUTION 27 (Rev.WRC-~~95~~97)

PRINCIPLES OF INCORPORATION BY REFERENCE

1. ~~No restrictions are necessary on the inclusion of references where these are non-mandatory. In such cases, reference could be made to the latest version of a Recommendation.~~No restrictions are necessary on the inclusion of references where these are non-mandatory. Where references are non-mandatory, it is not necessary to establish specific conditions in applying the texts quoted. In such cases, reference could, for example, be made to "the latest version" of a Recommendation.

2. Mandatory references to Resolutions or Recommendations of a world radiocommunication conference (WRC) are acceptable without restriction, since such texts will have been agreed by a WRC.

3. Where mandatory references are suggested, and the relevant texts are brief, the referenced material should be incorporated in the body of the Radio Regulations.

4. If, on a case-by-case basis, it is decided to incorporate material by reference on a mandatory basis, then the following provisions shall apply:

4.1 the referenced text shall have the same treaty status as the Regulations themselves;

4.2 the reference must be explicit, specifying the specific part of the text (if appropriate) and the version or issue number;

4.3 the referenced text must be adopted by the Plenary of a competent WRC, but should not be part of the Final Acts;

4.4 all texts incorporated by reference must be readily available, by being published in a separate volume;

4.5 if, between WRCs, a referenced text (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the original version until such time as a competent WRC agrees to incorporate the new version of the reference. The mechanism for considering such a step is given in Resolution **28 (WRC-95)**.

ADD

ANNEX 2 TO RESOLUTION 27 (Rev.WRC-97)

FACTORS TO BE CONSIDERED IN STUDIES INTO THE FURTHERANCE OF INCORPORATION BY REFERENCE

In reviewing the provisions of the Radio Regulations employing references to other texts, administrations and study groups should address the following factors:

1) whether each reference is mandatory, that is, incorporated by reference, or non-mandatory;

2) whether existing non-mandatory references or mandatory references which are determined to be of non-mandatory character use appropriate linking language, e.g., the words "should" or "may";

3) whether existing mandatory references or other types of reference which are determined to be of mandatory character use clear mandatory linking language, e.g., the word "shall";

4) whether the incorporated ITU-R or ITU-T Recommendation(s) are explicitly identified;

5) where referenced ITU-R or ITU-T Recommendations are not explicitly identified, determine which ones should be identified;

6) whether text incorporated from ITU-R or ITU-T Recommendations should be placed directly into the Radio Regulations instead of using incorporation by reference;

7) if the ITU-R or ITU-T Recommendation to be incorporated is, as a whole, unsuitable as treaty status text, whether to limit the reference to those portions of the ITU-R or ITU-T Recommendation which are of a suitable nature or to place the mandatory portion directly into the Radio Regulations.

ADD

ANNEX 3 TO RESOLUTION 27 (Rev.WRC-97)

PROVISIONS OF THE RADIO REGULATIONS REFERRING TO ITU-R AND ITU-T RECOMMENDATIONS

A) Provisions of Articles of the Simplified Radio Regulations referring to ITU-R and ITU-T Recommendations

RR item	Remark
S5.199 S5.287 S5.288 S19.38 S19.48 S19.92 S47.26 S47.27 S47.28 S47.29 S50.9 S51.35 S51.41 S51.77 S52.25 S52.27 S52.31 S52.69 S52.159 S52.181 S52.195 S52.222.1 S52.224 S52.229 S52.231 S52.240 S55.1 S57.1	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
S1.14 S5.511A S52.23 S52.235[+]	The reference to an ITU-R Recommendation in this provision seems to be of a **mandatory** character and the referenced text is **explicitly** identified, but a **non-standard wording** is used in this respect. There is a need to **review** these provisions with a view to using a standard wording. [+] The application of this provision is not mandatory but, if used, the referenced procedures are.

S3.2 S5.138 S5.458C S13.19 S21.1 S29.13 S32.5 S32.9.3 S32.21 S32.43 S32.64 S33.17 S33.37 S33.41 S34.1 S34.2 S51.25 S52.112 S58.1*	The incorporation by reference of an ITU-R Recommendation or an ITU-T Recommendation (*) in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and ensure that a standard method of reference is used.
S5.208A S5.503A S16.6 S21.2.2 S21.4.1 S29.12 S32.7 S51.71 S52.32 S52.63 S52.148 S52.152 S52.153 S52.234 S54.2[+] S56.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for **review**, unless administrations wish to consider changing the character of this provision. [+] Consider whether the application and use of the procedures referenced as mandatory.

S1.156 S3.4 S3.7 S3.14 S5.474 S9.50.1 S15.10 S15.12.1 S15.13.1 S16.1 S19.3 S19.23 S19.24 S19.112* S19.115* S19.126* S21.6.1 S21.12.1 S21.16.1 A.S22.1 S22.22.2 S22.26 S30.1 S56.7*	The reference to an ITU-R Recommendation or an ITU-T Recommendation (*) in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
S16.2 S19.83 S52.149 S52.188 S52.192 S52.213	The reference to an ITU-R Recommendation in this provision is of an **undefined** character, but the referenced text is **explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e., mandatory or non-mandatory).
S1.153 S1.167 S26.6	The reference to an ITU-R Recommendation in this provision is of an **undefined** character and the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e., mandatory or non-mandatory) and, if it becomes mandatory, to identify the referenced text explicitly.

B) Parts of Appendices S1 to S18 to the Simplified Radio Regulations referring to ITU-R Recommendations

RR/Ap. Item	Remark
• AP S4, Annex 2A, C.11, item d) • AP S5, Table S5-1, calculation method re No. S19.17A • AP S5, Annex 1, Tables 1-4	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
• AP S1, item 3 (3.2) • AP S5, Table S5-1, threshold/condition re No. S19.21 • AP S5, Table S5-1, calculation method re No. S19.21 • AP S13, RR 3259A • AP S16*, Sect. III, item 5	The reference to an ITU-R Recommendation or an ITU-T Resolution or Recommendation (*) in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and to ensure that a standard method of reference is used.
• AP S4, Annex 2A, C.8 • AP S5, Annex 1, paragraphs 1.2.1 and 1.2.3.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
AP S1, item 2 AP S2 AP S3, Table AP S3, item 12 AP S3, item 13 AP S11, Part B, (3.) AP S12, item 6) AP S13, RR 2937A AP S13, RR 3340	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.

ADD

ANNEX 4 TO RESOLUTION 27 (Rev.WRC-97)

LIST OF ITU-R RECOMMENDATIONS REFERRED TO IN THE RADIO REGULATIONS[2]

Recommendation	Title	Status[1]	Document	RR provision No[3]
ITU-R M.257-3	Sequential Single Frequency selective-calling system for use in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 145	**S19.38**, S19.83, **S19.92**, **S52.222.1, S52.235**, S54.2, AP S13 (A5, para. 11)
ITU-R SF.356-4	Maximum allowable values of interference from line-of-sight radio-relay systems in a telephone channel of a system in the fixed-satellite service employing frequency modulation, when the same frequency bands are shared by both systems	NOC	1994 SF-series	AP S7, 2.3.1 Note 2
ITU-R SF.357-4	Maximum allowable values of interference in a telephone channel of an analogue angle-modulated radio-relay system sharing the same frequency bands as systems in the fixed-satellite service	**MOD**	Blue 4-9/BL/1	AP S7, 2.3.1 Note 2
ITU-R F.405-1	Pre-emphasis characteristics for FM radio-relay systems for television	NOC	1990 Series, Volume IX	AP S30 (Annex 5, 3.1.1)
ITU-R TF.460-6	Standard-frequency and time-signal emissions	**MOD**	Document 7/1020	**S1.14**
ITU-R S.465-5	Reference earth-station radiation pattern for use in coordination and interference assessment in the frequency range from 2 to about 30 GHz	**MOD**	1994 S-series	AP S30 (Annex 6, 2.1)

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1 Status as of date of the end of the Radiocommunication Assembly, 1997.

2 This list does not include ITU-R Recommendations referred to in Resolutions and Recommendations from WARC/WRC.

3 The provisions indicated in bold make reference to the listed ITU-R Recommendation in a mandatory manner, i.e., incorporated by reference.

ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 60	S19.83, **S51.41**
ITU-R S.483-3	Maximum permissible level of interference in a television channel of a geostationary-satellite network in the fixed-satellite service employing frequency modulation, caused by other networks of this service	**MOD**	Blue - 4/BL/10	AP S30 (Annex 6, 1.5, Note 5)
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	NOC	1995 M-series Fascicle, Part 3, p. 150	**S51.77**, S52.182, **S52.231, AP 13 (A2, para. 10 (1))**
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 72	**S52.27**, S56.2
ITU-R M.493-9	Digital selective calling system for use in the maritime mobile services	**MOD**	Document M/1009	S54.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**MOD**	1997 M-series Fascicle, p. 339 + Document 8/1010	**S51.35**, S52.148, S52.149, S52.152, S52.153, **S52.159**, S54.2
ITU-R M.625-3	Direct-printing telegraph equipment employing automatic identification in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 1	S19.83, **S51.41**,

ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	NOC	1995 M-series Fascicle, Part 3, p. 143	S19.83, **S51.41**
ITU-R SF.675-	Calculation of the maximum power density (averaged over 4 kHz) of an angle-modulated carrier	MOD	1994 SF-series	AP S4 (C8a, footnote)[4]
ITU-R M.690-1	Technical characteristics of emergency position-indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121.5 MHz and 243 MHz	NOC	1995 M-series Fascicle, Part 4, p. 1	**AP S13 (A5, paras 1b and 4.2),** AP S15 (Table S15.2, 121.5 MHz),
ITU-R SF.765	Intersection of radio-relay antenna beams with orbits used by space stations in the fixed-satellite service	NOC	1994 SF-series Fascicle	S21.22, S21,41, S29.12
ITU-R RA.769-1	Protection criteria used for radioastronomical measurements	**MOD**	1995 RA-series Fascicle, p. 5	S5.208A **S5.511A**, S29.12[5]
ITU-R M.821-1	Optional expansion of the digital selective calling system for the maritime mobile service	MOD	1997 series M, Part 3	S54.2
ITU-R M.825-2	Characteristics of a transponder system using DSC techniques for use with vessel traffic services and ship-to-ship identification	MOD	Document 8/1005	S54.2
ITU-R IS.847-1	Determination of the coordination area of an earth station operating with a geostationary space station and using the same frequency band as a system in a terrestrial service	NOC	1994 IS-series Volume, p. 1	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**

[4] The reference in this provision is SF.675.

[5] The reference in these provisions is RA.769.

ITU-R IS.848-1	Determination of the coordination area of a transmitting earth station using the same frequency band as receiving earth stations in bidirectionally allocated frequency bands	NOC	1994 IS-series Volume, p. 31	**AP S5 (Table S5.1)**
ITU-R IS.849-1	Determination of the coordination area for earth stations operating with non-geostationary spacecraft in bands shared with terrestrial services	NOC	1994 IS-series Volume, p. 40	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**
ITU-R SA.1071	Use of the 13.75 to 14.0 GHz band by the space science services and the fixed-satellite service	NOC	1994 SA-series	S5.503A
ITU-R SM.1135	SINPO and SINPFEMO codes	NOC	1995 SM-series Fascicle, p. 47	
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	NOC	1995 SM-series Fascicle, p. 50	AP S1 (paras 1 (2) and **2 (3.1)**)
ITU-R SM.1139	International monitoring system	NOC	1995 SM-series Fascicle, p. 58	S16.2, S16.6
ITU-R IS.1143	System specific methodology for coordination of NGSO space stations (space-to-Earth) operating in the MSS with the fixed service	NOC	1995 IS-series	AP S5 (An 1, paras. 1.2.1 and 1.2.3.2)
ITU-R M.1169	Hours of service of ship stations	NOC	1995 M-series Fascicle, Part 3, p. 157	**S47.26, S47.27, S47.28, S47.29, S50.9**
ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 162	S51.71, **S52.23, S52.25**, **S52.31**, S52.32, S52.63, **S52.69**, **S55.1**
ITU-R M.1171	Radiotelephony procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 169	S51.71, S52.192, **S52.195,** S52.213, **S52.224**, S52.234, **S52.240**, **S57.1, AP S13(A2, para. 14A, 1),**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 178	**S19.48**, S32.7, AP S13 (Part A1, para. 5),

ITU-R M.1173	Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz	NOC	1995 M-series Fascicle, Part 3, p. 211	**S52.181**, **S52.229**, **AP S17 (B, Sect. I (2) and I (6a,b)),**
ITU-R M.1174	Characteristics of equipment used for on-board communications in the bands between 450 MHz	NOC	1995 M-series Fascicle, Part 3, p. 213	**S5.287, S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	NOC	1995 M-series Fascicle, Part 3, p. 215	**AP S13 (A5, para. 9),**
ITU-R M.1185-1	Method for determining coordination distance between ground based mobile earth stations and terrestrial stations operating in the 148.0 - 149.9 MHz band	**MOD**	Document 8/1019	**AP S5 (Annex 1, 3.2, Table 1),** RS 46 (Annex 2, Table 1)
ITU-R M.1187	A method for the calculation of the potentially affected region for a mobile-satellite service (MSS) network in the 1 - 3 GHz range using circular orbits	NOC	1995 M-series Fascicle, Part 5, p. 38	**AP S4 (C.11d)**

ATTACHMENT 6

DRAFT RESOLUTION [COM4-17]

PUBLICATION OF THE [WEEKLY] CIRCULAR INCLUDING SPECIAL SECTIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the Weekly Circular and the Special Sections, as referred to in Articles **S9**, **S11** and **S12A** of the Radio Regulations, are presently published on paper, microfiche and diskette;

b) that the form, content and periodicity of this publication need to be reviewed to improve its usability;

c) that the IFL (International Frequency List) and the SRS (a database of Space Radiocommunication Stations) are published every six months and the terrestrial Plans are published on a yearly basis exclusively on CD-ROM (Compact Disc - Read-Only Memory);

d) that the cost reduction and availability of CD-ROM and CD-ROM readers have improved greatly in recent times;

e) that large amounts of data may be more readily consulted if presented in an electronic format by using software;

f) that the introduction of new technologies requires adaptation and appropriate training from a user's point of view, especially for developing countries;

g) that information in electronic format could be used to fulfil administrations' database requirements,

further considering

h) that the budget of the ITU has provision for the distribution of one free copy of the Weekly Circular and the Special Sections to each administration;

i) that the use of a CD-ROM format would significantly reduce the cost of publishing and distributing the Weekly Circular;

j) that the use of electronic format is important for many administrations,

resolves

1 that the publication of the Weekly Circular and the Special Sections on paper and microfiche, as well as diskette format be migrated to a CD-ROM format, taking into consideration "*resolves* 4" of this Resolution;

2 that this publication be fortnightly;

3 that tests should be conducted in cooperation with all administrations before the introduction of the CD-ROM publication replacing the Weekly Circular, including the Special Sections, published on paper, microfiche, and on diskette;

4 that, following the successful completion of these tests and for an introductory period of a minimum of three months ending 1 January 1999, both the paper, microfiche and diskette format and the CD-ROM format should be provided in parallel;

5 that the query software to be made available on the CD-ROM be capable of easily identifying and extracting to file Parts I, II and III of the Weekly Circular, the associated Special Sections for terrestrial and space assignments, as well as Plan assignments;

6 that administrations are encouraged to discontinue usage of paper, microfiche and diskette as soon as possible and to inform the Radiocommunication Bureau accordingly,

instructs the Director of the Radiocommunication Bureau

1 to initiate the introduction of a CD-ROM format for the publication of the Weekly Circular including the Special Sections;

2 to consult with all the administrations during the testing phase of the new system;

3 to provide, an index of Parts 1, 2, 3 and the Special Sections printed on paper, for those administrations requesting it;

4 to include in the radiocommunication seminars appropriate training in the use of the CD-ROM format;

5 to make the data also available on TIES by remote electronic access on a subscription basis;

6 to fix a reasonable price for the provision of additional copies of the CD-ROM,

further instructs the Director of the Radiocommunication Bureau

7 to consider an alternative name, if appropriate, for the Weekly Circular;

8 to report to the next world radiocommunication conference on the experience gained in the introduction of the CD-ROM format with a view to consequentially amending the Radio Regulations, as appropriate,

requests the Secretary-General

to consider the provision of suitable software and/or hardware for the least developed countries requesting it.

ATTACHMENT 7

ARTICLE S59

Provisional Application of the Radio Regulations

MOD S59.1 These Regulations, which complement the provisions of the Constitution and Convention of the International Telecommunication Union (Geneva, 1992), and as revised and contained in the Final Acts of the World Radiocommunication Conferences (Geneva, 1995 and Geneva, 1997) shall have provisional application, pursuant to Article 54 of the Constitution, on the following basis.

MOD S59.2 All ~~revised~~ provisions of these Regulations, as revised by the World Radiocommunication Conference (Geneva, 1995) shall apply provisionally as of 1 June 1998, except those revised provisions concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of **S21**, **S22** and Appendix **S4**, which shall apply provisionally as of 1 January 1997.

ADD S59.3 All provisions of these Regulations, as revised by the World Radiocommunication Conference (Geneva, 1997) shall apply provisionally as of [~~1 June 2000~~1 January 1999], with the following exceptions:

~~a) those revised provisions concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of **S21**and **S22**, which shall apply provisionally as of [1 January 1999]~~;

~~b~~a) those revised provisions concerning coordination, notification and recording of frequency assignments (Articles **S4, S7, S8, S9, S11, S12, S13** and **S14,** and Appendices **S4** and **S5**), which shall apply provisionally as of [1 June 1998]~~.~~;

b) those revised provisions for which other effective dates are stipulated in Resolution […].

RESOLUTION [COM4-18]

PROVISIONAL APPLICATION OF CERTAIN PROVISIONS OF THE RADIO REGULATIONS AS MODIFIED BY WRC-97 AND TRANSITIONAL ARRANGEMENTS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that as a result of the review under Resolution **18** (Kyoto, 1994); a number of provisions related to the Advance Publication, Coordination and Notification of assignments for satellite networks have been modified and these should be applied provisionally as soon as possible;

b) that it was decided to reduce the regulatory time-frame for bringing a satellite network into use, and to delete the Advance Publication Information (API) if not followed by the coordination data within 24 months of the date of receipt of the API;

c) that there are a number of satellite networks for which the relevant information has been communicated to the ITU prior to the end of this Conference, and it is necessary to provide some transitional measures for the treatment of this information by the Bureau;

[d) that this Conference has modified some of the technical criteria related to coordination under Resolution **46 (Rev.WRC-97)** and it is necessary to provide some transitional measures,]

resolves

1 that the provisions of Sections I, IA and IB of Article **S9** and the provisions of Article **S11** (Nos.[**S11.24**, **S11.26**, **S11.43A**, **S11.44**, **S11.44B**, **S11.48** and **S11.xx**]) shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis as of [22 November 1997];

2 that for satellite networks which are subject to coordination for which the API has been received by the Bureau prior to [22 November 1997] but the coordination data has not been received by the Bureau prior to this date, the responsible administration shall have until [22 November 1999] or the end of the period pursuant to the application of No. **1056A** of the Radio Regulations, which ever date comes earlier, to submit the coordination data in accordance with the applicable provisions of the Radio Regulations, otherwise the Bureau shall cancel the relevant API in accordance with No. **1056A** or No. [**S9.5D**] as applicable;

3 that for satellite networks for which the API has been received by the Bureau prior to [22 November 1997], the maximum time period from the date of receipt of the API to bring the relevant frequency assignments into use shall be six years plus the extension pursuant to No. **1550** and Resolution [GTPLEN2-1] if applicable, which ever date comes earlier;

4 that the revised Appendix **S4** with respect to the API for satellite networks which are subject to coordination under Section II of Article **S9**, shall be applied as of [22 November 1997];

5 that for those networks which are subject to coordination for which the API has been received but not yet published prior to [22 November, 1997], the Bureau shall publish only the information of the revised Appendix **S4** as modified by WRC-97;

[6 that as this Conference has modified Appendix **S5**, as it relates to Resolution **46**, the relevant provisions of Appendix **S5** shall be used as of [22 November, 1997] in lieu of the same provisions in Annex 2 to Resolution **46 (Rev.WRC-97)**.]

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 320-E
18 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

United States of America

USA/320/1
ADD

DRAFT RESOLUTION [COM4-X]

PROVISIONAL APPLICATION OF ARTICLE S11 (Nos. S11.24 AND S11.26) OF THE RADIO REGULATIONS AS ADOPTED BY WRC-97

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has made provision for the operation of high altitude platform stations within the fixed service in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz;

b) that the Radio Regulations Board issued a provisional rule of procedure concerning notification periods in No. **S11.24** [**1228**] in February 1997, pending a final decision by WRC-97;

c) that WRC-97 modified **S11.24** and added **S11.26** of the Radio Regulations to provide that notices relating to assignments for high altitude platform stations in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz "shall reach the Bureau not earlier than five years before the assignments are bought into use";

d) that Resolution **COM5-7 (WRC-97)** instructs the Bureau concerning the treatment of notices for high altitude platform stations as from 22 November 1997,

resolves

that the provisions of Article **S11** (Nos. **S11.24** and **S11.26**) shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis from 22 November 1997.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

WORKING GROUP 1
OF THE PLENARY

NOTE FROM THE CHAIRMAN OF COMMITTEE 5 TO THE CHAIRMAN OF WORKING GROUP 1 OF THE PLENARY

As part of its consideration of the WRC-97 agenda Committee 5 considered allocations to non-GSO MSS in the bands below 1 GHz. Two resolutions were approved by Committee 5 as follows:

– Resolution [COM5-25], concerning studies relating to consideration of the allocation of the non-geostationary mobile-satellite service (MSS) in the meteorological aids band of 405 - 406 MHz; and

– Resolution 214 (Rev.WRC-97), concerning sharing studies relating to consideration of the allocation of bands below 1 GHz to the non-geostationary mobile-satellite service.

The conclusion of Committee 5 was that these resolutions contain priority issues that need to be considered by WRC-99.

They are therefore referred to WG PL1 for consideration for inclusion in the draft agenda for WRC-99.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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COMMITTEE 6

THIRD SERIES OF TEXTS SUBMITTED BY WORKING GROUP 1 OF THE PLENARY TO THE EDITORIAL COMMITTEE

Working Group 1 of the Plenary has concluded its consideration of Document DT/134 and unanimously adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairman of Working Group 1 of the Plenary

Annex: 1

DRAFT RESOLUTION GTPLEN1-2

INTERVAL BETWEEN WORLD RADIOCOMMUNICATION CONFERENCES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the Additional Plenipotentiary Conference (Geneva, 1992) concluded that in general world radiocommunication conferences should be held every two years in order for ITU to catch up to the widening gap between its Radio Regulations and the current radiocommunication environment;

b) that No. **90** of the ITU Constitution states that world radiocommunication conferences shall normally be convened every two years; however, following the application of the relevant provisions of the Convention, such a conference need not be convened or an additional one may be convened;

c) that serious concerns were expressed at [this Conference] about the extent of the agendas of the forthcoming world radiocommunication conferences, the limited time available for their preparation and the tendency to reconsider major issues at a subsequent conference,

recognizing

a) the argument that extending the interval between world radiocommunication conferences to two and a half to three years would increase the time available to undertake preparatory studies by Member States, Sector Members and the Radiocommunication Bureau;

b) the counter-argument that efforts should be focused on establishing realistic and manageable agendas, rather than on extending the conference interval;

c) the strategies enunciated in contributions to WRC-97 to limit conference agendas to items requiring urgent regulatory action for which the necessary technical preparatory work can be completed;

d) the further view that, if it is determined during the course of preparations for any given conference that preparatory studies related to a particular agenda item are not sufficiently mature to lead to substantive results, [future action on that item could include the future possibility of deferral] until the following conference,

noting

that a decision to change the interval between world radiocommunication conferences will need to be based on a thorough analysis of the impact of such a change on the future financial plans of the Union, on the extent and availability of the Secretariat to support such a conference,

resolves to invite

1 the ITU Council, at its 1998 session, on the basis of information provided by the Radiocommunication Bureau and the General Secretariat, taking into account the views of the relevant organs of the Union, undertake an analysis as outlined in the *noting* above, with a view to recommending a definitive course of action to the 1998 Plenipotentiary Conference on the feasibility of extending the interval between world radiocommunication conferences;

2 the 1998 Plenipotentiary Conference, to determine an appropriate strategy and include in its decision whether changes to the Constitution and Convention will be required;

3 the 1998 Plenipotentiary Conference to also consider the feasibility of scheduling single or limited theme conferences in the future,

invites the Secretary-General

to include this issue as a matter of urgency on the agenda of 1998 session of the ITU Council.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97

WORLD
RADIOCOMMUNICATION
CONFERENCE

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COMMITTEE 5

SUMMARY RECORD

OF THE

NINTH MEETING OF COMMITTEE 5

(ALLOCATIONS AND ASSOCIATED ISSUES)

Friday, 14 November 1997, at 1430 hours

Chairman: Mrs. V. RAWAT (Canada)

Subject discussed		**Documents**
1	Seventh report of Working Group 5B	263

1 Seventh report of Working Group 5B (Document 263)

1.1 The **Chairman of Working Group 5B**, introducing Document 263, said that the Working Group had held a lengthy discussion on FSS issues, especially on the subject of power flux-density limits to be applied for non-GSO/FSS to protect the fixed service. It had been decided to propose a new resolution to indicate the appropriate power flux-density limit values, but opinions had diverged concerning the treatment of tables and the values of power flux-density, following which it had been decided, with one reservation, to include the relevant tables both in Article S21 and in the new resolution. He drew attention to § 1 of Document 263, containing draft Resolution [COM5-23], in which certain frequency ranges had been placed in square brackets pending a decision as to where to place the tables, and MOD Table S21-4/Annex 1 to Resolution [COM5-23] in which the frequencies 18.6 - 18.8 GHz had been placed in square brackets pending further discussion. The 19.3 - 19.7 GHz range shown in that Table might, however, not be relevant to the Resolution, as it applied to non-GSO/MSS feeder links. Square brackets had been placed around the frequency ranges 11.7 - 12.2 GHz in the Table and around the footnotes ADD S21.16.6*bis* and ADD S21.16.6*ter*, pending discussion in other groups. Turning to § 2 and § 3 of the report, he said that, following the approval by the Committee of Document 208 on MSS and FSS issues, the square brackets in Resolution 121 should be removed, and the deletion of Resolution 119 (WRC-95) was proposed. He informed the Committee that a note had been received from Working Group PLEN-2 indicating its recommendation to delete Resolution 70 (WARC-92) but, as that resolution seemed to be very general in nature he felt that it might be maintained for the time being.

1.2 The **Chairman** invited the Committee to consider Document 263, section by section, starting with draft Resolution [COM5-23].

Title of draft Resolution [COM5-23]

1.3 The **delegate of France**, supported by the **delegates of Finland** and **the United Kingdom**, proposed deleting the frequency ranges in square brackets in the title of the draft Resolution and replacing them with the range 17.7 - 19.3 GHz, thus excluding the 19.3 - 19.7 GHz band designated for use by feeder links for non-GSO MSS systems referred to in the asterisked footnote.

1.4 The title, as amended, was **approved**.

considering a)

1.5 The **delegate of the United Kingdom** proposed removing the square brackets around 17.7 - 19.7 GHz and deleting 18.8 - 19.3 GHz, to reflect the fact that the power flux-density limits had for many years applied to the full range.

1.6 *considering* a), as thus amended, was **approved**.

considering b)

1.7 The **delegate of Russia** stressed the importance of taking into account the needs of space science research in the 18.6 - 18.8 GHz range - a point which was not reflected in the document. He expressed concern that if the limits listed in Article S21 were extended to the 18.6 - 18.8 GHz band, that band would be lost to studies of the environment for passive research.

1.8 The **Chairman** suggested that, in the light of previous discussions concerning band sharing between the passive services, the FSS and the terrestrial services, a footnote might be prepared, indicating that sharing of the frequency band 18.6 - 18.8 GHz between GSO and non-GSO/FSS systems was under study, with a view to its inclusion on the agenda of WRC-99.

1.9 The **delegate of the United Kingdom** said that although most studies had focused on the 18.8 - 19.3 GHz band, they related to a type of fixed service that operated throughout the whole band in many countries. While accepting the Chairman's suggestion, he would prefer to see the text of that footnote before giving his opinion, as the passive services were currently of secondary status in Regions 1 and 3. The **delegate of the United States** expressed his willingness to assist in drafting a footnote, perhaps for inclusion in Table S21-4, reflecting the concerns regarding the passive services.

1.10 The **delegate of France** considered that the results of the studies which had been carried out on the 18.8 - 19.3 GHz band were also applicable to bands below 18.8 GHz.

1.11 The **Chairman** suggested including a reference to the effect that studies had been carried out on the 18.8 - 19.3 GHz band and that the power flux-density values applicable thereto should also apply provisionally to the 17.7 - 18.6 GHz band, pending further study by ITU-R.

1.12 That suggestion was supported by the **delegate of the United Kingdom** and the **delegate of Russia**, who observed that Study Group 7 had also conducted studies on the 18.6 - 18.8 GHz band which were reflected in Recommendation ITU-R SA.1028 and in footnotes Nos. S5.522 and S5.523 of the revised Radio Regulations, containing criteria applicable to the protection of passive services.

1.13 The **delegate of the United Kingdom** proposed that, in the light of the discussion, *considering* b) might be amended as follows:

"b) that the results of studies to date of potential interference from non-GSO FSS networks in the 18.8 - 19.3 GHz range, but which may be extrapolated to the 17.7 - 19.3 GHz range, differ as to whether the power flux-density limits in Article S21 … etc."

1.14 ***c****onsidering* b), as amended, was **approved**.

considering **c)**

1.15 **Approved**.

considering **d)**

1.16 The **delegate of the United Kingdom**, supported by the **delegate of France**, proposed replacing the frequency bands in square brackets by 17.7 - 19.3 GHz, as even in the 18.8 - 19.3 GHz band the Resolution did call for some additional studies.

1.17 It was so **agreed**.

1.18 The **delegate of France** thought that the footnote to Table S21-4 suggested by the Chairman might be incorporated in the body of the text under the *considering* section. The **Chairman** said that such a text would be more appropriately placed under the *noting* section.

1.19 *considering* d), as amended, was **approved**.

noting **a), b) and c)**

1.20 **Approved**.

1.21 The **delegate of France** proposed the inclusion of a new paragraph under the *noting* section to read as follows:

"noting

d) that the band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) service, and that administrations should endeavour to limit to a strict minimum the risk of interference to passive sensors".

1.22 The **delegate of Russia** proposed the inclusion in that text of a reference to the interference criteria for satellite passive remote sensing contained in Recommendation ITU-R SA.1029. The **delegate of the United States** requested inclusion of a reference to "space research (passive)" and said that the frequency bands in Table S21-4 should reflect that amendment. The **Chairman** read out a modified version of the French proposal reflecting those two amendments. She suggested that the new paragraph should be inserted under *noting*, subject to editorial modification, and that a footnote should be added to Table S21-4 along the same lines as the French proposal.

1.23 It was so **agreed**.

***resolves* 1**

1.24 In response to a suggestion from the **delegate of the Islamic Republic of Iran**, the **Chairman** indicated that the paragraph concerned power flux-density from individual space stations, not aggregate emissions. She suggested removing the square brackets and including the phrase "in the range 17.7 - 19.3 GHz", to align the paragraph with *considering* d).

1.25 It was so **agreed**.

***resolves* 2**

1.26 The **Chairman** said that the date "27 October 1995" should read "27 October 1997". The **delegate of Canada** proposed adding a new sentence, in the interests of clarity, to read as follows: "All other non-GSO networks shall comply with the limits in effect after 21 November 1997". The **Chairman** suggested that, as the revised limits would not be known until after ITU-R studies were completed, a decision on *resolves* 2 might be deferred pending further consideration by the BR.

1.27 It was so **agreed**.

invites ITU-R, requests WRC-99, urges administrations

1.28 **Approved**.

MOD Table S21-4/Annex 1 to Resolution [COM5-23]

1.29 The **Chairman** suggested that the frequency bands in the left-hand column should be amended to read "17.7 - 19.3 GHz", as a result of the amendments to *considering* b) and *resolves* 1, and that a footnote should be added to the Table along the lines of the French amendment to the *noting* section of the draft Resolution.

1.30 In response to the **delegate of Canada**, who questioned the need to include a reference to the frequency range 19.3 - 19.7 GHz in Table S21-4, the **Chairman** pointed out that, as things stood, the bands were only applicable for the 300 MHz between 19.3 - 19.6 GHz, whereas the intent was that they should also be applicable for the whole 400 MHz. A reference might therefore have to be included in the draft Resolution so as to ensure that the limits would come into effect in the

additional 100 MHz range after the Conference. The **delegate of Canada** maintained that such a reference was not necessary on the grounds that the studies in questions related to the power flux-density limits of non-GSO FSS systems.

1.31 The **delegate of the United States** agreed that there was no need to mention the frequency range 19.3 - 19.7 GHz in the light of the Committee's earlier decision that the range covered in the draft Resolution should be limited to 17.7 - 19.3 GHz.

1.32 The **Chairman** suggested that the delegates concerned should hold consultations outside the meeting to try to resolve the problem of how to ensure the applicability of the relevant power flux-density limits in the additional 400 MHz range.

1.33 It was so **agreed**.

1.34 The **Chairman**, referring to the frequency bands covering the 11.7 - 12.2 GHz range placed between square brackets in Table S21-4, drew attention to the associated note, which indicated that the bands in question were currently being considered by Committee 4. There were two options open to Committee 5: to remove the text between square brackets from the table and incorporate it in a note for the attention of Committee 4; or to await the outcome of the work of Committee 4 before taking any further action.

1.35 The **delegates of Turkey** and **the Islamic Republic of Iran** having expressed their support for the second option, the **Chairman** said she would take it that unless she heard any objection the Committee as a whole agreed to that approach.

1.36 It was so **agreed**.

1.37 Table S21-4/Annex 1 to draft Resolution [COM5-23], as amended, was **approved**.

MOD S21.16.6

1.38 The **delegate of India** drew attention to an inconsistency between the terminology used in MOD S21.16.6 and *considering* b). The latter was more explicit, referring to "with a large number of satellites (i.e., greater than 100)", whereas the wording of the provision under consideration "such as systems operating with more than 100 satellites…" might be misleading.

1.39 The **Chairman** confirmed that the text of MOD S21.16.6 would be amended appropriately.

ADD S21.16.6*bis*, ADD S21.16.6*ter*

1.40 **Approved**.

1.41 Subject to the comments and amendments made during the discussion, as well as any subsequent editorial modifications that might be necessary, draft Resolution [COM5-23] as a whole, was **approved**.

1.42 The **Chairman** invited the Committee to consider the proposed modification to Part A2.2.3 of Resolution 46 (Rev.WRC-95).

1.43 The **delegate of the Islamic Republic of Iran** observed that the words "Annex 2 to" should be inserted before "Resolution 46 (Rev.WRC-95)" in the introductory sentence to Part A2.2.3.

1.44 The **delegate of Belgium**, referring to the new underlined text proposed for insertion in Annex 2 to Resolution 46 (Rev.WRC-95), suggested that mention should be made not only of the number of satellites in a network, but also of the fact that power flux-density limits were dependant on their orbital position.

1.45 The **Chairman** said that the text in question had been the subject of extensive debate in Working Group 5B and ad hoc Group 1 of Working Group PLEN-1. Since the changes proposed were merely a consequence of the revision of Article S21, further discussion of the matter seemed inappropriate. If the delegate of Belgium wished to pursue any technical matters, he should do so outside the meeting with the experts concerned.

1.46 The **delegate of India** pointed out that the amendment to be made to MOD S21.16.6 also applied to the first paragraph of the new underlined text.

1.47 The **Legal Adviser** said that it had been brought to his attention by the Radiocommunication Bureau that the amendment proposed by the Canadian delegate to *resolves* 2 of draft Resolution [COM5-23] implied that every network for which complete coordination and notification information had been received by the BR between 1995 and 21 November 1997 would also have to comply with the requirements set forth in the new underlined text to be inserted in Annex 2 to Resolution 46 (Rev.WRC-95). He asked whether the Canadian delegate's proposal was intended to have a retroactive effect, *inter alia* on those networks already being processed by BR and the BR alike would normally advise against retroactivity, where possible.

1.48 The **delegate of Canada** confirmed the retroactive intent of his proposal, namely to apply the power flux-density limits to all networks for which complete coordination and notification information had been submitted between the dates in question.

1.49 The **representative of BR** said that the Radiocommunication Bureau would therefore require clear instructions from the Conference lest it need to review any findings already submitted.

1.50 The **Chairman** said that the matter could be discussed in greater depth outside the meeting.

1.51 Responding to the **delegate of Turkey** who queried the figures in the last indent of the underlined text, the **Chairman** confirmed that the figures tallied with those in the relevant table.

1.52 Part A2.23 of Annex 2 to Resolution 46 (Rev.WRC-95), as amended, was **approved**.

1.53 The **Chairman**, summarizing the discussion, said she would take it that unless she heard any objection, the Committee would agree to the inclusion of the proposed power flux-density limit values in Article S21 as well as in draft Resolution [COM5-23].

1.54 The **delegates of the United States** and **Syria** reserved the right to revert to the subject in a Plenary meeting.

1.55 The **Chairman** said that the Committee would continue its consideration of Document 263 at its next meeting.

The meeting rose at 1615 hours.

The Secretary:
J. LEWIS

The Chairman:
V. RAWAT

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

FOURTH SERIES OF TEXTS FROM COMMITTEE 4 TO THE EDITORIAL COMMITTEE

At its tenth meeting (17 November 1997), Committee 4 approved the following texts which are submitted to Committee 6 for consideration and for subsequent transmittal to the Plenary Meeting:

- Articles S8, S9, S13, S14, S19 of the Simplified Radio Regulations (**Attachment 1**),
- Appendix S4 to the Simplified Radio Regulations (**Attachment 2**), and
- Resolution 13 (**Attachment 3**).

Committee 4 also reviewed those Resolutions and Recommendations from WARC/WRC that have incidence on the terms of reference of Committee 4/Working Group 4A. As a consequence, the Committee proposes that the Resolutions and Recommendations, indicated in **Attachment 4**, should be suppressed.

NOTE To Committee 6 - In Article **S13**, the French text of **S13.12A, S13.17A** and **S13.23B** has to be aligned with the English text.

E. GEORGE
Chairman of Committee 4

REPORT FROM COMMITTEE 4 TO THE PLENARY MEETING

1 The fourth series of texts which are submitted to Committee 6 for consideration and for subsequent transmittal to the Plenary Meeting have been approved at the tenth meeting of Committee 4. The delegation of the UAE reserved its position with regard to the proposed addition of S13.12A, on behalf of the Arab group of countries. All other texts were approved unanimously by Committee 4.

2 Committee 4 also considered other issues related to coordination and notification procedures, as included in the BR Report to WRC-97 (Document 28) and proposes the following course of action in this respect:

2.1 Concerning the updating of Appendix 27Aer2: the Committee proposes that the Conference instructs the BR to update this Appendix so as to reflect the appropriate geographical and political changes, as well as the new scheme concerning the designation of emissions, without altering the substance of any of these provisions.

2.2 Concerning the problems relating to the identification of tropospheric scatter systems in the fixed service (Recommendation 100 (Rev.WRC-95)): the Committee endorses the course of action as suggested by the BR, i.e., use of a special symbol ("ST") in the Preface to the IFL, in the context of column 6B (item 6B of Appendix S4) with the meaning "Fixed station using tropospheric scatter".

3 In accordance with agenda item 2, the Committee considered the issues related to the revised ITU-R Recommendations incorporated by reference in the Radio Regulations, which have been communicated by the RA-97 (Document 122 refers) in accordance with Resolution 28 (WRC-97). In this connection, the Committee proposes to update the following references in the Radio Regulations, in accordance with the principles contained in the Annex to Resolution 27 (WRC-95):

- In No. **S1.14**, change the reference from **ITU-R TF.460-4** to **ITU-R TF.460-5**.
- In Nos. **S51.35**, S52.148, S52.149, S52.152, S52.153, **S52.159** and S54.2, change the reference from **ITU-R M.541-6** to **ITU-R M.541-8**.
- In **Appendix S5 (Annex 1, 3.2, Table 1)** and Resolution 46 (Rev.WRC-95) (Annex 2, Table 1), change the reference from **ITU-R M.1185** to **ITU-R M.1185-1**.
- In Nos. **S5.511A** and S29.12, change the reference from **ITU-R RA.769** to **ITU-R RA.769-1** (the new reference was already used in No. S5.208A).

ATTACHMENT 1

ARTICLE S8

NOC **S8.1**

MOD **S8.1.1** [1] The expression "frequency assignment", wherever it appears in this Chapter, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register. Additionally, wherever the expression relates to a space station in the geostationary-satellite orbit or non-geostationary-satellite orbit, it shall be associated with ~~a nominal location in that orbit~~ item A.4 of Annex 2A to Appendix **S4**, as relevant.

(S8.2 not used)

MOD **S8.3** Any frequency assignment recorded in the Master Register with a favourable finding under No~~s~~. **S11.31** ~~to **S11.34** and **S11.41**, as appropriate,~~ shall have the right to international recognition. For such an assignment, this right means that other administrations~~, recognizing Nos. **S4.2** and **S4.3** in particular,~~ shall take it into account when making their own assignments, in order to avoid harmful interference. In addition, frequency assignments in frequency bands subject to a coordination or to a plan shall have a status derived from the application of the procedures relating to the coordination or from those associated with the Plan.

MOD **S8.4** A frequency assignment shall be known as a non-conforming assignment when it is not in accordance with the Table of Frequency Allocations or the other[2] provisions of these Regulations. Such an assignment shall be recorded for information purposes, only when the notifying administration states that it will be operated in accordance with No. **~~S8.5~~S4.4** (See also No. **~~S4.4~~S8.5**).

NOC **S8.4.1 - S8.5**

ARTICLE S9

MOD **Procedure for Effecting Coordination With or Obtaining Agreement of Other Administrations**[1, 2, 3, 4]

ADD **AS9.4** [4] Resolution [**GTPLEN2-1**] shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

Note by Committee 4 - It may be necessary to include an additional footnote referencing a Resolution on the implementation of certain provisions of this Article.

MOD A.S9.1

[1] For the application of the provisions of this Article with respect to stations in a space radiocommunication service using frequency bands covered by the fixed-satellite service allotment plan, see also Appendix **S30B** ~~and Resolution **107 (Orb-88)**~~.

MOD A.S9.3

[3] See Appendices **S30** and **S30A** as appropriate for the coordination of: ~~frequency assignments of other services in relation to stations of the broadcasting-satellite service and to stations of feeder links for this service in the bands covered by those Appendices.~~

a) proposed modifications to the Appendices **S30** Plan for the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

b) frequency assignments in other services to which the frequency bands referred to in a) above are allocated, with respect to assignments in the broadcasting-satellite service which are subject to the Appendix **S30** Plans;

c) proposed modifications to the Appendices **S30A** Plan for the feeder links to the broadcasting-satellite service in the frequency bands 17.3 - 17.8 GHz (in Region 2), and 14.5 - 14.8 GHz and 17.3 - 18.1 GHz (in Regions 1 and 3), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

d) frequency assignments in other services to which the frequency bands referred to in c) above are allocated, with respect to assignments in the fixed-satellite service (Earth-to-space) which are subject to the Appendix **S30A** Plan.

For the broadcasting-satellite service and for the feeder links for the broadcasting-satellite service in the fixed-satellite service in Region 2, Resolution **42** (**Orb-85**) is also applicable.

MOD

Section I. Advance Publication of Information on ~~Planned~~ Satellite Networks or Satellite Systems - General

MOD S9.1

Before initiating any action under this Article or under Article **S11** in respect of frequency assignments for a satellite network or a satellite system, an administration, or one[1] acting on behalf of a group of named administrations, shall, prior to the coordination procedure described in Section II of Article **S9** below, where applicable, send to the Bureau a general description of the network or system for advance publication in the Weekly Circular not earlier than ~~six~~five years and preferably not later than two years before the planned date of bringing into use of the network or system (see also

Nos. **S11.44** and **S11.44B** to **S11.44I**). The characteristics to be provided for this purpose are listed in Appendix **S4**. The coordination or notification information may also be communicated to the Bureau at the same time; it shall be considered as having been received by the Bureau not earlier than six months after the date of receipt of the information for advance publication where coordination is required by Section II of Article **S9**. Where coordination is not required by Section II, notification shall be considered as having been received by the Bureau not earlier than six months after the date of publication of the advance publication information.

NOC **S9.1.1** [1] Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of that group retain the right to respond in respect of their own networks or systems.

MOD **S9.2** Amendments to the information sent in accordance with the provisions of No. **S9.1** shall also be sent to the Bureau as soon as they become available. ~~For geostationary-satellite networks and non-geostationary-satellite networks which are subject to Section II of Article **S9**,~~ The use of an additional frequency band will require the application of the advance publication procedure for this band. ~~For non-geostationary-satellite networks which are not subject to Section II of Article **S9**, the use of an additional frequency band or an extension of the service area will require the application or recommencing, respectively, of the advance publication procedures for these modifications (see Resolution **48 (WRC-95)**).~~

NOC **S9.2A** If the information is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

NOC **S9.2B** On receipt of the complete information sent under Nos. **S9.1** and **S9.2**, the Bureau shall publish it in a Special Section of its Weekly Circular within three months. When the Bureau is not in a position to comply with the time limit referred to above, it shall periodically so inform the administrations, giving the reasons therefor.

ADD

Sub-Section IA. Advance Publication of Information on Satellite Networks or Satellite Systems That Are Not Subject to Coordination Procedure under Section II

MOD **S9.3** If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration believes that interference which may be unacceptable may be caused to its existing or planned satellite networks or systems ~~or terrestrial stations~~[2], it shall within four months of the date of the Weekly Circular communicate to the publishing administration its comments on the particulars of the anticipated interference to its existing or planned systems. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the

parties, and shall exchange any additional relevant information that may be available. If no such comments are received from an administration within the aforementioned period, it may be assumed that the administration concerned has no objections to the planned satellite network(s) of the system on which details have been published.

SUP **S9.3.1** ~~[2] The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. **S9.11, S9.11A** and **S9.21**.~~

MOD **S9.4** In the case of difficulties, the administration responsible for the planned satellite network shall explore all possible means to resolve the difficulties without considering the possibility of adjustment to networks of other administrations. If no such means can be found, it may request the other administrations to explore all possible means to meet its requirements. The administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks. An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of No. **S9.2B** shall, after the period of four months, inform the Bureau of the progress made in resolving any difficulties. If necessary, a further report shall be provided prior to ~~the commencement of coordination or~~ the submission of notices under Article **S11** to the Bureau.

NOC **S9.5** The Bureau shall inform all administrations of the list of administrations which have sent comments under No. **S9.3** and provide a summary of the comments received.

MOD **S9.5A** The procedure of Section IA shall be considered ~~solely~~mainly for the purposes of informing all administrations of developments in the use of space radiocommunications ~~and minimizing any difficulties that might otherwise arise during the coordination stage~~.

ADD **Sub-Section IB. Advance Publication of Information on Satellite Networks or Satellite Systems That Are Subject to Coordination Procedure under Section II**

ADD **S9.5B** If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration considers its existing or planned satellite systems or networks or terrestrial stations[1] to be affected, it may send its comments to the administration responsible for the satellite system or networks in question, so that the latter may take those comments into consideration when initiating the coordination procedure. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available.

ADD **S9.5B.1** [1] The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. **S9.11**, **S9.11A** and **S9.21**.

ADD **S9.5C** The procedure of Section IB shall be considered mainly for the purposes of informing all administrations of developments in the use of space radiocommunications

ADD **S9.5D** If the information under No. **S9.30** has not been received by the Bureau within the period of 24 months of the date of receipt by the Bureau of the relevant information under Nos. **S9.1** and **S9.2,** the information published under No. **S9.2B** shall be cancelled after the administration concerned has been informed at least three months before the end of the 24-month period. The Bureau shall also publish the cancellation in its Weekly Circular.

MOD **Section II. Procedure for Effecting Coordination ~~Procedure~~**

Sub-Section IIA. Requirement and Request for Coordination

MOD **S9.6** Before an administration[1,2] notifies to the Bureau or brings into use a frequency assignment in any of the cases listed below, it shall effect coordination, as required, with other administrations identified under No. S9.27:

MOD **S9.6.1** [1] In the case of coordination of an assignment in a satellite network ~~in relation to another satellite network~~, an administration may act on behalf of a group of named administrations. Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of the group retain the right to respond in respect of their own services which could affect or be affected by the proposed assignment~~networks or systems~~.

ADD **S9.6.2** [2] In all cases, the coordination of an earth station with terrestrial stations or other earth stations operating in the opposite direction of transmission shall remain within the authority of the administration on the territory of which this station is located.

MOD **S9.7** *a)* for a station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, ~~for~~ in any space radiocommunication service~~s and frequency bands except those covered by the Plans of Appendices **S30, S30A** and **S30B**~~ in a frequency band and in a region where this service is not subject to a Plan, with the exception of coordination between earth stations operating in the opposite direction of transmission.

NOC **S9.8** *b)*[4] for a transmitting space station of the fixed-satellite service using the geostationary-satellite orbit in a frequency band shared on an equal primary basis with the broadcasting-satellite service, in respect of stations of the latter service which are subject to the Appendix **S30** Plan;

NOC **S9.9** *c)*[4] for a transmitting space station of the fixed-satellite service using the geostationary-satellite orbit in a frequency band shared on an equal primary basis with the feeder links of the broadcasting-satellite service which are subject to the Appendix **S30A** Plan;

MOD

[4] ~~Application of these provisions is suspended pending the decision of the 1997 World Radiocommunication Conference on revision of Appendices **S30** and **S30A** with respect to Articles 6 and 7 of those two Appendices.~~Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD **S9.11** *d)* for a space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and ~~in which there is no plan for~~where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services;

NOC **S9.11A** *e)* for a station for which the requirement to coordinate is included in a footnote of the Table of Frequency Allocations referring to this provision:

MOD **S9.12** i) in a satellite network using a non-geostationary-satellite orbit, in respect of any other satellite network using a non-geostationary-satellite orbit, and in respect of any other satellite network using the geostationary-satellite orbit, with the exception of ~~the~~ coordination ~~under No. **S9.17A**~~ between earth stations operating in the opposite direction of transmission;

MOD **S9.13** ii) in a satellite network using the geostationary-satellite orbit, in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

NOC **S9.15** iv) which is either a specific earth station or typical earth station of a non-geostationary satellite network, in respect of terrestrial stations in frequency bands allocated with equal rights to space and terrestrial services and where the coordination area of the earth station includes the territory of another country;

NOC **S9.17** *f)*[5] for any specific earth station or typical mobile earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services, in respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country, with the exception of the coordination under No. **S9.15**;

[5] ~~Application of these provisions is suspended pending the decision of the 1997 World Radiocommunication Conference on revision of Appendices **S30** and **S30A** with respect to Articles 6 and 7 of those two Appendices.~~ Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD **S9.17A** *g)* for any specific earth station, in respect of other earth stations operating in the opposite direction of transmission, in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission and where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of an earth station, with the exception of the frequency bands subject to the Appendix **S30A** Plans;

MOD **S9.18** *h)* for any transmitting station of a terrestrial service in the bands referred to in No. **S9.17** within the coordination area of an earth station, in respect of this earth station, with the exception of the coordination under Nos. **S9.16** and **S9.19**;

MOD **S9.19** *i)*[6] for any transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to an earth station of the broadcasting-satellite service, except where this service is subject to the Appendix **S30** Plan;

SUP [6] ~~The application of these provisions with respect to the bands and services of Articles 6 and 7 of Appendices S30 and S30A is suspended pending the decision for the 1997 World Radiocommunication Conference on revision of those two Appendices.~~

NOC **S9.32** If the responsible administration concludes that coordination is not required under Nos. **S9.7** to **S9.9**, it shall send the relevant information pursuant to Appendix **S4** to the Bureau for action under No. **S9.34**.

NOC **S9.41** Following receipt of the Weekly Circular referring to requests for coordination under Nos. **S9.7** to **S9.9**, an administration believing that it should have been included in the request shall, within four months of the date of publication of the relevant Weekly Circular, inform the initiating administration and the Bureau, giving its technical reasons for doing so, and shall request that its name be included.

MOD **S9.43** ~~Following action under No. **S9.41**,~~ tThose administrations not responding under No. **S9.41** within the time limit specified ~~in No. **S9.41**~~ therein shall be regarded as unaffected and the provisions of Nos. **S9.48** and **S9.49** shall apply.

Sub-Section IIC. Action Upon a Request for Coordination

MOD **S9.50** An administration having received a request for coordination under Nos. **S9.7** to **S9.21**, or having been included in the procedure following action under No. **S9.41**, shall promptly examine the matter with regard to interference which may be caused to, or in certain cases, by its own assignments[2], identified in accordance with Appendix **S5**[3].

MOD **S9.51** Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.7** to **S9.9** shall, within four months of the date of publication of the ~~relevant~~ Weekly Circular under No. **S9.38**, either inform the requesting administration and the Bureau of its agreement or act under No. **S9.52**.

MOD **S9.51A** Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.15** to **S9.19** shall, within four months of the date of dispatch of the coordination data under No. **S9.29**, either inform the requesting administration of its agreement or act under No. **S9.52**.

MOD **S9.52** If an administration, following its action under No~~s~~. **S9.50**, does not agree to the request for coordination, it shall, within the ~~same~~ four-month~~s period~~ of the date of publication of the Weekly Circular under **S9.38**, or of the date of dispatch of the coordination data under No. **S9.29**, inform the requesting administration of its disagreement and shall provide information concerning its own assignments upon which that disagreement is based. It shall also make such suggestions as it is able to offer with a view to satisfactory resolution of the matter. A copy of that information shall be sent to the Bureau. Where the information relates to terrestrial stations or earth stations operating in the opposite direction of transmission within the coordination area of an earth station, only that information relating to existing radiocommunication stations or to those to be brought into use within the next three months for terrestrial stations, or three years for earth stations, shall be treated as notifications under Nos. **S11.2** or **S11.9**.

NOC **S9.52C** For coordination requests under Nos. **S9.11** to **S9.14** and **S9.21**, an administration not responding under No. **S9.52** within the same four-month period shall be regarded as unaffected and, in the cases of **S9.11** to **S9.14**, the provisions of Nos. **S9.48** and **S9.49** shall apply.

MOD **S9.60** If, within the same four-month period specified in No~~s~~. **S9.51** or **S9.51A**, an administration with which coordination is sought under Nos. **S9.7 - S9.9** and **S9.15 - S9.19** fails to reply or to give a decision under No~~s~~. **S9.51** or **S9.51A** or, following its ~~action~~disagreement under No. **S9.52**, fails to ~~reply, to give a decision or to~~ provide information concerning its own assignments on which its disagreement is based, the requesting administration may seek the assistance of the Bureau.

ARTICLE S13

(S13.5 to S13.8: not used)

NOC **S13.9 - S13.12**

ADD **S13.12A** *b)* whenever it appears from reliable information available that a recorded assignment has not been brought into regular operation in accordance with the notified required characteristics as specified in Appendix **S4**, or is not being used in accordance with those characteristics, the Bureau shall consult the notifying administration and, subject to its agreement [or in the event of no response within three months of the dispatch of a reminder,] shall either cancel, or suitably modify, or retain the basic characteristics of the entry.

SUP **S13.13**

(MOD) **S13.14** ~~*b*~~*c)* enter in the Master Register and publish in the Preface to the International Frequency List (IFL) all frequencies prescribed by these Regulations for common use;

(MOD) **S13.15** ~~*c*~~*d)* make appropriate entries in the Master Register resulting from its examinations of frequency assignment notices in accordance with Article **S11**;

(MOD) **S13.16** ~~*d*~~*e)* maintain and periodically update the Preface to the IFL.

NOC **S13.17**

MOD **S13.17A** The Bureau shall maintain master copies of all world frequency allotment or assignment plans contained in appendices to these Regulations, or adopted by world conferences convened by the Union, including, where applicable, the carrier to interference levels, or margins, as appropriate, associated with each assignment or allotment, and incorporating any ~~agreed~~ modifications resulting from the successful application of the relevant modification procedure, and shall provide such copies in an appropriate form for publication by the Secretary-General when justified by circumstances.

NOC **S13.18 to 13.19**

SUP **S13.20**

NOC **S13.21 to 13.23**

ADD **Section IV. Board Documents**

ADD **S13.23A** The Bureau shall, where appropriate, prepare draft modifications or additions to the Rules of Procedure which shall be made available for comment before being submitted to the Board. One week beforehand the draft agenda of each Board meeting shall be sent by facsimile, or mailed, to all administrations and shall also be made available in electronic form. At the same time all documents which are both referenced in that draft agenda and available at that time shall be sent by facsimile, or mailed, to those administrations requesting them as well as simultaneously being made accessible in electronic form.

ADD **S13.23B** Within one week after a meeting of the Board, a summary of all decisions taken in that meeting, as well as the approved minutes of the meeting preceding this one, shall be published. These shall be circulated to administrations by means of a circular-letter from the Bureau as well as then being made available in electronic form.

ADD **S13.23C** A copy of all documents considered at the Board's meetings, including the minutes, shall be available for public inspection by administrations in the offices of the Bureau as well as be available in electronic form.

ARTICLE S14

NOC **S14.1**

MOD **S14.2** For this purpose, the administration concerned shall submit a request for a review to the Bureau; it shall also cite the relevant provisions of the Radio Regulations and other references and shall state the ~~redress or other~~ action it seeks.

NOC **S14.3**

MOD **S14.4** If the outcome of the review successfully resolves the matter with the requesting administration without adversely affecting the interests of other administrations, the Bureau shall publish an outline of the review, the arguments, the settlement and any implications affecting other administrations for the information of all Members of the Union. If this review results in a modification to a finding previously rendered by the Bureau, the Bureau shall re-apply the relevant steps of the procedure within which the previous finding had been given, including, if appropriate, the removal of the corresponding entries in the Master Register or any consequential effect on notices subsequently received by the Bureau.

NOC **S14.5 - S14.7A**

SUP **S14.8 and S14.9**

ARTICLE S19

MOD **S19.35** § 16. The Secretary-General shall be responsible for allocating additional maritime identification digits to countries[2] within the limits specified[3], provided that he is satisfied that the possibilities offered by the MIDs allocated to an administration will soon be exhausted despite judicious ship station identity assignment as outlined in Section VI, which should be ~~and~~ in conformity with the ~~guidelines contained in the~~ relevant ITU-R and ITU-T Recommendations ~~(see Resolution **27 (WRC-95)**)~~.

MOD **S19.99** § 39. When a station[1] in the maritime mobile service or the maritime mobile-satellite service is required to use maritime mobile service identities, the responsible administration shall assign the identity to the station in accordance with the provisions described in Nos. **S19.100** to **S19.126**, and when doing so, administrations should take into account ~~in accordance with~~ the relevant ITU-R and ITU-T Recommendations ~~(see Resolution **27 (WRC-95)**)~~. In accordance with **S20.16,** administrations shall notify the Radiocommunication Bureau immediately when assigning maritime mobile service identities.

ATTACHMENT 2

APPENDIX S4

Consolidated List and Tables of Characteristics for Use in the Application of the Procedures of Chapter SIII

ANNEX 1A

(to Appendix **S4**)

List of characteristics of stations in the terrestrial services[1]

SUP *ITEM 6C – Experimental station*

Symbol EX in this item for experimental station only.

ADD *ITEM 7AA – Type of modulation*

Modulation choice is needed to specify if the requirement is to use DSB, SSB or any new broadcasting techniques recommended by ITU-R.

MOD *ITEM 8B – Radiated power (dBW)*

The radiated power expressed in dBW in one of the forms described in Nos. **S1.161** to **S1.163**. In the case of systems where automatic power control is applied, indicate the range of power control, expressed in dB above the transmitting power indicated above.

NOC *ITEM 9E – Height of antenna*

Information on height above ground level, in metres.

MOD *ITEM 9EA – Altitude of site above sea level*

Information on the altitude of the site above mean sea level, in metres (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments, and for all terrestrial stations in the frequency bands above 1 GHz that are shared between space radiocommunication and terrestrial radiocommunication services).

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[1] The Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the International Frequency List.

ADD *ITEM 9R – Slew angle*

The slew angle represents the difference between the azimuth of maximum radiation and the direction of unslewed radiation.

SUP *ITEM 10C – Seasons and solar activity*

The season or month of the year and the level of solar activity, expressed by appropriate symbols.

ADD *ITEM 10CA – Start date*

It is used in the case that the requirement starts after the start of the schedule.

ADD *ITEM 10CB – Stop date*

It is used in the case that the requirement stops before the end of the schedule.

ADD *ITEM 10CC – Days of operation*

It is used when the station does not transmit in every day of the week.

ANNEX 1B

(to Appendix **S4**)

Table of characteristics to be submitted for stations in the terrestrial services

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	B
SYNC									X					X				SYNC
1A	X	X	X	X	X	X	X	X	X	X	X[5)]	X	X[5)]	X	X		X	1A
1B	+	+	+	+	+	+	+	+			X[5)]				+			1B
1C				+											X	+		1C
1D											X		X					1D
1E											X		X					1E
1G															O			1G
1H															X			1H
1X																X		1X
1Y																O		1Y
1Z																+		1Z
2C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	+	X	X	2C
3A	X	X	X	X	X				X	O	O	O	O		X		X	3A
4A	X	X	X	X	X				X	X	X	X	X	X	X	+	X	4A
4B	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	4B
4C	X	X	X	X	X	*1)	*1)	*1)	X	X	X	X	X	X	X	+	X	4C
4D						*1)	*1)	*1)										4D
4E						*	*	*										4E
4F																	X	4F
4G									X									4G
5A				X		X	X											5A
5B				X		X	X											5B
5C				X		X	X										*	5C
5D		*2)	*2)												X	*3)	*	5D
5E	X	*	*		X											*		5E

X Mandatory * One of the items + Required in specific cases O Optional

1) (4C and 4D) or (4E).
2) (5D) or (5E and 5F).
3) (5D and 5F) or (5E and 5F).
5) May not be required with the new TerRaSys.

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
5F	X	*	*		X											*		5F
5G	+	+	+	+	+											+	+	5G
6A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6A
6B	+	+	X	X		X	X	+								X		6B
~~6C~~	~~+~~	~~+~~	~~+~~	~~+~~	~~+~~													~~6C~~
7A	X	X	X	X	X	X	X	X	X	X[5)]	X[5)]	X[5)]	X[5)]	X	X	X	X	7A
7AA															X			7AA
7B				X					X					X				7B
7C1									X[4)]		X		X					7C1
7C2											X		X					7C2
7D												X						7D
7E				+[7)]														7E
7F				+[7)]														7F
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8
8A	*	*	X	*	X	*	*	*	X					X	X	X	*	8A
8AB				+[7)]														8AB
8B	*	*		*		*	*	*		X	X	X	X				*	8B
8BH										X	X	X	X					8BH
8BV										X	X	X	X					8BV
8D											X		X					8D
9	X	X	X	X	X				X	X	X	X	X		X	X	X	9
9A	X	X	X	X	X				X	X	X	X	X		X	X	X	9A
9AA														X				9AA
9AB	+	+	+	+	+				+						+	+	+	9AB
9B				+											X			9B
9C	+	+	+	+	+											+		9C
9CA														X				9CA
9D				+						X	X	X	X					9D
9E	+	+	+	+	+				X	X	X	X	X					9E
9EA	+	+	+	+	+					X	X	X	X					9EA
9EB										X	X	X	X					9EB
9EC										X	X	X	X					9EC

X Mandatory * One of the items + Required in specific cases O Optional

4) For low power channels.
5) May not be required with the new TerRaSys.
7) This information need only to be furnished when such information has been used as a basis to effect coordination with another administration. This information may be optionally provided in a request for coordination under Nos. **S9.16**, **S9.18** and **S9.19**.

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
9F														X				9F
9G	+	+	+	+	+			+							+	+		9G
9GH									X									9GH
9GV									X									9GV
9H									X	X[5)]	X[5)]	X[5)]		+		+		9H
9I									X					X				9I
9IA														X				9IA
9J				+, +[7)]											X	+		9J
9K				+[7)]														9K
9N												X[5)]						9N
9NA														X				9NA
9NH										X[6)]	X[6)]	X[6)]	X					9NH
9NV										X[6)]	X[6)]	X[6)]	X					9NV
9O														X	X	X		9O
9P														X				9P
9Q									X					X				9Q
9R															X			9R
9T1														X				9T1
9T2														X				9T2
9T3														X				9T3
9T4														X				9T4
9T5														X				9T5
9T6														X				9T6
9T7														X				9T7
9T8														X				9T8
9T9A														+				9T9A
9T9B														X				9T9B
9T9C														+				9T9C

X Mandatory * One of the items + Required in specific cases O Optional

5) May not be required with the new TerRaSys.

6) To be used in the future TerRaSys.

7) This information need only to be furnished when such information has been used as a basis to effect coordination with another administration. This information may be optionally provided in a request for coordination under Nos. **S9.16**, **S9.18** and **S9.19**.

Table of characteristics to be submitted for stations in the terrestrial services *(end)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
9T9D														+				9T9D
10A				+														10A
10B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10B
~~10C~~		~~+~~		~~+~~											~~X~~			~~10C~~
10CA															O			10CA
10CB															O			10CB
10CC															O			10CC
10D																X		10D
10E																X		10E
10F																	X	10F
11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	O	X	11
12A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	12A
12B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	12B

X Mandatory * One of the items + Required in specific cases O Optional

ATTACHMENT 3

RESOLUTION 13 (Rev.WRC-~~95~~97)

FORMATION OF CALL SIGNS AND ALLOCATION OF NEW INTERNATIONAL SERIES

The World Radiocommunication Conference (Geneva, ~~1995~~1997),

considering

~~a) the adoption by this Conference of Article **S19** and Appendix **S42**;~~

~~b)~~ the increasing demand for call signs justified by the increased number of Members of the Union and by the increased requirements of countries which are already Members,

believing

that call signs already in use should, as far as possible, not be changed,

noting

a) that the former call sign series formed of three letters, or a figure and two letters, having been exhausted, a new series has been introduced formed of a letter, a figure and a letter; but in no case may the figure be 0 or 1;

b) that the method mentioned in *noting* a) is not applicable to series beginning with one of the following letters: B, F, G, I, K, M, N, R, W,

resolves

1 that the Director of the Radiocommunication Bureau shall continue to urge administrations:

1.1 to make maximum use of the possibilities of the series at present allocated, in order to avoid, as far as possible, further requests;

1.2 to review the call-sign assignments they have already made from their present allocations, with a view to releasing any series and placing them at the disposal of the Union;

2 that the Director shall, upon request, furnish advice to administrations on the means of effecting the greatest economy, which should be the rule, in the use of a series of call signs;

3 that if, nevertheless, before the next competent world radiocommunication conference, it appears that all the possibilities of the present system of forming call signs will be exhausted, the Director shall:

3.1 explore the possibility of extending the present ~~series as foreseen in Resolution **71** **(WRC-95)**~~allocations of international call sign series by lifting the limitation on use of the letter "Q" and the digits "0" and "1";

3.2 issue a circular-letter:

3.2.1 explaining the position;

3.2.2 urging the administrations to send in their proposals for possible solutions;

4 that, from the information thus submitted, the Director shall prepare a report, together with his comments and suggestions, for submission to the next competent world radiocommunication conference.

ATTACHMENT 4

List of Resolutions of WARC/WRC which are proposed for suppression

Resolution No.	Subject	Proposed action
17	Conference structure	SUP
19 (Mob-87)	Decisions of regional conferences	SUP
22 (WARC-92)	Assistance in implementing changes in allocations	SUP
37	Automated Frequency Management	SUP
38 (Rev.Mob-87)	Reassignment of frequencies in 2 MHz (R1)	SUP
47 (WRC-95)	Immediate application of RS46 in some bands	SUP
61	Division of the world into climatic zones	SUP
65	Cross-referencing of ITU-R Recommendations in RR	SUP
69 (Orb-88)	Simplified methods for assessment of interference between satellite networks	SUP
71 (WRC-95)	Identification of stations (Article 25/S19)	SUP
93 (WARC-92)	Treatment of Resolutions/Recommendations	SUP
94 (WARC-92)	Review of Resolutions/Recommendations	SUP
104 (Orb-88)	Application of RR 1550	SUP
107 (Orb-88)	Existing networks AP30B	SUP
110 (Orb-88)*	MPM	SUP
403	Use of common aeronautical frequencies (3 023 kHz and 5 680 kHz)	SUP
410 (WARC-92)	Development of AP26 Plan	SUP
702	RARC for VHF/UHF bands in R3	SUP
704 (Mob-83)	Planning of MMS/Aero.nav in LF/MF	SUP
713 (WRC-95)*	Operational matters concerning AMS and MMS	SUP

List of Recommendations of WARC/WRC which are proposed for suppression

Recommendation No.	Subject	Proposed action
6	Assistance to developing countries	SUP
10	Presentation of draft amendments to RR	SUP
11	Marginal numbering of the RR	SUP
13	WARC for partial revision of RR	SUP
15 (Orb-88)	Review of Article 14 of the RR	SUP
31	Handbook on Frequency Management	SUP
60	Technical standards of the IFRB	SUP
72	Terminology	SUP
73	Use of term "channel"	SUP
74	Use of SI	SUP

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COMMITTEE 4

NOTE BY THE CHAIRMAN OF COMMITTEE 4

RESOLUTION [COM4-20]

UPDATING THE "REMARKS" COLUMNS OF ARTICLE 9A OF APPENDIX 30A AND ARTICLE 11 OF APPENDIX 30 AND TABLES ASSOCIATED WITH THESE NEW "REMARKS" COLUMN ENTRIES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has adopted new texts related to the symbols in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30;

b) that WRC-97 has adopted new entries in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30 with the understanding that the lists of identified administrations will be reviewed and revised, as appropriate by WRC-99;

c) that studies of compatibility between the revised Regions 1 and 3 BSS (downlink and feeder link) Plan, and other services having allocations in the planned bands in all three Regions, and between the revised Regions 1 and 3 Plan and the Region 2 Plan, were performed during WRC-97 using data which had been received and published by the Bureau at the time of WRC-97 under relevant provisions of the Radio Regulations;

d) that because it was not possible to fully analyse the effect of all assignments which were received before 27 October 1997 but which had not been processed at the time of WRC-97;

e) that in order to fully analyse the effect of assignments that had not been fully processed it is necessary to process the assignments which have been received prior to WRC-97,

recognizing

a) that the revised Regions 1 and 3 Plan must be compatible with the Region 2 Plan and with the other services which have primary allocations in the planned bands in all three Regions in accordance with principles adopted at WRC-97;

b) that the Radiocommunication Bureau requires a clear instruction from WRC-97 on how to complete the analyses and to finalize the entries to be included in the "Remarks" column (column 9) of both Article 9A of Appendix 30A and Article 11 of Appendix 30;

c) that the instruction to the Bureau shall take effect on 22 November 1997,

resolves

1 that the Radiocommunication Bureau shall complete the required analyses based on the new Notes [10 to 14] to Article 9A of Appendix 30A, and Notes [7 to 9] to Article 11.2 of Appendix 30 added during this Conference;

2 that the Radiocommunication Bureau shall publish the results of its analyses after the Conference, together with a modified "Remarks" column (column 9) of Article 9A of Appendix 30A and Article 11 of Appendix 30 in the form of a circular letter;

3 that the new coordination requirements identified in the above-mentioned circular letter shall provisionally apply from the date of the above-mentioned circular letter until the decision of WRC-99;

4 that the Radiocommunication Bureau shall report the results of its analyses and the final lists of administrations to be included in the modified "Remarks" columns to WRC-99,

instructs the Secretary-General

to bring this Resolution to the attention of the Council, at its next session, with a view to including this item in the agenda of WRC-99.

_____

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COMMITTEE 4

NOTE BY THE CHAIRMAN OF COMMITTEE 4

PROPOSED PROVISIONS BASED ON THE PRINCIPLES ADOPTED AT COMMITTEE 4 (13 NOVEMBER 1997) ON COMPATIBILITY ISSUES

These proposed provisions are based on the current structure of Appendices 30 and 30A.

1 New assignments causing interference

1.1 Compatibility with FSS (space-to-Earth) (from BSS feeder link into FSS (space-to-Earth))

Proposed provision

In Article 5 of Appendix 30A

ADD

5.1.4bis Before an administration in Region 1 or 3 notifies to the Bureau or brings into use, any frequency assignment accompanied with NOTE [10] of paragraph 9A.2 to a transmitting feeder-link earth station in the band 17.7 - 18.1 GHz, it shall effect coordination of this assignment with each administration, using the method described in Annex 4 of Appendix 30A, in respect of specific earth stations in the fixed-satellite service (space-to-Earth) in the band 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or

b) received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997.

In paragraph 9A.2 of Article 9A of Appendix 30A

ADD

NOTE [10] - Before an administration notifies to the Bureau or brings into use this frequency assignment to a transmitting feeder-link earth station in the bands 17.7 - 18.1 GHz, it shall effect coordination of this assignment with each administration, using the method described in Annex 4 of Appendix 30A, in respect of a specific earth station in the fixed-satellite service (space-to-Earth) in the band 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or

b) received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997.

Complete analysis of assignments of FSS received prior to 27 October 1997 will be carried out by the Bureau to determine whether the coordination of the new BSS assignments are required with the above-mentioned service. The result of the Bureau's analysis, together with a modified "Remarks" column 9 of Article 9A of Appendix 30A, shall be conveyed to all administrations.

1.2 Compatibility with terrestrial service (from BSS feeder link into terrestrial services)

Proposed provision

In Article 5 of Appendix 30A

ADD

5.1.4ter Before an administration in Region 1 or 3 notifies to the Bureau, or brings into use, any frequency assignment accompanied with NOTE [11] of paragraph 9A.2 to a transmitting feeder-link earth station in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz, it shall effect coordination of this assignment with each administration whose territory lies wholly or partly within the coordination area of the feeder-link earth station, using the method described in Appendix 28 in respect of notices concerning stations of the fixed and mobile services in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or,

b) received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997.

In paragraph 9A.2 of Article 9A of Appendix 30A

ADD

NOTE [11] - Before an administration notifies to the Bureau or brings into use this frequency assignment to a transmitting feeder-link earth station in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz, it shall effect coordination of this assignment with each administration whose territory lies wholly or partly within the coordination area of the feeder-link earth station, using the method detailed in Appendix 28 in respect of notices concerning stations of the fixed and mobile services in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or

b) received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997.

Complete analysis of assignments of terrestrial services received prior to 27 October 1997 will be carried out by the Bureau to determine whether the coordination of the new BSS assignments are required with the above-mentioned service. The result of the Bureau's analysis together with a modified "Remarks" column 9 of Article 9A shall be conveyed to all administrations.

1.3 Compatibility with the Region 2 BSS Plan (from BSS feeder link into the Region 2 BSS Plan)

Proposed provision

In paragraph 9A.2 of Article 9A of Appendix 30A

ADD

NOTE [12] - This assignment shall be brought into use only when the limits given paragraph 5 of Annex 1 are not exceeded, or with the agreement of administrations identified in Table 1A [of Article 9A of Appendix 30A] with respect to assignments which are in conformity with Region 2 Plan on 27 October 1997.

These administrations shall be informed by the notifying administration of changes in characteristics before these beams are brought into use.

1.4 Compatibility with the Region 2 BSS Plan (from BSS downlink link into the Region 2 BSS Plan)
Compatibility with terrestrial services (from BSS downlink link into terrestrial service in all three Regions)
Compatibility with FSS (space-to-Earth) (from BSS downlink link into FSS (space-to-Earth))

Proposed provision

In paragraph 11.2 of Article 11 of Appendix 30

ADD

NOTE [7] - This assignment shall be brought into use only when the limits given in Table 1 [of Article 11.2 of Appendix 30] are not exceeded or with the agreement of the affected administrations identified in Table 2 [of Article 11.2 of Appendix 30] with respect to:

a) assignments in the Region 2 Plan on 27 October 1997; or

b) assignments in the terrestrial services which are recorded in Master Register with a favourable finding or received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997; or

c) assignments in the FSS that: are recorded in the Master Register with a favourable finding; or those which have been coordinated under the provisions of No. **1060** of the Radio Regulations or paragraph 7.2.1 of Appendix 30; or those that are in process of coordination under the provisions of No. **1060** of the Radio Regulations or paragraph 7.2.1 of Appendix 30 prior to 27 October 1997.

These administrations shall be informed by the notifying administration of changes in characteristics before these beams are brought into use.

Complete analysis of assignments of the terrestrial services and FSS received prior to 27 October 1997 will be carried out by the Bureau to determine whether the coordination of the new BSS assignments are required with the above-mentioned services. The result of the Bureau's analysis together with a modified "Remarks" column 9 of Article 11 of Appendix 30 and a new Table 2 of Article 11.2 of Appendix 30 shall be conveyed to all administrations.

2 New BSS assignments receiving interference

2.1 Compatibility with the Region 2 Plan (from Region 2 Plan into BSS feeder link and downlink)

Proposed provision

In paragraph 9A.2 of Article 9A of Appendix 30A

ADD

NOTE [13] - This assignment shall not claim protection from the assignment of the administration indicated in Table 1B [of Article 9A of Appendix 30A] which are in conformity with the Region 2 Plan on 27 October 1997.

Proposed provision

In paragraph 11.2 of Article 11 of Appendix 30

ADD

NOTE [8] - This assignment shall not claim protection from the assignment of the administration indicated in Table 3 [of Article 11.2 of Appendix 30] which is in conformity with the Region 2 Plan on 27 October 1997.

2.2 Compatibility with other services having allocations in the frequency bands covered by the Plans in all three Regions (from other services having allocation in the Plan bands in all three Regions into BSS feeder link and downlink)

Proposed provision

In paragraph 9A.2 of Article 9A of Appendix 30A

ADD

NOTE [14] - This assignment shall not claim protection from the assignments of the administration indicated in Table 1B [of Article 9A of Appendix 30A] which are recorded in the Master Register with a favourable finding prior to 27 October 1997 [to which S5.487/RR 838 and S5.43/RR 435 do not apply][*].

Proposed provision

In paragraph 11.2 of Article 11 of Appendix 30

ADD

NOTE [9] - This assignment shall not claim protection from the assignments of the administration indicated in Table 3 which are recorded in the Master Register with a favourable finding prior to 27 October 1997 [to which S5.487/RR 838 and S5.43/RR 435 do not apply]*.

---

[*] This item is to be considered when the text of the footnote S5.487/RR 838 is finally agreed.

Complete analysis of assignments of the terrestrial services and FSS received prior to 27 October 1997 will be carried out by the Bureau to determine whether the coordination of the new BSS assignments are required with the above-mentioned services. The result of the Bureau's analysis together with a modified "Remarks" column 9 of Article 9A of Appendix 30A and Article 11 of Appendix 30 and Tables 1B and 2 shall be conveyed to all administrations.

ADD Tables 1A and 1B to Article 9A of Appendix 30A

TABLE 1A

Beam name	Channels	Countries or geographical area affected
XXX00000	e.g. 1, 5, 9, 13, 17	ABC, DEF, GHI
....	.....	....

TABLE 1B

Beam name	Channels	Countries or geographical area affected
XXX00000	e.g. 1, 5, 9, 13, 17	ABC, DEF, GHI
.....	.....	.....

ADD Tables 1, 2 and 3 to Article 11.2 of Appendix 30

TABLE 1

Applicable criteria

Symbol	Criteria
a	Paragraph 3 of Annex 1*
b	Paragraphs 4, 5a) and 5b) of Annex 1 (see relevant paragraph cited below)*
c	Paragraph 6 of Annex 1*
* These paragraphs and the Annex references relate to the Radio Regulations in force at the time of WRC-97.	

TABLE 2

Beam name	Channels	Limit Crit. Ref. Table 1	Countries or geographical area affected
XXX00000	e.g. 1, 5, 9, 13, 17	a	ABC, DEF, GHI
	e.g. All channels	b	JKL
	e.g. For channels 2 to 4	c	MNO
XXX11111	e.g. 3, 7, 11, 15, 19	a	PQR

TABLE 3

Beam name	Channels	Countries or geographical area affected
XXX00000	e.g. 1, 5, 9, 13, 17	ABC, DEF, GHI

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COMMITTEE 4

NOTE BY THE CHAIRMAN OF WORKING GROUP 4D

RECOMMENDATIONS AND RESOLUTIONS OF WARC/WRC INCLUDED IN THE RADIO REGULATIONS ALLOCATED TO WORKING GROUP 4D

Please find attached the decisions taken by Working Group 4D concerning the above-mentioned Recommendations and Resolutions.

List of Recommendations and Resolutions of WARC/WRC included in the Radio Regulations allocated to Working Group 4D

Recommendation	Subject	Decision
35	Procedure for modification of a Plan	NOC
521	Technical parameters for Planning	Pending

Resolution No.	Subject	Decision
32	Use of frequencies in the 12 GHz band	SUP
34	Planning the band 12.5 - 12.75 GHz in R3	NOC
42 (Rev.Orb-88)	Interim systems in R2 (BSS and FSS) in bands governed by AP30/30A	NOC
106 (Orb-88)	Provisional application of AP30A	SUP
109 (Orb-88)	AP30A in MIFR	SUP
506 (Rev.Orb-88)	GSO only in BSS bands (12 GHz)	PENDING
507	Agreements/Plans for BSS	NOC
518 (Orb-88)	Area/Country symbols in AP30/30A	NOC
519 (Orb-88)	Provisions for interim systems	NOC
522 (WARC-92)	ITU-R work concerning BSS	SUP
524 (WARC-92)	Revision of AP30/30A	NOC
531 (WRC-95)	Review of AP30/30A	PENDING

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COMMITTEE 4

NOTE BY THE CHAIRMAN OF WORKING GROUP 4D

MODIFICATIONS TO FOOTNOTES

MOD

GHz
10.7 – 12.7

Allocation to Services		
Region 1	Region 2	Region 3
11.7 – 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE Mobile except aeronautical mobile	**11.7 – 12.1** FIXED S5.486 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile S5.485 S5.488	**11.7 – 12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE
	12.1 – 12.2 FIXED-SATELLITE (space-to-Earth) S5.485 S5.488 S5.489	S5.487 S5.492
S5.487 S5.492	**12.2 – 12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE S5.488 S5.490 S5.492	**12.2 – 12.5** FIXED MOBILE except aeronautical mobile BROADCASTING S5.487 S5.491

MOD S5.492 ~~In Region 2, in the band 12.2 - 12.7 GHz, a~~ Assignments to stations of the broadcasting-satellite service in conformity with the appropriate regional Plan in Appendix **S30** ~~in the Plan for Region 2 contained in Appendix **S30**~~ may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference or require more protection from interference than the broadcasting-satellite service transmissions operating in conformity with this ~~the Region 2~~ Plan. With respect to the space services, this band shall be used principally for the broadcasting-satellite service.

NOTE - IRN, CHN and VTN had concerns about the impact of the applicability of this footnote. The Bureau questioned the method of calculation to apply to this footnote.

MOD S5.493 The broadcasting-satellite service in the band 12.5 - 12.75 GHz in Region 3 is limited to ~~community reception with~~ a power flux-density not exceeding –111 dB(W/m^2) ~~as defined in Annex 5 of Appendix **S30**. See also Resolution **34**~~/27 MHz for all conditions and for all methods of modulation at the edge of the service area.

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COMMITTEE 4

NOTE BY THE SECRETARY-GENERAL

AVAILABILITY OF BSS PLAN INPUT DATA

Several requests have been made to the Bureau for access to the input data files that were used for the calculations of BSS-BSS compatibility. In this regard two documents are likely to be of interest. These are:

- the MSPACE(G) input text file which contains the raw data file that was used for the MSPACE calculations;
- a summary listing of the input data file in a format that is more understandable by people who may not be familiar with the details of the MSPACE(G) input data file format.

Because of their large volume and the high cost of reproducing such documents it is impractical to provide these documents in paper format. However, to make this information available for interested delegates the documents will be placed on the WRC-97 page of the ITU web site at: **http://web.itu.ch/itudoc/itu-r/wrc/wrc-97/docs.html**.

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COMMITTEE 4

SECOND AND FINAL REPORT OF AD HOC 1 OF COMMITTEE 4

This report addresses the remaining tasks established for ad hoc 1 by Committee 4 and Working Party 4D. The approved texts are contained in the annexes which cover:

- To study the possibility of a plan providing an increased minimum capacity for all countries of around 10 analogue channels whilst taking account of the following main principles:
  - a) allowance for regional/multinational systems, taking into account RR 2674;
  - b) retention of adequate capacity for future growth;
  - c) avoidance of monopoly utilization of resources;
- BSS Plans for Regions 1 and 3 and possible further review and revision by a competent conference;
- Studies related to Annex 7 of Appendix 30;
- Agenda items for WRC-99 and for a possible future conference.

Text in the annexes with square brackets is either still to be agreed or in the case of "[multinational and subregional systems]" should be aligned with the decision of Committee 4 on the terminology to be used for such systems.

ANNEX A

DRAFT RESOLUTION [COM4-XB]

[REVIEW AND POSSIBLE REVISION OF THE 1997 BSS PLANS FOR REGIONS 1 AND 3]

The World Radiocommunication Conference (Geneva, 1997),

considering

[a) that the World Radiocommunication Conference, 1997 adopted a revision of the BSS Plans for Regions 1 and 3 providing capacity for all new countries in accordance with Resolutions **524 (WARC-92)** and **531 (WRC-95)**;]

[b) that WRC-97 also considered that studies should be undertaken to establish the feasibility of providing additional minimum capacity for all Member States to provide a channel capacity large enough to permit the economical development of a broadcasting-satellite system;]

c) the increasing number of applications under Article **4** for modifications involving additions to the Plans;

d) the rights of all Member States to equitable access to the spectrum allocated to satellite broadcasting, and that Article **44** of the Constitution provides, *inter alia*, that "Members shall bear in mind that radio frequencies and the geostationary-satellite orbit are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to both",

resolves

1 that an inter-conference representative group (IRG) be established in accordance with Annex 2;

2 that the Director of the Radiocommunication Bureau present the results of the IRG studies to WRC-99 regarding the feasibility of increasing the minimum assigned capacity for countries in Regions 1 and 3 to around ten analogue-equivalent channels (see Annex 2), based on the planning principles in Annex 1;

3 that WRC-99 consider the results of the above studies and, if the conclusion is that such replanning is feasible, to initiate an appropriate revision for completion [at a future conference no later than [2000/2001]] [at WRC-01],

invites ITU-R

to study, as a matter of urgency, the technical possibilities for increasing the minimum capacity assigned to all Regions 1 and 3 countries in the Plans for Regions 1 and 3 contained in Appendices **30** and **30A**, in cooperation with the IRG and in accordance with the principles in Annex 1,

[invites the Council to recommend to the 1998 Plenipotentiary Conference

to consider the convening of a radiocommunication conference [before [2000/2001]] to revise those parts of the Plans in Appendices **S30** and **S30A** applying to Regions 1 and 3 subject to the consideration of WRC-99 of the results of the studies carried out by the IRG,]

instructs the Secretary-General

to bring this Resolution to the attention of the Council with a view to competent conferences undertaking the review of studies and, if necessary, the revision of the relevant parts of Appendices **S30** and **S30A** and associated provisions of the Radio Regulations.

ANNEX 1

Principles for the review and possible revision of the 1997 BSS Plans for Regions 1 and 3

The World Radiocommunication Conference, 1997 reviewed the planning principles proposed by several administrations and those adopted by WRC-95 in Resolution 531 and agreed to establish an inter-conference representative group (IRG) to carry out studies in accordance with the principles given below.

These principles are to be used in assessing the possibilities for meeting the objectives in this Resolution.

1) Provide for all countries a minimum capacity equivalent to around ten analogue channels while maintaining the same proportionality adopted by WARC-77.

2) Be based [mainly] on national coverage.

[3) Protect the "existing" systems in the Regions 1 and 3 Plans which are in conformity in those Plans (see Annex 2).]

4) In order to avoid the obsolescence of the Plans, caused by technical assumptions becoming out of date, ensure that the Plan is established with a view to achieving long-term flexibility.

5) Leaving capacity for future additional requirements[, such as subregional systems].

6) Consider, for planning, the appropriateness of a complete digital approach in the future and, if so, providing for the simultaneous operation of analogue and digital systems, if necessary during a defined time-scale.

7) Ensure that the integrity of the Region 2 Plans and their associated provisions is preserved, by providing the same protection to the assignments contained in those Plans, as now received under relevant provisions of the Radio Regulations and by not requiring more protection from assignments in the Region 2 Plans than currently provided under the Radio Regulations.

8) Compatibility shall be ensured between the broadcasting-satellite service in Regions 1 and 3 and those services having allocations in the planned bands in all three Regions.

ANNEX 2

Inter-conference representative group

WRC-97 has resolved that an inter-conference representative group, (IRG) be established to study the feasibility of increasing the minimum capacity for countries in Regions 1 and 3 to around the equivalent of ten analogue channels in accordance with the principles in Annex 1.

The IRG should be structured to consist of:

[• a supervisory policy group (the IRG) open to participation by all Members but membership encouraged to ensure adequate representation from all ITU regions;]

• the Bureau, assisted by a group of technical experts (GTE) and working to directions established by the IRG. Members of the GTE should be drawn from all Sector Members on the basis of technical expertise.

JWP 10-11S studies are encouraged to contribute to the studies and particularly in respect to items listed in the Appendix.

[APPENDIX

Initial suggestions to the IRG

1 National coverage

If countries wish to improve the economic viability of systems, for example by combining the assignments of several neighbouring countries, this may be permitted provided the countries concerned agree and agree to forgo their entitlement in the Plan to dedicated national capacity.

2 Elliptical beams

The studies should be based on elliptical beams calculated on test points within national territories provided by administrations using the ellipse calculation program available to the Bureau.

3 Use of standard reference planning parameters

The studies should be based on a set of reference planning parameters to maximize the efficiency in the use of the orbit/spectrum resource.

4 Relaxation of constraints for studies

In order to maintain as much flexibility as possible the following constraints can be relaxed:

Nominal 6° orbital spacing

Annex 7 orbital position limits

Retention of existing Plan orbit and assignments other than those which have been implemented (see Annex 1, Principle 3)

Co-location of neighbouring countries except where requested under 1 above

Eclipse protection

Application of Appendix 28 in respect of coordination of BSS feeder-link earth stations and terrestrial stations

5 Orbit and beam requirements

The number of orbital positions per country should, in general be one. However the orbit and beam allocations from WARC-77 may be used as a guide to address particular circumstances of large countries and multiple time zones.

6 Treatment of existing systems

Currently operating systems, i.e. implemented systems or notified systems for which the date of bringing into use has been confirmed to the Bureau, should be protected with current parameters. The studies may include consideration of changes to such systems for future generations.

7 Article 4 applications

Studies need to take account of, and provide for, those Article 4 applications in accordance with the provisions of the Plans received before xx/xxx/xx which have completed coordination and for which due diligence information has been received by the BR.

NOTE - WRC-99 may need to consider establishing a date after which Article 4 applications should not be considered prior to any revision of the Plans by a subsequent conference.

8 Application of provision 4.1.1 of Appendix 30

The IRG should consider the implications of strengthening this provision in the context of these studies and the principles in Annex 1.]

Alternatively

[APPENDIX

Replanning principles

1 National coverage

The planning shall be based, in general, on national coverage (and all test points shall be within the territory of the countries being covered).

However, if countries wish to improve the economic viability of systems by combining the assignments of several neighbouring countries this shall be permitted provided the countries concerned agree, and agree to forego their entitlement to dedicated national capacity.

2 Channels per service area

The planning shall be based on an attempt to provide a minimum of 10 (ten) 27 MHz bandwidth channels per national service area, but it shall not be permitted to have overlapping service areas (unless the number of channels is commensurately reduced).

3 Digital

In general the planning shall be based on an assumption of digital transmission but specific requests for continuation of analogue shall be allowed.

ITU-R should be urgently requested to provide a recommendation for realistic digital-digital protection ratios, masks and calculation methods for use in the replanning. (Similar requests should also be made in connection with analogue-digital digital-analogue.)

4 Elliptical beams

Due to the time and resource requirements needed to capture, verify and process shaped beams, the planning process should be based on elliptical beams. (At the stage of implementation administrations could use shaped beams provided that they do not cause additional interference or require additional protection than that which would have applied in the case of the reference ellipse used in the planning.)

The ellipses would be calculated based on test points within national territory provided by administrations and the ellipse calculation program is available to the Bureau.

5 Standard reference parameters

To achieve maximum efficiency in the use of the orbit/spectrum resource the planning shall be based on a set of reference planning parameters. (It is noted that under Article 5 systems which deviate from these reference parameters - either due to technological improvements or other reasons - are allowed provided that the deviations do not cause more interference to the Plan.)

6 Downlink e.i.r.p.

ITU-R should be urgently requested to provide advice concerning the C/N and necessary link budget margins for use in the planning, in order that a value (or a range of values) of downlink e.i.r.p. can be determined. ITU-R should also be asked to consider whether a reduction in downlink e.i.r.p. would be a desirable way of alleviating BSS-terrestrial compatibility constraints.

7 Feeder link e.i.r.p./uplink noise temperature

ITU-R should also be requested to advise on appropriate values for feeder link e.i.r.p. and receiver noise temperature to be used in the planning.

8 Polarization

Planning shall be based on circular polarization.

9 Removal of constraints during the planning process

In order to maintain as much flexibility for planning as possible (and thereby ensure that the maximum number of channels can be provided) the following constraints on planning should be removed (at least during the planning process) (but retaining Resolution 531, §§ 2.3 and 2.4):

- nominal 6° orbital spacing;
- Annex 7 orbital position limits;
- preservation of not brought into use current channels/orbital positions for entries in the current Plan;
- co-location of neighbouring countries at the same orbital position (except for cases where the neighbouring countries agree to merge their assignments into a regional beam as described in item 1 above).

10 Eclipse protection

The eclipse protection requirement used in the WARC-77 planning does not need to be maintained.

11 Elevation angle limits

It was considered that some limits on minimum earth station elevation angles should be applied. Subject to discussion the limits used by WARC-77 should be applied. [JWP 10-11S should be invited to advise.]

12 Number of orbital positions for each country

The number of orbital positions per country should, in general, be one. However, special consideration may be required to meet the requirements of large countries. [Retain current number of orbital positions.]

13 Treatment of existing systems

Currently operating systems (Type A) should be protected with current parameters. Whether or not this protection should extend beyond current generation is a matter for conference consideration.

Furthermore, to achieve maximum efficiency in the use of the orbit/spectrum resource the planning should be based on an homogeneous set of planning assumptions (especially for parameters such as downlink e.i.r.p. and receiving earth station antenna patterns). This requirement may be tempered somewhat by any requirement to allow the continued operation of existing systems and Article 4 systems.

14 Treatment of Article 4 systems in the Plan but not operating

(Type D) Article 4 assignments [received before ..... 1997] which have completed coordination and for which due diligence has been verified should be included in any replanning and be protected.

15 Use of existing assignments vis-à-vis Article 4

To avoid inefficient use of the orbital resource, the application of provision 4.1.1 of Appendices 30/30A should be tightened such that where Article 4 systems are introduced without using national assignments then those assignments will be considered to replace the national assignment and the national assignments will be removed from the Plan.

16 Cut-off date

To facilitate finalization of any Plan it will be important to establish a final cut-off date for inclusion of completed Article 4 systems of [6 months] before the conference that considers the replanning. For the purposes of the study only, Article 4 applications received after … need not be considered.

17 Compatibility studies

Since coordination between BSS feeder link earth stations and terrestrial services is in practice much easier than implied by the currently applied criteria of AP28, those constraints should not constrain the planning, but should be noted and the final resolution of the incompatibilities (if any) would be treated at the notification stage.]

[Requests for additional studies by the IRG

1) Annex 7 of Appendix 30

The IRG is requested to examine Annex 7 in the light of its studies for possible revision of the BSS Plans and in respect of the decisions taken by WRC-97, such as the reduction of downlink e.i.r.p. Its advice on the relevance of this annex in providing protection to all services sharing the Plan bands and particularly the Region 2 BSS Plans should be reported to WRC-99.

2) Avoidance of monopolization of the BSS resource

The IRG is requested to consider concerns identified by WRC-97 that modifications of the Plans for additional requirements or subregional systems should not monopolize the use of the bands by a country or a group of countries. Advice on how to address these concerns should be reported to WRC-99.

Requests for studies by ITU-R

ITU-R is requested to study and provide advice to the IRG on the following subjects.

1) Appropriate technical criteria for the studies addressing the following:

- digital-to-digital protection ratios;
- digital-to-analogue protection ratios;

- analogue-to-digital protection ratios;
- digital emission masks.

Plus associated calculation methods for the above.

2) A possible reduction in e.i.r.p. and related C/N and link budget margins as a means of alleviating the BSS terrestrial compatibility constraints.

3) Appropriate feeder link e.i.r.p. and receiver noise temperature.

4) Comparison of alternative polarization options.

5) The suitability of the minimum earth receive elevation angles used by WARC-77.

ANNEX B

Draft agenda items for future conferences

1 Agenda item for WRC-99

To consider the report of the Director of the Radiocommunication Bureau in accordance with Resolution [COM4-XB] and determine whether to initiate replanning for completion by a subsequent competent conference.

2 Agenda item for a future conference in the event WRC-99 confirms the feasibility of revising Appendices 30 and 30A in respect of Regions 1 and 3 in accordance with Resolution [COM4-XB]

To review and revise, as necessary, Appendices 30 and 30A in respect of the BSS Plans for Regions 1 and 3 in accordance with the decisions of WRC-99.]

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 331-E
18 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

WORKING GROUP 1 OF THE PLENARY

NOTE FROM THE CHAIRMAN OF COMMITTEE 4 TO THE CHAIRMAN OF WORKING GROUP 1 OF THE PLENARY

1) Committee 4 considered item 4 of the WRC-99 agenda and proposes the following modification:

"4. examination of the adequacy of the frequency allocations for HF broadcasting from about 4 MHz to 10 MHz taking into account the seasonal planning procedures adopted by WRC-97 and to consider bringing forward the date of availability of the HF bands allocated by WARC-92 to the broadcasting service in response to Resolution **COM4-16** and Resolution **COM4-14**."

2) Committee 4 made no proposals for the WRC-01 agenda relating to HF broadcasting issues.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 332(Rev.2)-E
19 November 1997
Original: English

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PLENARY MEETING

Trinidad and Tobago

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 4 - RESOLUTIONS AND RECOMMENDATIONS

This revision to Document 332(Rev.1) addresses the request that transitional measures be adopted for those systems currently in coordination under the procedures of Resolution 33 (WARC-79) prior to incorporation of those procedures within Articles **S9** and **S11** of the simplified Radio Regulations as revised by WRC-97.

A proposed transitional measure is submitted to the Conference for consideration in the form of revisions to Resolution 33 (WARC-79) as contained in the Attachment to this document.

Attachment: 1

ATTACHMENT

RESOLUTION No. 33 (Rev.WRC-97)

RELATING TO THE BRINGING INTO USE OF SPACE STATIONS IN THE BROADCASTING-SATELLITE SERVICE, PRIOR TO THE ENTRY INTO FORCE OF AGREEMENTS AND ASSOCIATED PLANS FOR THE BROADCASTING-SATELLITE SERVICE[1]

The World ~~Administrative Radio~~Radiocommunication Conference, (Geneva, ~~1979~~1997),

considering

a) that while Resolution **507** envisages plans for the broadcasting-satellite service, some administrations might nevertheless feel the need to bring stations in that service into use prior to such plans being established;

b) that administrations should, as far as possible, avoid proliferation of space stations in the broadcasting-satellite service before such plans have been established;

c) that a space station in the broadcasting-satellite service may cause harmful interference to terrestrial stations operating in the same frequency band, even if the latter are outside the service area of the space station;

d) that the procedures specified in ~~Article **11**~~Articles **S9** to **S14** and Appendix **S5** of the simplified Radio Regulations contain ~~no~~ provisions for coordination between ~~space~~ stations in the broadcasting-satellite service and terrestrial stations ~~and~~ between space ~~stations~~systems in that service and space systems of other administrations;

e) that there are many existing and planned stations in the broadcasting-satellite service not subject to agreements and associated plans that have submitted advance publication information (API) or a request for coordination under the existing Resolution **33 (WARC-79)** procedures and that some administrations are currently in coordination under these procedures;

resolves

1. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, and for satellite networks for which the API or the request for coordination has been received following [1 January 1999] the ~~following~~ procedures of Articles **S9** to **S14** shall be applied~~:~~ for the coordination and notification of stations in the broadcasting-satellite service and coordination and notification of other services in respect of that service;

~~[1] Replaces Resolution No **Spa2** 3 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.~~

2. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, and for satellite networks for which the API or the request for coordination has been received by the Bureau prior to [1 January 1999] the procedure in sections A to C in this Resolution shall be applied;

3. that a future conference review the requirement for the procedures in this Resolution.

NOC **Section A. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Terrestrial Stations**

NOC **Section B. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Space Systems of Other Administrations**

NOC **Section C. Notification, Examination and Recording in the Master Register of Assignments to Space Stations in the Broadcasting-Satellite Service Dealt With under this Resolution**

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 332(Rev.1)-E

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PLENARY MEETING

Trinidad and Tobago

PROPOSALS FOR THE WORK OF THE CONFERENCE

TRD/332/1
ADD

DRAFT RESOLUTION [TRD-1]

The World Radiocommunication Conference (Geneva, 1997),

recognizing

that current versions of Articles **S9** through **S14**, among others, contain provisions that are subject to change up to and throughout WRC-97 to try and ensure consistency between all their provisions,

considering

a) that the procedures of Articles **S9** and **S11** are still evolving and any oversight may create the risk of unintended but detrimental consequences to the adequate protection of space and terrestrial services during coordination;

b) that there are many existing and planned stations in the broadcasting-satellite service, not subject to agreements and associated plans that have submitted advance publication information (**AP4**) and/or request for coordination information (**AP3**) under Resolution **33**;

c) that administrations are currently in coordination under the procedures of Resolution **33**;

d) that, pending the entry into force and approval of the revised procedures of the Simplified Radio Regulations, there could be regulatory difficulties in considering which procedures could be applied in completing coordination,

requests

that the procedures contained in Resolution **33** (**WARC-79**) be maintained for the coordination and notification of stations in the broadcasting-satellite service and other services in respect of that service for those systems for which advance publication information or request for coordination information has been received by the Bureau prior to 22 November 1997.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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COMMITTEE 4

Trinidad and Tobago

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 4 - RESOLUTIONS AND RECOMMENDATIONS

Revision to Resolution 33 as proposed by Document DT/143

Introduction

Current versions of Articles S9 through S14, among others, contain provisions that are subject to change up to and throughout WRC-97 to try and ensure consistency between all their provisions.

considering

a) that the procedures of Articles **S9** and **S11** are still evolving and any oversight may create the risk of unintended but detrimental consequences to the adequate protection of space and terrestrial services during coordination;

b) that there are many existing and planned stations in the broadcasting-satellite service, not subject to agreements and associated plans that have submitted advance publication information (AP4) and/or request for coordination information (AP3) under Resolution **33**;

c) that administrations are currently in coordination under the procedures of Resolution **33**;

d) that new regulatory approaches may need to be carefully considered in order to avoid adverse effects on networks undergoing different phases of the procedures;

e) that experience needs to be gained in the application of the procedures of the Simplified Radio Regulations;

f) that, pending the entry into force and approval of the revised procedures of the Simplified Radio Regulations, there could be regulatory difficulties in considering which procedures could be applied in completing coordination,

requests

that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, the procedures contained in Resolution **33** be maintained for the coordination and notification of stations in the

broadcasting-satellite service and other services in respect of that service for those systems for which advance publication information or request for coordination information has been received by the Bureau prior to [22 November 1997]; or

that transitional measures be adopted to protect systems currently in coordination under the procedures of Resolution **33**, prior to the incorporation of those procedures within Articles **S9** and **S11** as modified by WRC-97.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 333-E
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

FIFTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

ARTICLE S5

MOD S5.134 The use of the bands 5 900 - 5 950 kHz, 7 300 - 7 350 kHz, 9 400 - 9 500 kHz, 11 600 - 11 650 kHz, 12 050 - 12 100 kHz, 13 570 - 13 600 kHz, 13 800 - 13 870 kHz, 15 600 - 15 800 kHz, 17 480 - 17 550 kHz and 18 900 - 19 020 kHz by the broadcasting service is limited to single-sideband emissions with the characteristics specified in Appendix **S11** to the Radio Regulations or to any other spectrum efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference.

SUP S5.135 Make consequential modifications to the Table of Frequency Allocations.

SUP S5.148 Make consequential modifications to the Table of Frequency Allocations.

SUP ARTICLE S12A

RESOLUTION 517 (Rev.WRC-97)

TRANSITION FROM DOUBLE-SIDEBAND (DSB) TO SINGLE-SIDEBAND (SSB) OR OTHER SPECTRUM-EFFICIENT MODULATION TECHNIQUES IN THE HF BANDS BETWEEN 5 900 kHz AND 26 100 kHz ALLOCATED TO THE BROADCASTING SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the HF bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz are severely congested;

b) that SSB techniques provide a more efficient utilization of the frequency spectrum than DSB techniques;

c) that SSB techniques enable reception quality to be improved;

d) that Recommendation **515 (HFBC-87)** encourages the accelerated design and manufacture of SSB transmitters and receivers;

e) Appendix **S11** to the Radio Regulations concerning the SSB system specification in the HF broadcasting services;

f) that rapid developments are taking place in digital sound broadcasting technologies;

g) that digital modulation or other spectrum-efficient modulation techniques are expected to provide the means to achieve the optimum balance between sound quality, circuit reliability and bandwidth;

h) that digitally modulated emissions can, in general, provide network coverage more efficiently than amplitude modulated transmissions by using fewer simultaneous frequencies and less power;

i) that the lifetime of a transmitter is at least twenty years;

j) that it is economically unattractive, using current technology, to convert existing conventional DSB broadcasting systems to SSB operation;

k) that some existing DSB transmitters have been used with digital modulation techniques without transmitter modifications;

l) that the lifetime of a receiver is of the order of ten years;

m) that the Radiocommunication Sector is carrying out urgent studies on the development of broadcast digital modulation emissions in the bands allocated to the broadcasting service below 30 MHz;

n) that other spectrum-efficient modulation techniques may be developed in the future,

resolves

1 that the procedure in the Annex to this Resolution shall be used for the purpose of ensuring an orderly transition from DSB to SSB or other spectrum-efficient modulation techniques

recommended by ITU-R in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service;

2 that the final date for the cessation of DSB emissions specified in the Annex to this Resolution shall be periodically reviewed by competent future world radiocommunication conferences in the light of the latest available complete statistics on the worldwide distribution of SSB and other spectrum-efficient modulation technique transmitters and receivers, as called for in Resolution **COM4-14**,

instructs the Director of the Radiocommunication Bureau

to compile and maintain the statistics referred to in *resolves* 2, to make these statistics available to administrations and to submit summaries thereof to the competent future world radiocommunication conferences,

invites ITU-R

to continue its studies on digital techniques in HF broadcasting as a matter of urgency with a view to the development of this technology for future use in HF broadcasting,

invites administrations

to assist the Director of the Radiocommunication Bureau by providing the relevant statistical data and to participate in ITU-R studies on matters relating to the development and introduction of digitally modulated transmissions in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service.

ANNEX TO RESOLUTION 517 (Rev.WRC-97)

PROCEDURE FOR THE TRANSITION FROM DOUBLE-SIDEBAND (DSB) TO SINGLE-SIDEBAND (SSB) OR OTHER SPECTRUM-EFFICIENT MODULATION TECHNIQUES IN THE HF BANDS BETWEEN 5 900 kHz AND 26 100 kHz ALLOCATED TO THE BROADCASTING SERVICE

1 The early introduction of SSB or other spectrum-efficient modulation techniques recommended by ITU-R is encouraged.

2 All DSB emissions shall cease not later than 31 December 2015, at 2359 hours UTC.

3 SSB emissions shall comply with the characteristics specified in Appendix **S11** to the Radio Regulations.

4 Other spectrum-efficient modulation techniques, including digital, shall comply with the characteristics to be recommended by ITU-R.

5 After 31 December 2015, 2359 hours UTC, SSB emissions shall comply with the characteristics specified in Appendix **S11** to the Radio Regulations which, *inter alia*, require a carrier reduction of 12 dB relative to peak envelope power.

6 Until 31 December 2015, 2359 hours UTC, SSB emissions intended for reception by DSB receivers with envelope demodulation, in the bands currently used under Article **S12**, shall have a carrier reduction of 6 dB relative to peak envelope power.

7 SSB emissions with a carrier reduction of 12 dB relative to peak envelope power can also be introduced in the spectrum allocated for the type of emission described in § 6 above.

8 Other spectrum-efficient modulation techniques recommended by ITU-R, including digital, can also be introduced in the HF bands between 5900 kHz and 26 100 kHz allocated to the broadcasting service.

9 Until 31 December 2015, 2359 hours UTC, whenever an administration replaces a DSB emission by an emission using SSB or other spectrum-efficient modulation techniques, including digital, it shall ensure that the level of interference is not greater than that caused by the original DSB emission.

DRAFT RESOLUTION [COM4-6]

INFORMATION RELEVANT IN THE APPLICATION OF ARTICLE S12

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference adopted Article **S12** as a simple and flexible seasonal planning procedure based on coordination for HF broadcasting;

b) that Article **S12** responds to the intent of Resolution **508 (WARC-79)** and Resolution **523 (WARC-92)**;

c) that Article **S12** makes reference to the Rules of Procedure,

considering further

d) that appropriate Rules of Procedure are to be developed by the Bureau and adopted by the Radio Regulations Board,

resolves to instruct the Director of the Radiocommunication Bureau

to consider the information contained in the Annex in developing the Rules of Procedure,

urges administrations

1 to support the Director of the Radiocommunication Bureau in the preparation of these Rules of Procedure and in the development and testing of any accompanying computer software;

2 to submit their schedules in a common electronic format to be defined in the Rules of Procedure,

requests the Director of the Telecommunication Development Bureau

to consider the provision of the necessary funding to enable developing countries to participate fully in the application of Article **S12** and relevant radiocommunications seminars.

ANNEX

This Annex responds to the need for information in the application of Article **S12**; the flowchart in Description 2 provides an overview of the Procedure.

1 Software development

The Procedure will require a number of user friendly software modules to be developed, tested and supplied to administrations by the Bureau. This will ensure that the same software modules are used by administrations and the Bureau for the analysis of the schedules.

The Bureau should:

- develop the aforementioned software with assistance from administrations;
- distribute this software, together with user instructions and relevant documentation;
- organize appropriate training in the use of the software;
- monitor the functional performance of the software and if needed make necessary modifications.

2 Software modules

Data capture of requirements

A new module will be required that permits the capture of all data elements detailed in Description 3. This module should also contain validation routines that prevent inconsistent data being captured and sent to the Bureau for processing.

Propagation calculation

This new module should calculate the signal strength and other necessary data at all relevant test points as described in Descriptions 1 and 4.

This module should also include an option that allows administrations to select the optimum frequency bands for their requirements.

The output format of the data and medium should be such that it allows easy publication and distribution of the results to all administrations.

The results of these calculations should be displayable in a graphical format.

Compatibility analysis

This module should use the output of the propagation calculation to provide a technical analysis of a requirement both alone and in the presence of other requirements as in Description 4. This analysis is used in the coordination process.

The values for the parameters given in Description 4 should be user selectable but the recommended default values should be used in the absence of other values.

The results of this analysis should be capable of being displayed in a graphical format for a defined service area as in Description 4.

Data query

This module should enable the user to perform typical data query functions.

DESCRIPTION 1

SELECTION OF SUITABLE FREQUENCY BAND(S)

General

In order to assist broadcasters and administrations in the preparation of their HF broadcasting requirements, the Bureau will prepare and distribute suitable computer software. This should be easy to use and the output should be easy to understand.

User input data

The user should be able to enter:

– the name of the transmitting station (for reference purposes);
– the geographic coordinates of the transmitting station;
– the transmitter power;
– the bands which are available for use;
– hours of transmission;
– sun spot number;
– months during which a service is required;
– the available antenna types, together with the relevant directions of maximum radiation;
– the required coverage area specified as a set of CIRAF zones and quadrants (or by means of relevant geographic information).

It is desirable that the software should be able to store the above information, once it has been entered correctly, and provide the user with an easy means of recalling any previously entered information.

Methodology and data

The software should use:

– Recommendation ITU-R BS.705 for the calculation of antenna patterns;
– Recommendation ITU-R P.533 for the prediction of wanted field strength values;
– Recommendation ITU-R P.842 for the calculation of reliability values.

The set of 911 test points (agreed at HFBG-87) should be used, supplemented where necessary with test points based on a geographic grid.

The software should calculate the field strength values and the fading margins at each test point inside the required service area for each of the frequency bands declared to be available, taking account of the relevant transmitting antenna characteristics for each frequency band. The desired RF signal to noise ratio should be user selectable with a default value of 34 dB.

The dates for which calculations are made should be user selectable, the default values being:

– 0.5 month after the start of the season;

– mid-point of the season;

– 0.5 month before the end of the season.

The times for which calculations are made should be user selectable, the default values being:

– 30 minutes past the hour in which the requirement starts;

– 30 minutes past each successive hour until the hour in which the requirement stops.

Software output data

For rapid assessment of suitable bands, the software should calculate:

– the basic service reliability (BSR) for each available band and for the relevant test points from the set of 911 test points;

– the basic area reliability (BAR) for each available band and for the relevant test points from the set of 911 test points.

In order to provide information about the geographic distribution of wanted signal values within the required service area, additional results should be available from the software:

– a listing should be available giving, for each of the available bands, the basic circuit reliability (BCR) for each of the test points (from the set of 911 test points) inside the required service area.

In some cases, a graphical display of the BCR values throughout the required service area may be desirable. These values should be calculated at test points at 2 degree intervals of latitude and longitude throughout the required service area.

The BCR values should be displayed graphically as a set of coloured or hatched "pixels" scaled in steps of 10 per cent. It should be noted that:

– reliability values relate to the use of a single frequency band;

– reliability values are a function of the desired RF signal-to-noise ratio (user selectable);

– the field strength values should be calculated by the supplied software on the user's own computer hardware. The software supplied should calculate the relevant reliability values based on these field strength values and the user supplied desired signal to noise values.

DESCRIPTION 2

TIME SEQUENCE FOR THE PROCEDURE

In the sequence outlined below, the start date for a given schedule period is defined as D and the end date for the same schedule period is defined as E.

Date	**Action**
D-4 months	Closing date for Administrations to send their schedules[1] to the Radiocommunication Bureau (Bureau) preferably by electronic mail or on 3.5" diskette (720 kbytes or 1.44 Mbytes). Schedule data will be made available via TIES as soon as it has been processed.
D-2 months	Bureau to send to administrations a consolidated schedule (the Tentative Schedule) together with a complete compatibility analysis[2].
D-2 weeks	Closing date for receipt of amendments from administrations to correct errors and other changes resulting from the coordination process to ensure that this information appears in the schedule for date D.
D	Bureau to issue the High Frequency Broadcasting Schedule and compatibility analysis.
D to E	Administrations to correct errors and coordinate in-season changes of requirements sending information to the Bureau as it becomes available.
	Bureau to issue updates of the Schedule and compatibility analysis at intervals of two months.
E	Closing date for receipt of final operational schedules from administrations to Bureau. No input is needed if there have been no changes to the information previously sent.
E+1 month	Bureau to send to administrations the final consolidated schedule (the Final Schedule) together with a compatibility analysis.

Figure 1 shows, in flow chart form, the time sequence for the Procedure.

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[1] See Description 3.

[2] See Description 4. The schedules and the results of the analyses should be available on CD-ROM and in TIES.

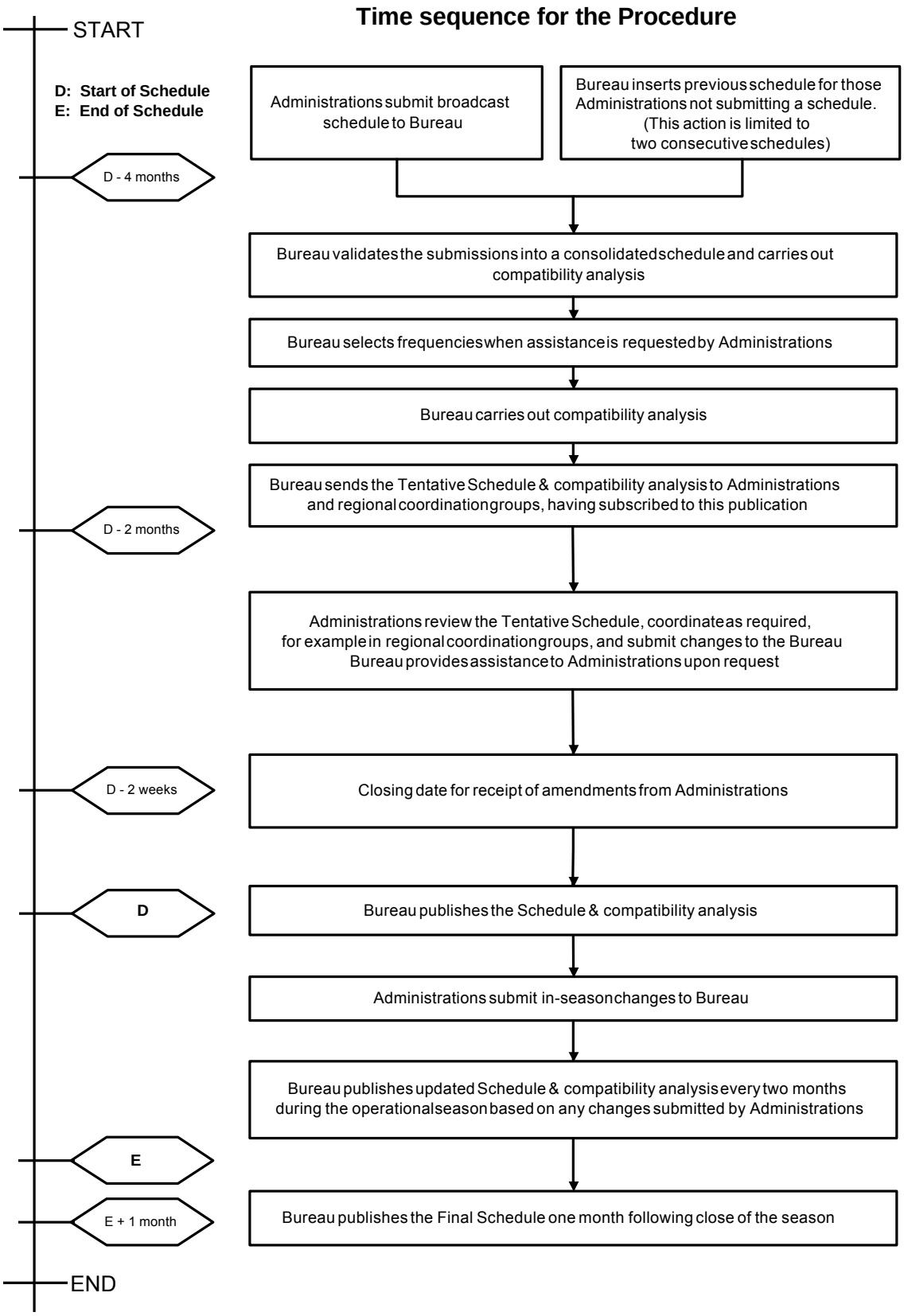
Time sequence for the Procedure
START
D: Start of Schedule
E: End of Schedule
Administrations submit broadcast schedule to Bureau
Bureau inserts previous schedule for those Administrations not submitting a schedule. (This action is limited to two consecutive schedules)
D - 4 months
Bureau validates the submissions into a consolidated schedule and carries out compatibility analysis
Bureau selects frequencies when assistance is requested by Administrations
Bureau carries out compatibility analysis
Bureau sends the Tentative Schedule & compatibility analysis to Administrations and regional coordination groups, having subscribed to this publication
D - 2 months
Administrations review the Tentative Schedule, coordinate as required, for example in regional coordination groups, and submit changes to the Bureau
Bureau provides assistance to Administrations upon request
D - 2 weeks
Closing date for receipt of amendments from Administrations
D
Bureau publishes the Schedule & compatibility analysis
Administrations submit in-season changes to Bureau
Bureau publishes updated Schedule & compatibility analysis every two months during the operational season based on any changes submitted by Administrations
E
E + 1 month
Bureau publishes the Final Schedule one month following close of the season
END

FIGURE 1

DESCRIPTION 3

SPECIFICATION OF INPUT DATA FOR A REQUIREMENT

The fields needed for a given requirement and their specifications are:

– frequency in kHz, up to 5-digit integer;
– start time, as 4-digit integer;
– stop time, as 4-digit integer;
– target service area, as a set of up to 12 CIRAF zones and quadrants up to a maximum of 30 characters;
– site code, a 3 character code from a list of codes, or a site name and its geographic coordinates;
– power in kW, up to 4-digit integer;
– azimuth of maximum radiation;
– slew angle, up to 2-digit integer representing the difference between the azimuth of maximum radiation and the direction of unslewed radiation;
– antenna code, up to 3-digit integer from a list of values, or a full antenna description, as given in Recommendation ITU-R BS.705;
– days of operation;
– start date, in the case that the requirement starts after the start of the schedule;
– stop date, in the case that the requirement stops before the end of the schedule;
– modulation choice, to specify if the requirement is to use DSB or SSB (see Recommendation ITU-R BS.640). This field may be used to identify any other type of modulation when this has been defined for use by HFBC in an ITU-R Recommendation;
– administration code;
– broadcasting organization code;
– identification number;
– identification of synchronization with other requirements.

DESCRIPTION 4

COMPATIBILITY ANALYSIS

General

In order to assess the performance of each requirement in the presence of noise and the potential interference from other requirements using the same or adjacent channels, it is necessary to calculate the relevant reliability values. The Bureau will prepare suitable software to enable this to be done, taking account of user requirements in terms of desired signal-to-noise and signal-to-interference ratios.

Input data

The programme schedule for a given season - this may be either an initial consolidated schedule (to permit assessment of those requirements which need coordination) or the high frequency broadcasting schedule (to provide assessment of the likely performance of requirements during the relevant season).

Methodology and data

The software should use:

– Recommendation ITU-R BS.705 for the calculation of antenna patterns;

– Recommendation ITU-R P.533 for the prediction of thewanted field strength values at each test point for each wanted requirement;

– Recommendation ITU-R P.533 for the prediction of the potentially interfering field strength values from all other co-channel or adjacent channel requirements at each test point for each wanted requirement;

– Recommendations **517 (HFBC-87)** and ITU-R BS.560 for adjacent channel RF protection ratios;

– Recommendation ITU-R P.842 for the calculation of reliability values.

The set of 911 test points (agreed at HFBG87) should be used, supplemented where necessary with test points based on a geographic grid.

The software should calculate the wanted and unwanted field strength values and the fading margins at each test point inside the required service area.

The desired RF signal-to-noise and RF protection ratios should be user selectable, the default values being 34 dB and 17 dB (co-channel case) respectively. The latter values should be used by the Bureau for its compatibility analyses.

The dates for which a compatibility analysis is made should be user selectable, the default values being:

– 0.5 month after the start of the season;

– mid-point of the season;

– 0.5 month before the end of the season.

These default values should be used by the Bureau for its compatibility analyses.

The times for which a compatibility analysis is made should be user selectable, the default values being:

– 30 minutes past the hour in which the requirement starts;

– 30 minutes past each successive hour until the hour in which the requirement ends.

These default values should be used by the Bureau for its compatibility analyses.

Software output data

For rapid assessment of the performance of a requirement, the software should calculate:

– the overall service reliability (OSR) for the relevant test points from the set of 911 test points;

– the overall area reliability (OAR) for the relevant test points from the set of 911 test points.

In order to provide information about the geographic distribution of wanted and unwanted signal values for a given requirement, additional results should be available from the software:

– a listing should be available giving the overall circuit reliability (OCR) for each of the relevant test points from the set of 911 test points.

In some cases, a graphical display of the coverage achieved throughout a required service area may be desirable. These values will need to be calculated by the user (with the supplied software and on the user's own computer hardware) at test points at 2 degree intervals of latitude and longitude throughout the required service area. The values should be displayed graphically as a set of coloured or hatched pixels in steps of 10 per cent. It should be noted that:

– reliability values relate to the use of a single frequency;

– reliability values are a function of the desired RF signal-to-noise and RF protection ratios (both user selectable);

– the field strength values for the test points (from the set of 911 test points) inside the required service area should be calculated by the Bureau. The software supplied should calculate the relevant reliability values based on these pre-calculated field strength values and the user supplied desired signal-to-noise and signal-to-interference values.

– the field strength values for the test points at 2 degree intervals should be calculated using the supplied software on the user's own computer hardware. The software supplied should calculate the relevant reliability values based on these field strength values and the user supplied desired signal-to-noise and signal-to-interference values.

RESOLUTION [COM4-14]

SURVEY OF HF BROADCASTING TRANSMITTER AND RECEIVER STATISTICS AS CALLED FOR IN RESOLUTION 517 (Rev.WRC-97)

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that Resolution **517 (Rev.WRC-97)** provides for the replacement, by 31 December 2015, of double-sideband (DSB) emissions in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service;

b) that Resolution **517 (Rev.WRC-97)** resolves that the date in *considering* a) shall be periodically reviewed by competent future world radiocommunication conferences in the light of the latest available complete statistics on the worldwide distribution of SSB and other spectrum-efficient modulation technique transmitters and receivers;

c) that ITU-R is working in response to Question ITU-R 217/10 "Digital Broadcasting in AM Bands" and to Question ITU-R 224/3 "The Prediction of System Performance and Reliability for Digital Modulation Techniques at HF",

noting

a) that Recommendation No. **515 (HFBC-87)** recommended that new transmitters installed after 31 December 1990 be capable of operating in the SSB mode;

b) that Recommendation No. **515 (HFBC-87)** invited administrations to encourage receiver manufacturers to begin producing low-cost receivers capable of receiving DSB and SSB broadcasting emissions by 31 December 1990,

recognizing

a) that insufficient information is known on the availability and use of HF broadcasting SSB transmitters and receivers;

b) that broadcasters, unlike most users of other radiocommunication services, have no control over the receivers used by their listeners;

c) that activity is continuing on the development of digital modulation systems for recommendation by ITU-R,

resolves

that the first survey of transmitter and receiver statistics called for in Resolution **517 (Rev.WRC-97)** should be conducted as a matter of urgency, such that its results will be available to [WRC-99] for consideration.

DRAFT RESOLUTION [COM4-15]

MEASURE TO SOLVE THE INCOMPATIBILITY BETWEEN BSS IN REGION 1 AND FSS IN REGION 3 IN THE FREQUENCY BAND 12.2 - 12.5 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the 12.2 - 12.5 GHz frequency band is allocated on a primary basis to the BSS in Region 1 and FSS in Region 3;

b) that both services should have equitable access to the orbit and spectrum resources;

c) that at present, the procedures of Appendix 30 applicable to the FSS in Region 3 in respect of the BSS Plan in Region 1 are such that only the Plan assignments are protected, so that it could lead to situations where an FSS system could receive interference from a BSS system, or the opposite, but for which currently there are no regulatory provisions which require any type of coordination procedure to be undertaken;

d) that several modifications to the Regions 1 and 3 BSS Plan, which have assignments in the 12.2 - 12.5 GHz frequency band, have entered into the Plan by successfully applying the current Article 4 procedure, or are still applying the current Article 4 modification procedure. Some of these assignments have already been brought into use;

e) that some Region 3 FSS systems are currently operating, or are under coordination, applying relevant Radio Regulatory provisions,

resolves

1 that the Radiocommunication Bureau shall apply the criteria of Annex 4 to Appendix 30 to identify:

– the BSS assignments in the 12.2 - 12.5 GHz frequency band, submitted under paragraphs 4.1a) or 4.1b) of Article 4 of Appendix 30, for which complete Annex 2 information has been received by the Bureau before 27 October 1997 and those assignments which are affected by Region 3 FSS networks for which complete Appendix 3 or Appendix S4 information, submitted under paragraph 7.2.1 of Article 7 of the same Appendix, has been received by the Bureau after the date of receipt of the above-mentioned Annex 2 information for BSS and before these modifications and additions have been included into the Regions 1 and 3 BSS Plan.

– The Radiocommunication Bureau shall also identify, the administrations which are affecting these BSS assignments in the 12.2 - 12.5 GHz frequency band;

2 that the Radiocommunication Bureau shall apply the criteria of Annex 1 to Appendix 30 and relevant Rules of Procedure to identify:

– the Region 3 FSS networks in the frequency band 12.2 - 12.5 GHz, and for which complete Appendix 3 or Appendix S4 information, submitted under paragraph 7.2.1 of Article 7 of Appendix 30, has been received by the Bureau before 27 October 1997 which are affected by BSS assignments in the 12.2 - 12.5 GHz frequency band, submitted under paragraphs 4.1a) or 4.1b) of Article 4 of the same Appendix, for which complete Annex 2 information has been received by the Bureau prior to the date of the receipt of the above-mentioned Appendix 3 or Appendix S4 information but for which the date of inclusion of these modifications and

additions in the BSS Plan, is after the date of receipt of the above-mentioned Appendix 3 or Appendix S4 information.

– The Radiocommunication Bureau shall identify, the administrations which are affecting the above-mentioned Region 3 FSS networks in the 12.2 - 12.5 GHz frequency band;

3 the administrations which have been identified by the BR in *resolves* 1 and 2 above shall make all possible mutual efforts to solve the interference problems.

NOTE 1 - The implications of this Resolution on the workload of the Bureau has to be taken into account.

NOTE 2 - Any retroactive application of this Resolution shall in no way have any implications regarding the status of both the BSS or the FSS that may be identified by the Bureau.

RESOLUTION [COM4-16]

INFORMATION ON THE OCCUPANCY BY FIXED AND MOBILE SERVICES IN THE ADDITIONAL HF BANDS ALLOCATED BY WARC-92 TO THE BROADCASTING SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97, in response to Resolution **529 (WRC-95)** did not recommend a date or dates by which the fixed and mobile services, in the additional HF bands allocated by WARC-92 to the broadcasting service, would no longer be protected, due to insufficient information on the current use of these bands by the fixed and mobile services;

b) that the fixed and mobile services in use in each of the above-mentioned bands shall be protected until 1 April 2007;

c) that Resolution **21 (Rev.WRC-95)** established a procedure for the transfer of the fixed and mobile service assignments in the above-mentioned bands to other appropriate frequency bands;

d) that it may be possible and desirable for the broadcasting service to use parts of the above-mentioned bands prior to 1 April 2007,

resolves to instruct the Director of the Radiocommunication Bureau

1 to present a report to CPM-99 and [WRC-99], providing information gathered by means of consultation with administrations, on the occupancy by fixed and mobile services in each of the additional HF bands allocated by WARC-92 to the broadcasting service;

2 to provide to CPM-99 and [WRC-99] any new information with regard to possible sharing between broadcasting and other services in the HF bands, together with that information already provided to WARC-92,

urges administrations

1 to provide to the Director of the Radiocommunication Bureau the information which would permit the action in*resolves* 1 and 2 to be carried out;

2 to submit to [WRC-99] proposals with regard to the status to be given prior to 1 April 2007 to the broadcasting service in each of the additional HF bands, or portions thereof, allocated by WARC-92 to the broadcasting service.

RECOMMENDATION No. 503 (Rev.~~HFBC-87~~WRC-97)

HF BROADCASTING

The World ~~Administrative Radio Conference, for the Planning of the~~HF Bands ~~Allocated to the Broadcasting Service (Geneva, 198~~7~~)~~Radiocommunication Conference (Geneva, 1997),

considering

a) the congestion ~~of~~in the HF broadcasting bands;

b) the extent of adjacent channel interference;

noting

the possibility of improving the situation by implementing pertinent ~~CCIR~~ITU-R Recommendations;

recommends that administrations

1. pay special attention to the provisions for "out-of-band spectrum" contained in ~~CCIR~~ Recommendation ITU-R SM.328-~~6~~9;

2. encourage, to the maximum extent possible, manufacturers to design and build HF broadcasting receivers that conform to ~~CCIR~~ Recommendation ITU-R SM.332-4 concerning the selectivity of receivers;

invites administrations

to take advantage, to the maximum extent practicable, of synchronized frequency transmitter operation, taking into account Recommendation ~~CCIR~~ITU-R BS.702-1~~205-2~~;

invites ~~the CCIR~~ITU-R

to carry out further studies in relation to the Recommendations mentioned above, taking into account the requirements of HF broadcasting, with a view to updating these three Recommendations whenever necessary.

RECOMMENDATION NO. 515 (~~HFBC-87~~REV.WRC-97)

INTRODUCTION OF HF BROADCASTING TRANSMITTERS AND RECEIVERS CAPABLE OF ~~BOTH DOUBLE-SIDEBAND (DSB) AND SINGLE-SIDEBAND (SSB) MODES OF OPERATION~~ OPERATION WITH SPECTRUM-EFFICIENT MODULATION TECHNIQUES

~~The World Administrative Radio Conference for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987)~~The World Radiocommunication Conference (Geneva, 1997),

considering

a) Resolution **517 (~~HFBC-87~~Rev.WRC-97)** relating to the introduction of SSB~~[1] techniques~~ or other spectrum-efficient modulation techniques, including digital,

~~*b) that the First Session of the present Conference (Geneva, 1984), in its Report to the Second Session, dealt with the progressive introduction of SSB emissions*~~;

b) that industry should be encouraged to manufacture appropriate transmitters and receivers;

~~*c) that incentives clearly need to be provided to industry to manufacture receivers with synchronous demodulation, and appropriate transmitters;*~~

~~*d)* Appendix **45** to~~*c)* Appendix **S11** of the Radio Regulations relating to the SSB system specification for the HF bands allocated to the broadcasting service,

considering further

~~*e)*~~*a)* that the introduction of SSB or other spectrum-efficient modulation techniques can be accelerated by the appropriate transmitting and receiving equipment being more widely available in good time;

~~*f)*~~*b)* that lead-time is necessary for manufacturers to produce ~~equipment capable of working either in both modes, SSB[1] and DSB, or in the SSB[1] mode alone~~ appropriate equipment,

~~*recommends to administrations*~~

~~that new transmitters which are installed after 31 December 1990 should, as far as possible, be capable of working either in both modes, SSB[1] and DSB, or in the SSB mode alone~~,

invites ~~the CCIR~~ITU-R

to complete its studies into receivers for ~~SSB~~ spectrum-efficient modulation techniques,

~~invites~~recommends administrations

to bring to the notice of the transmitter and receiver manufacturers the most recent results of relevant ~~CCIR~~ITU-R studies on spectrum-efficient modulation techniques suitable for use at HF as well as the information referred to in *considering* *c)~~d)~~* ~~and to encourage them to start to produce, by 31 December 1990, low-cost receivers having synchronous demodulators capable of receiving both DSB and SSB broadcasting emissions~~,

---

~~[1] With the possibility of both a 6 dB and a 12 dB carrier reduction relative to peak envelope power.~~

instructs the Secretary-General

to transmit this Recommendation to the International Electrotechnical Commission (IEC).

DRAFT RECOMMENDATION [4-A]

COORDINATION OF HF BROADCASTING SCHEDULES IN THE BANDS ALLOCATED TO THE BROADCASTING SERVICE BETWEEN 5 900 kHz AND 26 100 kHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that Article **S12** establishes the principles and the Procedure for use of the frequency bands allocated to the HF broadcasting service between 5 900 kHz and 26 100 kHz;

b) that the aforementioned principles stipulate, *inter alia*, that the Procedure should promote the development of a voluntary coordination process among administrations to resolve incompatibilities;

c) that the Procedure itself encourages administrations to coordinate their schedules with other administrations as far as possible prior to submission;

d) that the development of coordination among administrations with the assistance of the Bureau, when requested would result in better use of the spectrum allocated to the HF broadcasting service between 5 900 kHz and 26 100 kHz,

recognizing

a) that the participation of broadcasting organizations in this coordination process would make the task of resolving incompatibilities easier;

b) that multilateral coordination of the use of the HF broadcasting bands is already practiced on an informal basis in various regional coordination groups[1] ,

recommends administrations

to promote, as far as possible, regular coordination of their broadcasting schedules among appropriate regional coordination groups of administrations or broadcasting organizations in order to resolve or reduce incompatibilities, through actual (bilateral or multilateral) meetings or by correspondence (telephone, facsimile, email, etc.).

_____

[1] Not related to the ITU Regions.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 334-E
26 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

SIXTH PLENARY MEETING

Friday, 14 November 1997, at 1635 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Approval of the agenda	OJ/148; 249
2	Report of Working Group PLEN-2	249, 258
3	Announcement by the Indonesian delegation	-

1 Approval of the agenda (Documents OJ/148; 249)

1.1 The **delegate of Mexico**, supported by the **delegates of Tonga**, **Papua New Guinea**, **the United States**, **Japan**, **the Islamic Republic of Iran**, **Malaysia**, **Russia**, **Pakistan** and **Jordan,** objected to the inclusion of Document 249 in the agenda for consideration in conjunction with the report of Working Group PLEN-2 (in Document 258).

1.2 The **delegate of Luxembourg**, supported by the **delegates of the Netherlands**, **Australia**, **Germany** and **the Czech Republic**, stressed that Document 249 should be introduced and that discussion of Documents 249 and 258 should take place under the same agenda item. Endorsing that view, the **delegate of Germany** pointed out that the countries which had expressed reservations concerning the decisions of Working Group PLEN-2 with respect to financial due diligence procedures were listed in section II f) of Document 258.

1.3 The **Chairman** acknowledged the right of those administrations submitting Document 249 to introduce it in the Plenary. Furthermore, Documents 249 and 258 were indeed related, as both dealt with the issue of due diligence with reference to Resolution 18 (Kyoto, 1994).

1.4 The **delegate of Mexico**, invoking No. 399 of the Convention, moved for closure of the debate.

1.5 Opposing closure of debate, the **delegate of Netherlands** underlined that it was the sovereign right of any Member State to introduce a document that it had submitted in the Plenary. The **delegate of Australia** endorsed that view.

1.6 The **Chairman** invited the meeting to proceed to a vote on the motion for closure of debate.

1.7 The motion for closure of debate was **carried** by 32 votes to 20, with 28 abstentions.

1.8 The **Chairman** then invited the meeting to proceed to a vote on the question under discussion, namely, the request to keep Document 249 on the agenda.

1.9 The request was **approved** by 30 votes to 27, with 18 abstentions.

1.10 The **delegate of Syria** stated that it was unusual in the history of ITU that there had been a motion to close debate and to vote on the request of a number of administrations to submit a proposal to the Plenary for its consideration because they were not satisfied with the way the matter had been dealt with at a lower level. He stated that he was opposed to the way this had been done since, if this practice was followed, administrations could be prevented from raising issues at the Plenary level.

1.11 The **delegate of Algeria** was concerned that the will of the Plenary had not been accurately reflected in the votes. While any delegation submitting a document should have the right to introduce that document, the question at issue at the present meeting had been the timing of the introduction of Document 249 and whether further consultations could usefully take place before the document was introduced.

1.12 The agenda, as set out in Document OJ/148, was **approved**.

2 Report of Working Group PLEN-2 (Documents 249, 258)

2.1 The **Chairman of Working Group PLEN-2**, introducing the report of the Working Group contained in Document 258, drew attention, under section I, to part 1 of Annex 1 to the document which set out the recommendations in respect of regulatory time limits forwarded by the Working

Group to Committee 4. It was proposed to reduce the time period for bringing a new satellite network into use to a total of seven years, with an extension from the fifth to the seventh years depending on a number of conditions, including due diligence requirements, being met. For those systems already in the process of introduction, the former six-year period would apply, with an automatic three-year extension, again qualified by due diligence requirements. Turning to part 2 of Annex 1, he said that the Working Group had further agreed that the advance publication information should be substantially reduced for those systems that were subject to coordination. The advance publication information would be cancelled if it were not followed within 24 months by the submission of a coordination request, in accordance with Appendix 3 to the Radio Regulations. A resolution on entry into force of the provisions set out in parts 1 and 2 of Annex 1 would be required, and Committee 4 had been requested to produce appropriate regulatory text for inclusion in the Radio Regulations.

2.2 Referring to section II of Document 258, he remarked that while all participants in the Working Group had acknowledged the need to review the question of due diligence, it had been difficult to agree on the means by which due diligence could be achieved. After careful consideration of the two options, financial due diligence and administrative due diligence, it had been decided to support the latter. Draft Resolution [GTPLEN2-1] contained in Annex 2 to the document represented a carefully crafted series of compromises on both the concept and the detailed regulatory features of a due diligence approach. In establishing that approach, four principles had guided the work of the Working Group: that the procedures should be equitable, taking into account the interests of both developing and developed countries; that they should not be overly bureaucratic; that they should be realistic and workable; and that they should take into account the systems submitted prior to the development of the new procedures. The scope of the procedures, as set out in the draft Resolution, encompassed FSS, MSS and BSS systems in geostationary and non-geostationary-satellite orbits in the non-planned bands for FSS and BSS systems. The procedures applied to three categories of systems. First, for new systems, the procedures took immediate effect. Due diligence information would have to be provided within five years, following which administrations would have a further two-year extension in which to bring the systems into use. Failure to supply the information would mean that a system would no longer be taken into account for the purposes of coordination, and its entry in the Master Register would be cancelled. Secondly, systems in the process of introduction would have until no later than the year 2003 to comply with due diligence requirements. Thirdly, for systems already registered, a compliance date in the year 2000 had been set. The role of the Radiocommunication Bureau in verifying the completeness of the information had been carefully defined. The information would be published promptly in the Weekly Circular.

2.3 The draft Resolution required some further editorial work, particularly in respect of *resolves* 1, to make it clear that the due diligence procedures did not affect the requirement to coordinate. He emphasized that there had been widespread agreement that the entries in the Plan itself were outside the framework of due diligence. The Working Group had, however, been unable to agree on a definition of the modifications or additions under Article 4 of Appendices 30, 30A and 30B which would be subject to due diligence. The references to the provisions had therefore been placed in square brackets. Summarizing the content of the proposals put forward, he said that the practical effects of their implementation would need to be monitored over time.

2.4 Section III of Document 258 recorded that the Working Group had noted the recommendations in Document 8, with the exception of recommendation F, in respect of which draft Recommendation [GTPLEN2-A] on international monitoring had been drafted, the text being set out in Annex 4 to the document.

2.5 The **delegate of Tonga** made the statement reproduced in Annex 1.

2.6 The **delegate of Spain**, referring to Document 258, said that Spain should be added to the list of administrations (in section I) reserving their position in respect of paragraph 4 ii) of the report of Working Group PLEN-2 in Annex 1, and to the list of administrations (in section II f)) reserving their position in respect of financial due diligence procedures. Spain had also reserved its position in respect of draft Resolution [GTPLEN2-1].

2.7 The **delegate of Australia** fully supported the approach set down in the report in Annex 1 to Document 258.

2.8 The **delegate of Algeria** recalled that Algeria had reserved its position with respect to Annex 1 to draft Resolution [GTPLEN2-1] as there had been insufficient time to debate amendments, in particular to paragraphs 1 and 2 which appeared in square brackets.

2.9 The **delegate of the Islamic Republic of Iran** placed on record his wish to amend sections II e) and III a) of Document 258.

2.10 The **Chairman** noted that the results of the deliberations by Committee 4 on the issues set out in Annex 1 to Document 258 would be forwarded to the Plenary for consideration. He suggested that draft Resolution [GTPLEN2-1] be referred to an ad hoc group composed of the drafting group which had developed the detailed regulatory provisions. The terms of reference of the new group, to be called ad hoc Group 1 of the Plenary, would be to update Annex 2 to Document 258, reflecting the discussion on the text in square brackets and any further comments made in the Working Group on the draft Resolution and to report back to the Plenary.

2.11 It was so **agreed**.

3 Announcement by the Indonesian delegation

3.1 The **delegate of Indonesia** was proud to announce the successful launch of its satellite by Ariane.

The meeting rose at 1740 hours.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

Annex: 1

Original: English

ANNEX 1

Statement by the delegate of Tonga

Mr. Chairman, first I would like to congratulate Mr. David Leive for the excellent work he has done in steering Working Group PLEN-2 in its activities over the last two weeks. The Group faced many difficult decisions and often had to deal with firmly held and conflicting views from its members, but through it all Mr. Leive with utmost patience and exemplary courtesy, guided us towards the compromise texts which you now have before you.

The Kingdom of Tonga has sought to contribute in a positive way towards the work of Mr. Leive's Group and has likewise attempted to play an active part in its deliberations. We have expressed our position firmly and the results have not always been exactly what we would have wanted. However, the texts which are being presented to Plenary now are the results of much long and difficult work, and as such do represent a compromise between the differing views expressed. On this basis, Tonga is happy to support the proposals of the Working Group and will not seek to revise the decisions of the Group. We hope that others who, like us, do not see all that they would wish reflected in the text before you, will nevertheless accept the consensus and compromise reflected in them, and allow us to move ahead with these new regulatory provisions.

There is one aspect of the text Mr. Chairman, of which I would wish to make special mention and that is the question of retrospectivity. My Administration firmly believes that any new legislative or regulatory provisions should always look forward and not backwards. My delegation accordingly, strenuously sought to have this principle (govern) the deliberations of Working Group 2 and had urged that administrations should be allowed to process their satellite network filings to completion on the basis of the rules that were in place at the time that the filing were made. There is something strangely odious about changing the rules in the middle of the game.

You will note Mr. Chairman that there are certain provisions in the texts before the Plenary today which are retrospective in their application. To the extent and only to the extent expressed in these texts, does my delegation accept their retrospectivity. Otherwise, the Kingdom of Tonga reserves its right on the matter of the retrospective application of new procedures.

That said, Mr. Chairman, I say again, Tonga does agree to support the present proposals, but we do so firmly on the basis that any acceptance by this Conference of retrospective application of certain new regulatory provisions is so done on an exceptional basis and in exceptional circumstances. Tonga does not accept that the approval by WRC-97 of provisions which have retrospective impact sets a precedent for general application by future conferences. We make our reservation on that basis.

In concluding, Mr. Chairman, I would again wish to emphasise the support by my Administration for the proposed text which we have before us. I hope that we can all agree to support these carefully crafted compromises.

Thank you.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 335-E
18 November 1997
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

Source: Documents 311, 319, 320

SIXTH SERIES OF TEXTS FROM COMMITTEE 4 TO THE EDITORIAL COMMITTEE

At its eleventh meeting (18 November 1997), Committee 4 approved the following texts which are submitted to Committee 6 for consideration and for subsequent transmittal to the Plenary Meeting:

- Articles S11, S13 and S59 of the Simplified Radio Regulations (**Attachment 1**).
- Appendix S4 and S5 to the Simplified Radio Regulations (**Attachment 2**).
- Resolution 27, 33, 48, [COM4-17], [COM4-18] and [COM4-19] (**Attachment 3**).

All these texts were approved by Committee 4.

E. GEORGE
Chairman of Committee 4

Chairman of Committee 4

REPORT FROM COMMITTEE 4 TO THE PLENARY MEETING

1 The sixth series of texts which are submitted to Committee 6 for consideration and for subsequent transmittal to the Plenary Meeting have been approved at the eleventh and twelfth meetings of Committee 4.

2 Concerning Article S11, the following reservations were made:

- delegation of BFA reserved its position with regard to the proposed modification of S11.14;
- delegation of IRN reserved its position with respect to S11.43A, pending further developments on the application of this provision with respect to the Plans of Appendices S30 and S30A;
- delegations of GRC and TON reserved their positions with respect to S11.44, pending the decisions with respect to Resolution [GTPLEN2-1];
- delegation of TON reserved its position with regard to the provision S11.44G;
- delegation of MLA reserved its position with regard to the proposed suppression of S11.49.

3 Concerning Article S13, several delegations reserved their positions AFTER the unanimous adoption of that Article S13 by Committee 4.

4 Committee 4 considered Appendix S5 and noted the following items that have to be corrected:

– the date shown in the date of entry into force column in Table S5-2 (S5-1A in Document 2) for the band 2 170 - 2 200 MHz should be corrected to 01.01.2000;
– as some errors in references to RR provisions in the column "RR footnotes" in Table S5-2 were identified (due to renumbering), it was agreed to request the Bureau to check all relevant provisions and to correct the errors when preparing the printed version of the Final Acts; and
– as Table S5-2 may need further updating to reflect additional "other space services", it was agreed to follow the standard practice so as to include them in the Rules of Procedure.

5 Committee 4 decided to modify Resolution 33 and to suppress Resolution 48 (WRC-95). It also agreed to abrogate Resolution 46 (Rev.WRC-95) as of the date of the provisional application of the Radio Regulations as revised by WRC-97. Until that date, a revised version of Resolution 46, as approved by Committee 5, will continue to apply.

6 The delegation of Syria reserved its position with respect to the mention of "ITU-T Recommendations" in Resolution 27 (Rev.WRC-97).

7 Committee 4 considered the issue of provisional application of the Radio Regulations, as revised by WRC-97, as well as the related transitional arrangements. In this context, Committee 4 approved draft new Resolutions [COM4-18] and [COM4-19]. The revised Article S59 does contain several dates in square brackets. Although Committee 4 did not take any decision concerning the dates, the majority of the views expressed a preference for a single date for the application of all provisions, having in mind the practical difficulties which are expected with different dates. The delegation of Spain reserved its position concerning the cross-referencing of WRC Resolutions in Article S59, and the delegations of TON and IRN reserved their positions with regard to Resolution [COM4-18].

8 Concerning the study of regulatory/procedural matters in the preparation for WRC-99, Committee 4 is of the opinion that the amount of expected work in this regard does justify the activating of the Special Committee on regulatory/procedural matters (Resolution ITU-R 38-1 refers).

ATTACHMENT 1

MOD

ARTICLE S11

Notification and Recording of Frequency Assignments[1,2]

MOD A.S11.1 [1] ~~For the notification and recording of assignments in the following~~ Regions and frequency bands see also the appropriate Appendices:

See Appendices **S30** and **S30A** respectively, for the notification and recording of:

a) frequency assignments to stations in the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2);

b) frequency assignments in other services to which the frequency bands referred to in a) above are allocated, so far as their relationship to the broadcasting-satellite service which is subject to Appendix **S30** is concerned;

c) frequency assignments to feeder-link stations in the fixed-satellite service (Earth-to-space) in the frequency bands 14.5 - 14.8 GHz in Region 1 (see No. **S5.510**) and in Region 3, 17.3 - 18.1 GHz in Regions 1 and 3, and 17.3 - 17.8 GHz in Region 2 and other services in these bands;

d) frequency assignments in the same service or in other services to which the frequency bands referred to in c) above are allocated, so far as their relationship to the fixed-satellite service (Earth-to-space) in these bands is concerned.

For the broadcasting-satellite service in Region 2 and for feeder links in the fixed-satellite service for the broadcasting-satellite service in Region 2, Resolution **42 (Rev.Orb-88)** is also applicable.

See also Appendix **S30B** for the notification and recording of assignments in the following frequency bands:

All Regions, fixed-satellite service only

4 500 - 4 800 MHz	(space-to-Earth)
6 725 - 7 025 MHz	(Earth-to-space)
10.7 - 10.95 GHz	(space-to-Earth)
11.2 - 11.45 GHz	(space-to-Earth)
12.75 - 13.25 GHz	(Earth-to-space)

~~Region 1~~	~~Region 2~~	~~Region 3~~	~~Appendix~~
~~11.7 - 12.5 GHz~~	~~12.2 - 12.7 GHz~~	~~11.7 - 12.2 GHz~~	~~**S30**~~
~~14.5 - 14.8 GHz~~ ~~17.3 - 18.1 GHz~~	~~17.3 - 17.8 GHz~~	~~14.5 - 14.8 GHz~~ ~~17.3 - 18.1 GHz~~	~~**S30A**~~
~~**All Regions, fixed satellite service only**~~ ~~4 500 - 4 800 MHz~~ ~~(space-to-Earth)~~ ~~6 725 - 7 025 MHz~~ ~~(Earth-to-space)~~ ~~10.7 - 10.95 GHz~~ ~~(space-to-Earth)~~ ~~11.2 - 11.45 GHz~~ ~~(space-to-Earth)~~ ~~12.75 - 13.25 GHz~~ ~~(Earth-to-space)~~		~~See also S30B~~	~~**See also Appendix 30B**~~

ADD **A.S11.2** [2] Resolution [**GTPLEN2-1**] shall also be applied with respect to those satellite networksand satellite systemsthat are subject to it.

Note by Committee 4 - It may be necessary to include an additional footnote referencing a Resolution on the implementation of certain provisions of this Article.

MOD **S11.14** Frequency assignments ~~for~~to ship stations and ~~for~~to mobile stations of other services, ~~for~~to stations in the amateur service, ~~for~~to earth stations in the amateur-satellite service, and those ~~for~~to broadcasting stations in the high frequency bands allocated to the broadcasting service between 5900 kHz and 26 100 kHz~~5 950 - 6 200 kHz, 7 100 - 7 300 kHz (Regions 1 and 3), 9 500 - 9 900 kHz, 11 650 - 12 050 kHz, 13 600 - 13 800 kHz, 15 100 - 15 600 kHz, 17 550 - 17 900 kHz, 21 450 - 21 850 kHz, 25 670 - 26 100 kHz,~~ which are subject to Article **S12A** ~~applies~~ shall not be notified under this Article.

MOD **S11.18** *a)* stations covered by the allotment ~~or assignment~~ plan of Appendices **S25**, **S26** and **S27**;

MOD **S11.21** *d)* any terrestrial stations in bands shared with space services which exceed the limits specified in Table II of Appendix **S7** and in **S21.3**; ~~, which exceed the limits specified in No. **S21.3**, in accordance with No. **S21.7;**~~[2]

ADD **S11.21A** e) any terrestrial stations in bands listed in Table S21-2[2];

MOD **S11.22** ~~*e)*~~*f)* earth stations whose coordination area ~~extends to~~includes the territory of another administration or where the earth station is located within the coordination area of an earth station operating in opposite direction of transmission;[2,3]

ADD **S11.22.1** [3] In this case, individual notices of frequency assignments are required for frequency bands allocated with equal rights to space services, in the opposite direction of transmission, where coordination is required under Appendix **S5**, Table S5-1.

(MOD) **S11.23** ~~*f)*~~*g)* earth stations whose interference potential is greater than that of a coordinated typical earth station[2].

S11.20.1 to S11.23.1

[2] In these cases, individual notices of frequency assignments are required for frequency bands allocated with equal rights to terrestrial and space services where coordination is required under Appendix **S5**, Table S5-1.

MOD **S11.24** Notices relating to assignments for stations of terrestrial services, except for those referred to in No. **S11.25** or **ADD S11.26**, shall reach the Bureau not earlier than three months before~~, preferably not later than one month before, and in no case later than one month after~~ the assignments are brought into use.

MOD **S11.25** Notices relating to assignments for stations in space services, and for terrestrial stations involved in the coordination ~~of~~with a satellite network, shall reach the Bureau not earlier than three years before~~ and not later than three months before~~ the assignments are brought into use.

ADD **S11.26** Notices relating to assignments for high altitude platform stations in the fixed service in the 47.2 - 47.5 GHz and 47.9 - 48.2 GHz bands shall reach the Bureau not earlier than five years before the assignments are brought into use.

Section II. Examination of Notices and Recording of Frequency Assignments in the Master Register

MOD **S11.27** Notices not containing ~~the basic~~ those characteristics specified in Appendix **S4** as mandatory or required shall be returned with comments to help the notifying administration to complete and submit them again, unless the information not provided is immediately forthcoming in response to an inquiry of the Bureau.

MOD **S11.31.3** [3] Notices relating to radio astronomy stations are ~~only~~ examined with respect to No. **S11.31** only.

NOC **S11.32A** *c)* with respect to the probability of harmful interference that may be caused to or by assignments recorded with a favourable finding under Nos. **S11.36** and **S11.37** or **S11.38**, or recorded in application of No. **S11.41**, or published under Nos. **S9.38** or **S9.58** but not yet notified, as appropriate, for those cases for which the notifying administration states that the procedure for coordination under No. **S9.7** could not be successfully completed (see also No. **S9.65**);[4] or

NOC **S11.32A.1** [4] The examination of such notices with respect to any other frequency assignment for which a request for coordination under **S9.7** has been published under No. **S9.38** but not yet notified shall be effected by the Bureau in the order of their publication under the same number using the most recent information available.

NOC **S11.33** *d)* with respect to the probability of harmful interference that may be caused to or by other assignments recorded with a favourable finding in application of Nos. **S11.36** and **S11.37** or **S11.38** or in application of No. **S11.41**, as appropriate, for those cases for which the notifying administration states that the procedure for coordination or prior agreement under Nos. **S9.17**[5], **S9.17A** or **S9.18**[5] could not be successfully completed (see also No. **S9.65**);[6] or

MOD **S11.36** When the examination with respect to No. **S11.31** leads to a favourable finding, the assignment shall be recorded in the Master Register or examined further with respect to Nos. **S11.32** to **S11.34**, as appropriate. When the finding with respect to No. **S11.31** is unfavourable, the assignment shall be recorded in the Master Register for information purposes and subject to application of No. **S8.5**, only if ~~it includes a reference to~~ the administration ~~is deemed to have undertaken~~ shall undertake that it will be operated in accordance with ~~under the provision~~ No. **S4.4**, otherwise the notice shall be returned with an indication of the appropriate action.

(MOD) **S11.37** When the examination with respect to No. **S11.32** leads to a favourable finding, the assignment shall be recorded in the Master Register indicating the administrations with which the coordination procedure has been completed.[1, 2] When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action, if Nos. **S11.32A** or **S11.33** do not apply.

ADD **S11.37.1** [1] When the agreement of the administrations affected has been obtained only for a specified period, the Bureau shall be notified accordingly and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned.

ADD **S11.37.2** [2] When a frequency assignment to a space station in the broadcasting-satellite service in an unplanned band is recorded in the Master Register, a note shall be entered in the remarks Column indicating that such recording does not prejudge in any way the decisions to be included in the agreements and associated plans referred to in Resolution **507**.

NOC **S11.38** When the examination with respect to Nos **S11.32A** or **S11.33** leads to a favourable finding, the assignment shall be recorded in the Master Register indicating the names of the administrations with which coordination was completed and those with which it was not completed but in respect of which the finding was favourable. When the finding is unfavourable, the notice shall be returned with an indication of the appropriate action.

MOD **S11.39** When the examination with respect to No **S11.34** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action. However, notices under Appendices **S25**, **S26** and **S27** shall be treated as follows:

NOC **S11.39A** In the case of a notice in conformity with the technical principles of Appendix **S27**, but not in conformity with the Allotment Plan, the Bureau shall examine whether the protection specified in Appendix **S27** is afforded to the allotments in the Plan and to assignments already recorded in the Master Register with a favourable finding.

NOC **S11.39B** When the examination under No. **S11.39A** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to No. **S11.39A**.

NOC **S11.39C** A notice in conformity with the technical principles of Appendix **S26**, but not in conformity with the Allotment Plan, shall be examined with respect to the allotments in Part III of Appendix **S26**.

NOC **S11.39D** When the examination under No. **S11.39C** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to No. **S11.39C**.

ADD **S11.39E** In the case of a notice not in conformity with the Allotment Plan of Appendix **S25**, the assignment may be recorded provisionally in the Master Register on the condition that the administration has initiated the procedure of Appendix **S25** in accordance with 1.23 of Section I of Appendix **S25**.

S11.40 Not used.

NOC **S11.41** After a notice is returned under No.**S11.38**, should the notifying administration resubmit the notice and insist upon its reconsideration, the Bureau shall enter the assignment provisionally in the Master Register with an indication of those administrations whose assignments were the basis of the unfavourable finding. The entry shall be changed from provisional to definitive recording in the Master Register only if the Bureau is informed that the new assignment has been in use, together with the assignment which was the basis for the unfavourable finding, for at least four months without any complaint of harmful interference being made (see Nos.**S11.47** and **S11.49**).

NOC **S11.42** Should harmful interference be caused by an assignment recorded under No. **S11.41** to any recorded assignment which was the basis of the unfavourable finding, the station using the frequency assignment recorded under No. **S11.41** shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

MOD **S11.43** In every case when a new assignment is recorded in the Master Register it shall, in accordance with the provisions of Article **S8** of this Chapter, include an indication of the finding ~~and of~~ reflecting the ~~consequent~~ status of the assignment. This information shall also be published in the Weekly Circular.

MOD **S11.43A** A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix **S4**, shall be examined by the Bureau under Nos. **S11.31** to **S11.34**, as appropriate. Any change to the characteristics of an assignment that has been notified and confirmed as having been brought into use, shall be brought into use within 5 years from the date of the notification of the modification. Any change to the characteristics of an assignment that has been notified but not yet brought into use, shall be brought into use within the period provided for in No. **S11.44**.

MOD **S11.44** The notified date of bringing into use of any assignment to a space station of a satellite network shall be no later than five ~~six~~ years following the date of ~~publication~~ receipt by the Bureau of the relevant information under No. **S9.1** ~~relevant Weekly Circular referred to in No.**S9.2B**~~. The notified date of bringing into use may ~~will~~ be extended at the request of the notifying administration by not more than two ~~three~~ years only under the conditions specified under Nos. **S11.44B** to **S11.44I**. Any frequency assignment not brought into use within the required period shall be cancelled by the Bureau after having informed the administration at least 3 months before the expiry of the above date.

ADD **S11.44A** A notice not conforming to No. **S11.44** shall be returned to the notifying administration with a recommendation to restart the advance publication procedure.

ADD **S11.44B** The notified date of bringing into use will be extended by the Bureau in accordance with No. **S11.44** if due diligence information is provided for the satellite network if required by Resolution **[GTPLEN2-1]**; the procedure for effecting coordination in accordance with Section II of Article **S9** as applicable has commenced; and the notifying administration certifies that the reason for the extension is one or more of the following specific circumstances;

ADD **S11.44C** a) launch failure;

ADD **S11.44D** b) launch delays for circumstances outside the control of the administration or operator;

ADD **S11.44E** c) delays caused by modifications of satellite design necessary to reach coordination agreements;

ADD **S11.44F** d) problems in meeting the satellite design specifications;

ADD **S11.44G** e) delays in effecting coordination after the assistance of the Bureau was requested under No. **S9.59**.

ADD **S11.44H** f) financial circumstances outside the control of the administration or the operator; or

ADD **S11.44I** g) *force majeure*.

NOC **S11.45** The notified date of bringing into use of an assignment to a terrestrial station will be extended at the request of the notifying administration by not more than six months.

NOC **S11.46** In applying the provisions of this Article, any resubmitted notice which is received by the Bureau more than six months after the date on which the original notice was returned by the Bureau shall be considered to be a new notice.

MOD **S11.47** All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice, or by the extension date granted under No. **S11.44** or No. **S11.45.** Within thirty days of such an assignment being brought into use, the notifying administration shall so inform the Bureau. If the Bureau does not receive that confirmation within the above period, after a reminder, it shall cancel the entry. The Bureau shall however ~~consult~~ inform the administration concerned before taking such action.

MOD **S11.48** If after the expiry of the period of ~~six~~ five years, plus the extension specified in No. **S11.44**, as appropriate, from the date of ~~publication of the relevant Weekly Circular~~ receipt of the complete information referred to in No. **S9.1**, the administration responsible for the satellite network ~~has not submitted the Appendix **S4** information for notification under No. **S11.2** and~~ has not brought the frequency assignments to stations of the network into use, the corresponding information published under Nos. **S9.2B** and **S9.38**, as appropriate, shall be cancelled only after the administration concerned has been informed, at least three months before the expiry date referred to in No. **S11.44**.

SUP **S11.49** ~~Where the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the assignment is to be brought back into regular use. This latter date shall not exceed two years from the date of suspension.~~

ARTICLE S13

Instructions to the Bureau

Section I. Assistance to Administrations by the Bureau

MOD **S13.1** When an administration has difficulty in applying the procedures of Articles **S9** and **S11** and Appendices **S30**, **S30A** and **S30B** the Bureau shall, upon request, endeavour to assist in such cases ~~where:~~.

SUP **S13.2**

SUP **S13.3**

SUP **S13.4**

ARTICLE S59

Provisional Application of the Radio Regulations

MOD **S59.1** These Regulations, which complement the provisions of the Constitution and Convention of the International Telecommunication Union (Geneva, 1992), and as revised and contained in the Final Acts of the World Radiocommunication Conferences (Geneva, 1995 and Geneva, 1997) shall have provisional application, pursuant to Article 54 of the Constitution, on the following basis.

MOD **S59.2** ~~All revised~~ The provisions of these Regulations, as revised by the World Radiocommunication Conference (Geneva, 1995) shall apply provisionally as of 1 June 1998, except those revised provisions concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of **S21**, **S22** and Appendix **S4**, which shall apply provisionally as of 1 January 1997.

ADD **S59.3** ~~All~~ The provisions of these Regulations, as revised by the World Radiocommunication Conference (Geneva, 1997) shall apply provisionally as of [~~1 June 2000~~1 January 1999], with the following exceptions:

~~a) those revised provisions concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of **S21** and **S22**, which shall apply provisionally as of [1 January 1999]~~;

ADD S59.4 a) those revised provisions concerning coordination, notification and recording of frequency assignments (Articles **S4, S7, S8, S9, S11, S12, S13** and **S14,** and Appendices **S4** and **S5**), which shall apply provisionally as of [1 June 1998];

ADD S59.5 b) those revised provisions for which other effective dates of application are stipulated in Resolutions […].

ATTACHMENT 2

ANNEX 2A

(to Appendix **S4**)

Characteristics of Satellite Networks or Earth or Radio Astronomy Stations[1]

ADD **A.13 As appropriate, reference to the Bureau's Weekly Circular Special Section**

ADD a) providing the advance publication information required in accordance with No. **S9.1**;

ADD b) providing the coordination information required in accordance with No. **S9.7**;

ADD c) providing the information required in accordance with No. **S9.21**;

ADD d) providing the coordination information required in accordance with No. **S9.8**;

ADD e) providing the coordination information required in accordance with No. **S9.9**;

ADD f) providing the coordination information required in accordance with No. **S9.11**;

ADD g) providing the coordination information required in accordance with No. **S9.11A**;

ADD h) providing the information required in accordance with Article 6 of Appendix **S30B**.

...

B.4 Non-geostationary space station antenna characteristics

a) The isotropic gain of the antenna in the direction of maximum radiation (dBi) and the antenna radiation pattern.

b) In the case of a space station submitted in accordance with Resolution **46 (Rev.WRC-95)/** No. **S9.11A**:

– orientation of the satellite transmitting and receiving antenna beams and their radiation pattern;

– the satellite antenna gain $G(\theta_e)$ as a function of elevation angle at a fixed point on the Earth;

– the spreading loss (for a non-GSO satellite) as a function of elevation angle (to be determined by equations or provided in graphical format);

– maximum and average beam peak e.i.r.p./4 kHz and e.i.r.p./1MHz for each beam~~.~~;

– for the fixed-satellite service (space-to-Earth) in the band 6 700 - 7 075 MHz, calculated peak value of power flux-density produced within ±5 degrees inclination of the geostationary-satellite orbit.

APPENDIX S4

Consolidated List and Tables of Characteristics for Use in the Application of the Procedures of Chapter SIII

ANNEX 2B (TO APPENDIX **S4**)

Table of characteristics to be submitted for space and radio astronomy services
A. General characteristics of the satellite network or the earth station

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.1.a	X	X	X	X	X		X	X	X	A.1.a	
A.1.b							X			A.1.b	
A.1.c								X		A.1.c	
A.1.d									X	A.1.d	
A.1.e.1						X				A.1.e.1	
A.1.e.2						X				A.1.e.2	X
A.1.e.3						X				A.1.e.3	
A.1.e.4										A.1.e.4	X
A.1.f	X	X	X	X	X	X	X	X	X	A.1.f	X
A.2.a	X	X	X	X	X	X	X	X	X	A.2.a	
A.2.b	X			X						A.2.b	
A.2.c										A.2.c	X
A.3	~~X~~		X	X	X	X	X	X		A.3	X
A.4.a.1	X			X			X	X	X	A.4.a.1	
A.4.a.2	~~X~~			X			X	X		A.4.a.2	
A.4.a.3	~~X~~			X						A.4.a.3	
A.4.a.4	~~X~~			X						A.4.a.4	
A.4.a.5	~~X~~			X						A.4.a.5	
~~A.4.b~~			~~X~~		~~X~~					~~A.4.b~~	
A.4.b.1		X	X		X					A.4.b.1	
A.4.b.2		X	X		X					A.4.b.2	
A.4.b.3		X	X		X					A.4.b.3	
A.4.b.4		X	X		X					A.4.b.4	
A.4.b.5					X					A.4.b.5	
A.4.c						X				A.4.c	
A.5				X	X	X	X	X	X	A.5	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

* The application of this column is suspended pending the decision of WRC-99.

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.6				X	X	X	X	X	X	A.6	
A.7.a						X		X		A.7.a	
A.7.b						X		X		A.7.b	
A.7.c						X				A.7.c	
A.7.d						X		X		A.7.d	
A.8							X			A.8	
A.9							X			A.9	
A.10						X				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				**X**	**X**					A.13	

B. Characteristics to be provided for each satellite antenna beam and for each earth station antenna

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
B.1	~~X~~		X	X	X	X	X	X	X	B.1	
B.2	~~X~~		X	X	X	X			X	B.2	
B.3.a	~~X~~			X						B.3.a	
B.3.b.1	~~X~~			X						B.3.b.1	
B.3.b.2	~~X~~			X						B.3.b.2	
B.3.c	~~O~~			C						B.3.c	
B.3.d	~~O~~			X			X	X	X	B.3.d	
B.3.e	~~X~~			X						B.3.e	
B.3.f	~~X~~			X				X		B.3.f	
B.3.g.1							X	X	X	B.3.g.1	
B.3.g.2							X	X	X	B.3.g.2	
B.3.g.3							X	X	X[9)]	B.3.g.3	
B.3.g.4							X	X	X[9)]	B.3.g.4	
B.3.g.5							X	X	X[9)]	B.3.g.5	
B.3.g.6								X		B.3.g.6	
B.3.g.7							X			B.3.g.7	
B.4.a			X		X					B.4.a	
B.4.b			X		X					B.4.b	
B.5.a						X				B.5.a	
B.5.b						X				B.5.b	
B.5.c						X				B.5.c	
B.6										B.6	X

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

9) Only information on co-polar antenna characteristics is required.

* The application of this column is suspended pending the decision of WRC-99.

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.1	X	X	X						X	C.1	
C.2.a				X	X	X	X	X		C.2.a	
C.2.b										C.2.b	X
C.3.a				X	X	X		X		C.3.a	
C.3.b										C.3.b	X
C.4	X	X	X	X	X	X	X	X		C.4	X
C.5.a	~~X~~		X	X	X			X	X	C.5.a	
C.5.b						X				C.5.b	
C.5.c										C.5.c	X
C.6	~~X~~		X	X	X	X	X	X		C.6	
C.7.a	~~O~~		O	X	X	X	X	X		C.7.a	
C.7.b	~~O~~		O	C	C	`C				C.7.b	
C.7.c	~~O~~		O	C	C	C				C.7.c	
C.7.d	~~O~~		O	C	C	C				C.7.d	
C.8.a	~~X~~ [1), 7)]		X [1), 7)]	X [7)]	X [7)]	C [8)]				C.8.a	
C.8.b	~~X~~ [1), 7)]		X [1), 7)]	X [7)]	X [7)]	X				C.8.b	
C.8.c	~~O~~		O	X [6)]	X [6)]	X [6)]				C.8.c	
C.8.d				X [2)]	X [2)]					C.8.d	
C.8.e	~~O~~		O	X [6)]	X [6)]	X [6)]				C.8.e	
C.8.f	~~X~~ [3)]		X [3)]							C.8.f	
C.8.g				C [4)]	C [4)]	C [4), 5)]				C.8.g	
C.8.h							X			C.8.h	
C.8.i								X		C.8.i	
C.8.j									X	C.8.j	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

1) Only the value of maximum power density is mandatory.

2) For transmission from the space station only.

3) For space-to-space relay only.

4) For transmission from the earth station only.

5) Not required for coordination under Nos **S9.15**, **S9.17** or **S9.17A**.

6) Required, if applicable, for the type of transmission. If not applicable, a reason why it is not applicable is required.

7) One or the other of C.8.a or C.8.b is mandatory, but not both.

8) Only the value of total peak envelope power is required for coordination under Nos **S9.15, S9.17** or **S9.17A**.

* The application of this column is suspended pending the decision of WRC-99.

C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna *(end)*

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.9.a	~~O~~		O	C	C					C.9.a	
C.9.b							X	X		C.9.b	
C.9.c			X		X					C.9.c	
C.10.a	~~X~~		X	X	X					C.10.a	
C.10.b	~~X~~		X	X	X			X		C.10.b	
C.10.c.1	~~X~~		X	X	X			X	X	C.10.c.1	
C.10.c.2	~~X~~		X	X	X			X	X	C.10.c.2	
C.10.c.3	~~O~~		O	X	X			X	X	C.10.c.3	
C.10.c.4	~~X~~		X	X	X			X	X	C.10.c.4	
C.10.c.5	~~X~~		X	X	X				X	C.10.c.5	
C.10.c.6								X		C.10.c.6	
C.11.a	~~X~~ [10]	X [10]	X	X	X					C.11.a	
C.11.b								X		C.11.b	
C.11.c							X		X	C.11.c	
C.11.d			~~X~~		X					C.11.d	
C.12									X	C.12	
C.13										C.13	X
C.14							X			C.14	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

[10] Only the list of country or geographic designators or a narrative description of the service area shall be supplied.

D. Overall Link Characteristics

Items in Appendix	Advanced publication of a geostationary-satellite network	Advanced publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advanced publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
D.1	~~X~~			X						D.1	
D.2.a	~~X~~			X						D.2.a	
D.2.b	~~X~~			X						D.2.b.	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

* The application of this column is suspended pending the decision of WRC-99.

APPENDIX S5

Identification of Administrations with Which Coordination Is to Be Effected or Agreement Sought Under the Provisions of Article S9

NOC 1. For the purpose of effecting coordination under Article **S9**, except in the case under No. **S9.21**, and for identifying the administrations with which coordination is to be effected, the frequency assignments to be taken into account are those in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category[1] of allocation, which might affect or be affected, as appropriate, and which are:

a) in conformity with No. **S11.31**[3]; and

b) either recorded in the Master Register with a favourable finding with respect to No. **S11.32**; or

c) recorded in the Master Register with an unfavourable finding with respect to No. **S11.32** and a favourable finding with respect to No. **S11.32A** or No. **S11.33**, as appropriate; or

d) coordinated under the provisions of Article **S9**; or

MOD *e)* included in the coordination procedure with effect from the date of receipt[3] by the Bureau, in accordance with No. **S9.34**, of ~~the basic~~ those characteristics ~~as~~ specified in Appendix **S4** as mandatory or required, or from the date of dispatch, in accordance with No. **S9.29** of the appropriate information listed in Appendix **S4**; or

ADD *ebis)* where appropriate, in conformity with a world or regional allotment or assignment plan and the associated provisions;

MOD *f)* for terrestrial radiocommunication stations or earth stations operating in the opposite direction of transmission[4], in addition, operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years from the date of dispatch of coordination data under No. **S9.29**, whichever is the longer, or from the date of the publication referred to in No. **S9.38**, as appropriate.

MOD 2. For the application of No. **S9.21**, the agreement of an administration may be required with respect to the frequency assignments in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category of allocation, which ~~may be affected~~ may affect or be affected, as appropriate, and:

a) in cases involving a station in a space radiocommunication ~~station~~service with respect to ~~another space radiocommunication station~~any other station or involving a terrestrial radiocommunication station with respect to an earth station:

i) which are in conformity with No. **S11.31**, and comply with the relevant conditions listed in Section 1, paragraphs *b)* to *f)*; or

~~– are recorded in the Master Register, or~~

~~are notified to the Bureau, or~~

~~for which information under No. **S9.34** has been received by the Bureau; or~~

ii) for which the procedure under No. **S9.21** has been initiated with effect from the date of receipt by the Bureau, in accordance with No. **S9.34**, of the basic characteristics as specified in Appendix **S4**; or

~~*b)* for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years, whichever is the longer; or~~

~~*c)*~~*b)* for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the other terrestrial station assignment into service, or within the next three months, whichever is the longer;

MOD 3. For each of the frequency assignments to ~~an individual~~ a station ~~or to a satellite network~~ of a terrestrial or space radiocommunication service mentioned in paragraphs 1 and 2 above, the level of interference shall be determined using the method referred to in Table S5-1 which is appropriate to the particular case.

MOD 4. The assignment is considered to ~~cause or suffer interference~~ affect or be affected, as appropriate, and coordination must be sought under the procedure of Article **S9**, if:

MOD *a)* the ~~interference level exceeds the~~ threshold levels given in Table S5-1 are exceeded; ~~or~~ and

b) the condition specified in Table S5-1 is applicable.

5. Threshold values to determine whether coordination under No. **S9.11A** is required are given in Table S5-2.

6. No coordination is required:

MOD *a)* when the use of a new frequency assignment will not cause or suffer, as appropriate, in respect of any service of another administration, an increase in the level of interference above the threshold calculated in accordance with the method referred to in Table S5-1 and S5-2; or

NOC *b)* to *g)*

TABLE S5-1

Technical conditions for coordination
(see Article **S9**)

	Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a region where this service is not subject to a Plan, in respect of any other satellite network using that orbit, ~~for~~ in any space radiocommunication service in a frequency band and in a region where this service is not subject to a Plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	Any frequency band allocated to a space service, where this service is not subject to a Plan, ~~except those mentioned in the plans of Appendices **S30, S30A** and **S30B**~~	Value of $\Delta T/T$ exceeds 6%	Appendix **S8**	

MOD

No. **S9.8** GSO/GSO	A transmitting space station of the fixed-satellite service (FSS) using the geostationary-satellite orbit in a frequency band shared with the BSS on an equal primary basis, in respect of space stations of the latter service which are subject to the plan in Appendix **S30**	11.7 - 12.2 GHz (R2) 12.2 - 12.7 GHz (R3) 12.5 - 12.7 GHz (R1)	i) There is an overlap in the necessary bandwidths of the space stations of FSS and BSS; and ii) the power flux-density (pfd) of the space station of the FSS exceeds the value given in Annex 4 of Appendix **S30** on the territory of another administration located in another region	Check by using the assigned frequencies and bandwidths;	See also Article 7 of Appendix **S30**. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD

No. **S9.9** GSO/GSO	A station of the FSS in a frequency band shared on an equal primary basis with the feeder links of the BSS, which are subject to the plan in Appendix **S30A**	17.7 - 18.1 GHz (R1) 17.7 - 18.1 GHz (R3) 17.7 - 17.8 GHz (R2)	i) Value of $\Delta T_S/T_S$ exceeds 4% (see Section I of Annex 4 of Appendix **S30A**); and ii) geocentric inter-satellite angular separation is less than 3° or greater than 150°	i) Case II of Appendix **S8** ii) Annex 1 of Appendix **S8**	The threshold/conditions do not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -137 dB (W/m^2/MHz) on the surface of the Earth at the equatorial limb. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD	No. **S9.11** GSO/terrestrial	A space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and ~~in which there is no plan for~~where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services~~;~~	620 - 790 MHz 1 452 - 1 492 MHz 2 310 - 2 360 MHz 2 520 - 2 655 MHz 2 655 - 2 670 MHz 12.5 - 12.75 GHz (R3) 17.~~3~~7 - 17.8 GHz (R2) 21.4 - 22 GHz (R1, R3) 40.5 - 42.5 GHz 84 - 86 GHz	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.12** 1) Non-GSO/ Non-GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-~~1A~~2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.12** 2) Non-GSO/GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using the geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-~~1A~~2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	

(MOD)	No. **S9.13** GSO/Non-GSO	A station in a satellite network using the geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-~~1A~~2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.14** Non-GSO/terrestrial, GSO/terrestrial	For a space station in a satellite network in the frequency bands for which a footnote refers to No. **S9.11A** in respect of stations of terrestrial services where threshold(s) is (are) exceeded	See Table S5-~~1A~~2	~~For a non-GSO space station:~~ See ~~Table **S5-2**~~**Section 1 of Annex 1**	See ~~Table **S5-2**~~**Section 1 of Annex 1**	
(MOD)	No. **S9.15** Non-GSO/terrestrial	A specific earth station or a typical earth station in respect of terrestrial stations in frequency bands for which a footnote refers to No. **S9.11A** allocated with equal rights to space and terrestrial services, where the coordination area of the earth station includes the territory of another country	See Table S5-~~1A~~2	The coordination area of the earth station covers the territory of another administration	See Section 2 of Annex 1	

MOD	No. **S9.16** terrestrial/ non-GSO	A transmitting station of a terrestrial service within the coordination area of an earth station in a non-geostationary-satellite network in frequency bands for which a footnote refers to No. **S9.11A**	See Table S5-~~1A~~2	Transmitting terrestrial station is situated within the coordination area of a receiving earth station ~~which has already been coordinated~~	See Section 2 of Annex 1	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.15**
MOD	No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services in ~~relation to~~ respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country with the exception of the coordination under No. **S9.15**	Any frequency band allocated to a space service, except those mentioned in the plans of Appendix **S30A**	The coordination area of the earth station covers the territory of another administration	Appendix **S7** (For earth stations in the radiodetermination-satellite service (RDSS) in the bands 1 610 - 1 626.5, 2 483.5 - 2 500 and 2 500 - 2 516.5 MHz, see Remarks column) 1) The coordination area of aircraft earth stations is determined by increasing the service area by 1 000 km with respect to the aeronautical mobile service (terrestrial) or 500 km with respect to terrestrial services other than the aeronautical mobile service.	NOTE - For RDSS earth stations, a uniform coordination distance of 400 km corresponding to an airborne earth station shall be used. In cases where the earth stations are all ground-based, a coordination distance of 100 km shall be used.

	No. **S9.17** GSO, non-GSO/ terrestrial (cont.)				2) For receiving earth stations in the meteorological-satellite service in frequency bands shared with the meteorological aids service, the coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above mean sea level, assuming 4/3 Earth radius.	~~The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendix **30A** is suspended pending the decision of WRC-97 on revision of Appendix **30A**~~. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.
MOD	No. **S9.17A** GSO, non-GSO/ GSO, non-GSO	A specific earth station in respect of other earth stations operating in the opposite direction of transmission in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station with the exception of the frequency bands subject to Appendix **S30A** Plans	Any frequency band allocated to a space service	The coordination area of the earth station covers the territory of another administration or the earth station is located within the coordination area of an ~~coordinated~~ earth station	i) For bands in Table S5~~.1A~~.2, see Section 2 of Annex 1 ii) See Recommendations ITU-R IS.847, IS.848 and IS.849	~~The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decision of WRC-97 on revision of Appendices **30** and **30A**.~~

MOD	No. **S9.18** terrestrial/GSO, non-GSO	Any transmitting station of a terrestrial service in the bands mentioned in No. **S9.17** within the coordination area of an earth station, in respect of this earth station with the exception of the coordination under Nos. **S9.16** and **S9.19**	Any frequency band allocated to a space service~~, except those mentioned in Appendices **S30** and **S30A.**~~	Transmitting terrestrial station is situated within the coordination area of a~~n already coordinated~~ receiving earth station	See remarks	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.17**
MOD	No. **S9.19** terrestrial/GSO	A transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the BSS, except where the service is subject to the Appendix **S30** Plan	~~11.7 - 12.2 GHz (R3)~~ ~~11.7 - 12.5 GHz (R1)~~ ~~12.2 - 12.7 GHz (R2)~~ ~~and the~~ bands listed in No. **S9.11**	i) Necessary bandwidths overlap; and ii) the pfd of the terrestrial station at the edge of the ~~BSS~~broadcasting-satellite service area exceeds the permissible level	i) Check by using the assigned frequencies and bandwidths ii) ~~Annex 3 to Appendix **S30** for bands covered by that Appendix~~	~~See also Article **6** of Appendix **S30**~~ ~~The application of these provisions with respect to the bands and services of Articles **6** and **7** of Appendices **30** and **30A** is suspended pending the decision of WRC-97 on revision of Appendices **30** and **30A.**~~

ATTACHMENT 3

MOD

RESOLUTION 27 (Rev.WRC-~~95~~97)

REFERENCES TO ITU-R AND ITU-T RECOMMENDATIONS IN THE RADIO REGULATIONS

The World Radiocommunication Conference (Geneva, 199~~5~~7),

considering

a) that the principles of incorporation by reference ~~were~~ have been adopted by the 1995 World Radiocommunication ~~this~~ Conference and have been revised by this Conference (see Annex 1 to this Resolution ~~hereto~~);

b) that there are provisions of the Radio Regulations which employ mandatory incorporation by reference but fail to make explicit reference to the ITU-R or ITU-T Recommendations incorporated;

c) that the 1997 Conference Preparatory Meeting for this Conference urged administrations to give further consideration to the status of material incorporated by reference ~~by Resolution ITU-R 38, the 1995 Radiocommunication Assembly established a special committee to address the review of regulatory/procedural matters~~, :

– using the initial assessment provided by the Bureau in the CPM Report and the set of principles given in Annex 1 to this Resolution;

– noting that mandatory references shall be explicit and use the appropriate regulatory language;

– taking into account the factors contained in Annex 2 to this Resolution;

d) that the Director of the Bureau has developed a list (see Annex 1 to the Report of the Conference Preparatory Meeting to this Conference) of the provisions of the Radio Regulations using incorporation by reference, which provides an initial assessment of the status of each reference and forms the basis for the work on appropriate referencing, examples of which are contained in Annex 3 to this Resolution;

e) that the Radiocommunication Bureau has developed a list, contained in Annex 4 to this Resolution, of the ITU-R Recommendations to which explicit reference is made in the Radio Regulations,

resolves

that ITU-R and ITU-T Recommendations ~~, in view of *considering b)*, the provisions of the Radio Regulations which use mandatory incorporation by reference should be studied in order to determine whether they require modification pursuant to the principles adopted by this Conference~~ incorporated or proposed for incorporation by reference in the provisions of the Radio Regulations be identified and examined at WRC-99, with a view to establishing the correct method of reference in accordance with the principles set out in Annex 1 to this Resolution and taking into account the factors listed in Annex 2 to this Resolution, in order to complete the simplification of the Radio Regulations in respect of incorporation by reference,

instructs the Director of the Radiocommunication Bureau

to arrange a review of the provisions of the Radio Regulations containing references to ITU-R or ITU-T Recommendations and propose suitable recommendations to the Conference Preparatory Meeting for inclusion in its report to WRC-99 using the list of provisions contained in Annex 3 to this Resolution together with the guidance contained in Annexes 1 and 2 to this Resolution, and taking into account the list of ITU-R Recommendations contained in Annex 4 to this Resolution,

urges administrations

to use the Report of the Conference Preparatory Meeting to WRC-99 in order to prepare their proposals on incorporation by reference to that Conference.

~~*urges administrations*~~

~~to review the ITU-R Recommendations and the provisions of the Radio Regulations employing incorporation by reference in light of~~*resolves* ~~above,~~

~~*instructs the Director of the Radiocommunication Bureau*~~

~~to arrange for appropriate studies to be conducted by the new special committee established by the 1995 Radiocommunication Assembly to address the review of regulatory/procedural matters and for the committee to report the results of those studies to the 1997 Conference Preparatory Meeting.~~

MOD

ANNEX 1 TO RESOLUTION 27 (Rev.WRC-~~95~~97)

PRINCIPLES OF INCORPORATION BY REFERENCE

1. ~~No restrictions are necessary on the inclusion of references where these are non-mandatory. In such cases, reference could be made to the latest version of a Recommendation.~~Where references are non-mandatory, it is not necessary to establish specific conditions in applying the texts quoted. In such cases, reference could, for example, be made to "the latest version" of a Recommendation.

2. Mandatory references to Resolutions or Recommendations of a world radiocommunication conference (WRC) are acceptable without restriction, since such texts will have been agreed by a WRC.

3. Where mandatory references are suggested, and the relevant texts are brief, the referenced material should be incorporated in the body of the Radio Regulations.

4. If, on a case-by-case basis, it is decided to incorporate material by reference on a mandatory basis, then the following provisions shall apply:

4.1 the referenced text shall have the same treaty status as the Regulations themselves;

4.2 the reference must be explicit, specifying the specific part of the text (if appropriate) and the version or issue number;

4.3 the referenced text must be adopted by the Plenary of a competent WRC, but should not be part of the Final Acts;

4.4 all texts incorporated by reference must be readily available, by being published in a separate volume;

4.5 if, between WRCs, a referenced text (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the original version until such time as a competent WRC agrees to incorporate the new version of the reference. The mechanism for considering such a step is given in Resolution **28 (WRC-95)**.

ADD

ANNEX 2 TO RESOLUTION 27 (Rev.WRC-97)

FACTORS TO BE CONSIDERED IN STUDIES INTO THE FURTHERANCE OF INCORPORATION BY REFERENCE

In reviewing the provisions of the Radio Regulations employing references to other texts, administrations and study groups should address the following factors:

1) whether each reference is mandatory, that is, incorporated by reference, or non-mandatory;

2) whether existing non-mandatory references or mandatory references which are determined to be of non-mandatory character use appropriate linking language, e.g., the words "should" or "may";

3) whether existing mandatory references or other types of reference which are determined to be of mandatory character use clear mandatory linking language, e.g., the word "shall";

4) whether the incorporated ITU-R or ITU-T Recommendation(s) are explicitly identified;

5) where referenced ITU-R or ITU-T Recommendations are not explicitly identified, determine which ones should be identified;

6) whether text incorporated from ITU-R or ITU-T Recommendations should be placed directly into the Radio Regulations instead of using incorporation by reference;

7) if the ITU-R or ITU-T Recommendation to be incorporated is, as a whole, unsuitable as treaty status text, whether to limit the reference to those portions of the ITU-R or ITU-T Recommendation which are of a suitable nature or to place the mandatory portion directly into the Radio Regulations.

ADD

ANNEX 3 TO RESOLUTION 27 (Rev.WRC-97)

PROVISIONS OF THE RADIO REGULATIONS REFERRING TO ITU-R AND ITU-T RECOMMENDATIONS

A) Provisions of Articles of the Simplified Radio Regulations referring to ITU-R and ITU-T Recommendations

RR item	Remark
S5.199 S5.287 S5.288 S19.38 S19.48 S19.92 S47.26 S47.27 S47.28 S47.29 S50.9 S51.35 S51.41 S51.77 S52.25 S52.27 S52.31 S52.69 S52.159 S52.181 S52.195 S52.222.1 S52.224 S52.229 S52.231 S52.240 S55.1 S57.1	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
S1.14 S5.511A S52.23 S52.235[+]	The reference to an ITU-R Recommendation in this provision seems to be of a **mandatory** character and the referenced text is **explicitly** identified, but a **non-standard wording** is used in this respect. There is a need to **review** these provisions with a view to using a standard wording. [+] The application of this provision is not mandatory but, if used, the referenced procedures are.

S3.2 S5.138 S5.458C S13.19 S21.1 S29.13 S32.5 S32.9.3 S32.21 S32.43 S32.64 S33.17 S33.37 S33.41 S34.1 S34.2 S51.25 S52.112 S58.1*	The incorporation by reference of an ITU-R Recommendation or an ITU-T Recommendation (*) in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and ensure that a standard method of reference is used.
S5.208A S5.503A S16.6 S21.2.2 S21.4.1 S29.12 S32.7 S51.71 S52.32 S52.63 S52.148 S52.152 S52.153 S52.234 S54.2[+] S56.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for **review**, unless administrations wish to consider changing the character of this provision. [+] Consider whether the application and use of the procedures referenced as mandatory.

S1.156 S3.4 S3.7 S3.14 S5.474 S9.50.1 S15.10 S15.12.1 S15.13.1 S16.1 S19.3 S19.23 S19.24 S19.112* S19.115* S19.126* S21.6.1 S21.12.1 S21.16.1 A.S22.1 S22.22.2 S22.26 S30.1 S56.7*	The reference to an ITU-R Recommendation or an ITU-T Recommendation (*) in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
S16.2 S19.83 S52.149 S52.188 S52.192 S52.213	The reference to an ITU-R Recommendation in this provision is of an **undefined** character, but the referenced text is **explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e., mandatory or non-mandatory).
S1.153 S1.167 S26.6	The reference to an ITU-R Recommendation in this provision is of an **undefined** character and the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e., mandatory or non-mandatory) and, if it becomes mandatory, to identify the referenced text explicitly.

B) Parts of Appendices S1 to S18 to the Simplified Radio Regulations referring to ITU-R Recommendations

RR/Ap. Item	Remark
• AP S4, Annex 2A, C.11, item d) • AP S5, Table S5-1, calculation method re No. S19.17A • AP S5, Annex 1, Tables 1-4	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
• AP S1, item 3 (3.2) • AP S5, Table S5-1, threshold/condition re No. S19.21 • AP S5, Table S5-1, calculation method re No. S19.21 • AP S13, RR 3259A • AP S16*, Sect. III, item 5	The reference to an ITU-R Recommendation or an ITU-T Resolution or Recommendation (*) in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and to ensure that a standard method of reference is used.
• AP S4, Annex 2A, C.8 • AP S5, Annex 1, paragraphs 1.2.1 and 1.2.3.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
AP S1, item 2 AP S2 AP S3, Table AP S3, item 12 AP S3, item 13 AP S11, Part B, (3.) AP S12, item 6) AP S13, RR 2937A AP S13, RR 3340	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.

ADD

ANNEX 4 TO RESOLUTION 27 (Rev.WRC -97)

LIST OF ITU-R RECOMMENDATIONS REFERRED TO IN THE RADIO REGULATIONS[2]

Recommendation	Title	Status[1]	Document	RR provision No[3]
ITU-R M.257-3	Sequential Single Frequency selective-calling system for use in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 145	**S19.38**, S19.83, **S19.92**, **S52.222.1, S52.235**, S54.2, AP S13 (A5, para. 11)
ITU-R SF.356-4	Maximum allowable values of interference from line-of-sight radio-relay systems in a telephone channel of a system in the fixed-satellite service employing frequency modulation, when the same frequency bands are shared by both systems	NOC	1994 SF-series	AP S7, 2.3.1 Note 2
ITU-R SF.357-4	Maximum allowable values of interference in a telephone channel of an analogue angle-modulated radio-relay system sharing the same frequency bands as systems in the fixed-satellite service	**MOD**	Blue 4-9/BL/1	AP S7, 2.3.1 Note 2
ITU-R F.405-1	Pre-emphasis characteristics for FM radio-relay systems for television	NOC	1990 Series, Volume IX	AP S30 (Annex 5, 3.1.1)
ITU-R TF.460-6	Standard-frequency and time-signal emissions	**MOD**	Document 7/1020	**S1.14**
ITU-R S.465-5	Reference earth-station radiation pattern for use in coordination and interference assessment in the frequency range from 2 to about 30 GHz	**MOD**	1994 S-series	AP S30 (Annex 6, 2.1)

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1 Status as of date of the end of the Radiocommunication Assembly, 1997.

2 This list does not include ITU-R Recommendations referred to in Resolutions and Recommendations from WARC/WRC.

3 The provisions indicated in bold make reference to the listed ITU-R Recommendation in a mandatory manner, i.e., incorporated by reference.

ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 60	S19.83, **S51.41**
ITU-R S.483-3	Maximum permissible level of interference in a television channel of a geostationary-satellite network in the fixed-satellite service employing frequency modulation, caused by other networks of this service	**MOD**	Blue - 4/BL/10	AP S30 (Annex 6, 1.5, Note 5)
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	NOC	1995 M-series Fascicle, Part 3, p. 150	**S51.77**, S52.182, **S52.231, AP 13 (A2, para. 10 (1))**
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 72	**S52.27**, S56.2
ITU-R M.493-9	Digital selective calling system for use in the maritime mobile services	**MOD**	Document M/1009	S54.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**MOD**	1997 M-series Fascicle, p. 339 + Document 8/1010	**S51.35**, S52.148, S52.149, S52.152, S52.153, **S52.159**, S54.2
ITU-R M.625-3	Direct-printing telegraph equipment employing automatic identification in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 1	S19.83, **S51.41**

ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	NOC	1995 M-series Fascicle, Part 3, p. 143	S19.83, **S51.41**
ITU-R SF.675-	Calculation of the maximum power density (averaged over 4 kHz) of an angle-modulated carrier	MOD	1994 SF-series	AP S4 (C8a, footnote)[4]
ITU-R M.690-1	Technical characteristics of emergency position-indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121.5 MHz and 243 MHz	NOC	1995 M-series Fascicle, Part 4, p. 1	**AP S13 (A5, paras 1b and 4.2),** AP S15 (Table S15.2, 121.5 MHz),
ITU-R SF.765	Intersection of radio-relay antenna beams with orbits used by space stations in the fixed-satellite service	NOC	1994 SF-series Fascicle	S21.22, S21,41, S29.12
ITU-R RA.769-1	Protection criteria used for radioastronomical measurements	**MOD**	1995 RA-series Fascicle, p. 5	S5.208A **S5.511A**, S29.12[5]
ITU-R M.821-1	Optional expansion of the digital selective calling system for the maritime mobile service	MOD	1997 series M, Part 3	S54.2
ITU-R M.825-2	Characteristics of a transponder system using DSC techniques for use with vessel traffic services and ship-to-ship identification	MOD	Document 8/1005	S54.2
ITU-R IS.847-1	Determination of the coordination area of an earth station operating with a geostationary space station and using the same frequency band as a system in a terrestrial service	NOC	1994 IS-series Volume, p. 1	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**

[4] The reference in this provision is SF.675.

[5] The reference in these provisions is RA.769.

ITU-R IS.848-1	Determination of the coordination area of a transmitting earth station using the same frequency band as receiving earth stations in bidirectionally allocated frequency bands	NOC	1994 IS-series Volume, p. 31	**AP S5 (Table S5.1)**
ITU-R IS.849-1	Determination of the coordination area for earth stations operating with non-geostationary spacecraft in bands shared with terrestrial services	NOC	1994 IS-series Volume, p. 40	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**
ITU-R SA.1071	Use of the 13.75 to 14.0 GHz band by the space science services and the fixed-satellite service	NOC	1994 SA-series	S5.503A
ITU-R SM.1135	SINPO and SINPFEMO codes	NOC	1995 SM-series Fascicle, p. 47	
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	NOC	1995 SM-series Fascicle, p. 50	AP S1 (paras 1 (2) and **2 (3.1)**)
ITU-R SM.1139	International monitoring system	NOC	1995 SM-series Fascicle, p. 58	S16.2, S16.6
ITU-R IS.1143	System specific methodology for coordination of NGSO space stations (space-to-Earth) operating in the MSS with the fixed service	NOC	1995 IS-series	AP S5 (An 1, paras. 1.2.1 and 1.2.3.2)
ITU-R M.1169	Hours of service of ship stations	NOC	1995 M-series Fascicle, Part 3, p. 157	**S47.26, S47.27, S47.28, S47.29, S50.9**
ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 162	S51.71, **S52.23, S52.25**, **S52.31**, S52.32, S52.63, **S52.69**, **S55.1**
ITU-R M.1171	Radiotelephony procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 169	S51.71, S52.192, **S52.195,** S52.213, **S52.224**, S52.234, **S52.240**, **S57.1, AP S13(A2, para. 14A, 1)**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 178	**S19.48**, S32.7, AP S13 (Part A1, para. 5)

ITU-R M.1173	Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz	NOC	1995 M-series Fascicle, Part 3, p. 211	**S52.181**, **S52.229**, **AP S17 (B, Sect. I (2) and I (6a,b))**
ITU-R M.1174	Characteristics of equipment used for on-board communications in the bands between 450 MHz	NOC	1995 M-series Fascicle, Part 3, p. 213	**S5.287, S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	NOC	1995 M-series Fascicle, Part 3, p. 215	**AP S13 (A5, para. 9)**
ITU-R M.1185-1	Method for determining coordination distance between ground based mobile earth stations and terrestrial stations operating in the 148.0 - 149.9 MHz band	**MOD**	Document 8/1019	**AP S5 (Annex 1, 3.2, Table 1),** RS 46 (Annex 2, Table 1)
ITU-R M.1187	A method for the calculation of the potentially affected region for a mobile-satellite service (MSS) network in the 1 - 3 GHz range using circular orbits	NOC	1995 M-series Fascicle, Part 5, p. 38	**AP S4 (C.11d)**

ATTACHMENT 4

MOD

RESOLUTION No. 33 (Rev.WRC-97)

RELATING TO THE BRINGING INTO USE OF SPACE STATIONS IN THE BROADCASTING-SATELLITE SERVICE, PRIOR TO THE ENTRY INTO FORCE OF AGREEMENTS AND ASSOCIATED PLANS FOR THE BROADCASTING-SATELLITE SERVICE[1]

The World ~~Administrative Radio~~ Radiocommunication Conference (Geneva ~~1979~~, 1997),

considering

a) that while Resolution **507** envisages plans for the broadcasting-satellite service, some administrations might nevertheless feel the need to bring stations in that service into use prior to such plans being established;

b) that administrations should, as far as possible, avoid proliferation of space stations in the broadcasting-satellite service before such plans have been established;

c) that a space station in the broadcasting-satellite service may cause harmful interference to terrestrial stations operating in the same frequency band, even if the latter are outside the service area of the space station;

d) that the procedures specified in Article**s S9** to **S14**~~11~~ and Appendix **S5** of the Radio Regulations contain ~~no~~ provisions for coordination between ~~space~~ stations in the broadcasting-satellite service and terrestrial stations ~~and~~ between space systems ~~stations~~ in that service and space systems of other administrations;

resolves

1. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, the ~~following~~ procedures of Sections A, B and C shall be applied for the coordination and notification of stations in the broadcasting-satellite service and coordination and notification of other services in respect of that service, until [DD.MM.YYYY - date of provisional application of the Simplified Radio Regulations as decided by WRC-97~~:~~.

2. that, as from [DD.MM.YYYY - date of provision application of the Simplified Radio Regulations as decided by WRC-97], the procedures of Articles **S9** to **S14** shall be applied for the coordination and notification of stations in the broadcasting-satellite service and coordination and notification of other services in respect of that service, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force.

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[1] ~~Replaces Resolution No **Spa2**-3 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971~~.

NOC **Section A. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Terrestrial Stations**

NOC **Section B. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Space Systems of Other Administrations**

NOC **Section C. Notification, Examination and Recording in the Master Register of Assignments to Space Stations in the Broadcasting-Satellite Service Dealt With under this Resolution**

SUP RESOLUTION 48 (WRC-95)

ADD

RESOLUTION [COM4-17]

PUBLICATION OF THE WEEKLY CIRCULAR INCLUDING SPECIAL SECTIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the Weekly Circular and the Special Sections, as referred to in Articles **S9**, **S11** and **S12A** of the Radio Regulations, are presently published on paper, microfiche and diskette;

b) that the form, content and periodicity of this publication need to be reviewed to improve its usability;

c) that the IFL (International Frequency List) and the SRS (a database of Space Radiocommunication Stations) are published every six months and the terrestrial Plans are published on a yearly basis exclusively on CD-ROM (Compact Disc - Read-Only Memory);

d) that the cost reduction and availability of CD-ROM and CD-ROM readers have improved greatly in recent times;

e) that large amounts of data may be more readily consulted if presented in an electronic format by using software;

f) that the introduction of new technologies requires adaptation and appropriate training from a user's point of view, especially for developing countries;

g) that information in electronic format could be used to fulfil administrations' database requirements,

further considering

h) that the budget of the ITU has provision for the distribution of one free copy of the Weekly Circular and the Special Sections to each administration;

i) that the use of a CD-ROM format would significantly reduce the cost of publishing and distributing the Weekly Circular;

j) that the use of electronic format is important for many administrations,

resolves

1 that the publication of the Weekly Circular and the Special Sections on paper and microfiche, as well as diskette format be migrated to a CD-ROM format, taking into consideration *resolves* 4" of this Resolution;

2 that this publication be fortnightly;

3 that tests should be conducted in cooperation with all administrations before the introduction of the CD-ROM publication replacing the Weekly Circular, including the Special Sections, published on paper, microfiche, and on diskette;

4 that, following the successful completion of these tests and for an introductory period of a minimum of three months ending 1 January 1999, both the paper, microfiche and diskette format and the CD-ROM format should be provided in parallel;

5 that the query software to be made available on the CD-ROM be capable of easily identifying and extracting to file Parts I, II and III of the Weekly Circular, the associated Special Sections for terrestrial and space assignments, as well as Plan assignments;

6 that administrations are encouraged to discontinue usage of paper, microfiche and diskette as soon as possible and to inform the Radiocommunication Bureau accordingly,

instructs the Director of the Radiocommunication Bureau

1 to initiate the introduction of a CD-ROM format for the publication of the Weekly Circular including the Special Sections;

2 to consult with all the administrations during the testing phase of the new system;

3 to provide, an index of Parts 1, 2, 3 and the Special Sections printed on paper, for those administrations requesting it;

4 to include in the radiocommunication seminars appropriate training in the use of the CD-ROM format;

5 to make the data also available on TIES by remote electronic access on a subscription basis;

6 to fix a reasonable price for the provision of additional copies of the CD-ROM,

further instructs the Director of the Radiocommunication Bureau

7 to consider an alternative name, if appropriate, for the Weekly Circular;

8 to report to the next world radiocommunication conference on the experience gained in the introduction of the CD-ROM format with a view to consequentially amending the Radio Regulations, as appropriate,

requests the Secretary-General

to consider the provision of suitable software and/or hardware for the least developed countries requesting it.

ADD

RESOLUTION [COM4-18]

PROVISIONAL APPLICATION OF CERTAIN PROVISIONS OF THE RADIO REGULATIONS AS MODIFIED BY WRC-97 AND TRANSITIONAL ARRANGEMENTS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that as a result of the review under Resolution **18** (Kyoto, 1994); a number of provisions related to the Advance Publication, Coordination and Notification of assignments for satellite networks have been modified and these should be applied provisionally as soon as possible;

b) that it was decided to reduce the regulatory time-frame for bringing a satellite network into use, and to delete the Advance Publication Information (API) if not followed by the coordination data within 24 months of the date of receipt of the API;

c) that there are a number of satellite networks for which the relevant information has been communicated to the ITU prior to the end of this Conference, and it is necessary to provide some transitional measures for the treatment of this information by the Bureau;

d) that this Conference has modified some of the technical criteria related to coordination under Resolution **46 (Rev.WRC-97)** and it is necessary to provide some transitional measures,

resolves

1 that the provisions of Sections I, IA and IB of Article **S9** and the provisions of Article **S11** (Nos. [**S11.43A**, **S11.44**, **S11.44B** to **S11.44I, S11.47** and **S11.48**]), as revised by WRC-97 shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis as of [22 November 1997];

2 that for satellite networks which are subject to coordination for which the API has been received by the Bureau prior to [22 November 1997] but the coordination data has not been received by the Bureau prior to this date, the responsible administration shall have until [22 November 1999] or the end of the period pursuant to the application of No. **1056A** of the Radio Regulations, which ever date comes earlier, to submit the coordination data in accordance with the applicable provisions of the Radio Regulations, otherwise the Bureau shall cancel the relevant API in accordance with No. **1056A** or No. [**S9.5D**] as applicable;

3 that for satellite networks for which the API has been received by the Bureau prior to [22 November 1997], the maximum time period from the date of receipt of the API to bring the relevant frequency assignments into use shall be six years plus the extension pursuant to No. **1550** [and Resolution [**GTPLEN2-1**] if applicable, which ever date comes earlier];

4 that the revised Appendix **S4** with respect to the API for satellite networks which are subject to coordination under Section II of Article **S9**, shall be applied as of [22 November 1997];

5 that for those networks which are subject to coordination for which the API has been received but not yet published prior to [22 November, 1997], the Bureau shall publish only the information of the revised Appendix **S4** as modified by WRC-97;

[6 that as this Conference has modified Appendix **S5**, as it relates to Resolution **46**, the relevant provisions of Appendix **S5** shall be used as of [22 November, 1997] in lieu of the same provisions in Annex 2 to Resolution **46 (Rev.WRC-97)**.]

ADD

RESOLUTION [COM4-19]

PROVISIONAL APPLICATION OF PROVISIONS Nos. S11.24 AND S11.26 OF THE RADIO REGULATIONS AS ADOPTED BY WRC-97 WITH REGARD TO HIGH ALTITUDE PLATFORM STATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has made provision for the operation of high altitude platform stations within the fixed service in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz;

b) that the Radio Regulations Board issued a provisional rule of procedure concerning notification periods in No. **S11.24** (RR **1228**) in February 1997, pending a final decision by WRC-97;

c) that WRC-97 modified **S11.24** and added **S11.26** of the Radio Regulations to provide that notices relating to assignments for high altitude platform stations in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz "shall reach the Bureau not earlier than five years before the assignments are bought into use";

d) that Resolution **[COM5-7] (WRC-97)** instructs the Bureau concerning the treatment of notices for high altitude platform stations as from 22 November 1997,

resolves

that the provisions of Article **S11** (Nos. **S11.24** and **S11.26**) shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis from 22 November 1997.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 336-E
18 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

NOTE BY THE CHAIRMAN OF COMMITTEE 4

FORMAT AND TEXT OF ARTICLE 11 OF APPENDIX 30 AND ARTICLE 9A OF APPENDIX 30A

The proposed format and text of Article 11 of Appendix 30 and Article 9A of Appendix 30A are based on the current structure of Appendices 30 and 30A.

Please find attached the layout and the text of Article 11 of Appendix 30 and the layout and the text of Article 9A of Appendix 30A.

ARTICLE 11

The Plan for the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz in Region 3 and 11.7 - 12.5 GHz in Region 1

11.1 COLUMN HEADINGS OF THE PLAN

Col. 1. *Notifying administration symbol*.

Col. 2. *Beam identification* (Column 2, normally, contains the symbol designating the country or the geographical area taken from Table B1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 3. *Nominal orbital position*, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).

Col. 4. *Channel number*.

Col. 5. *Nominal intersection of the beam axis with the Earth (boresight or aim point in the case of a non-elliptical beam) longitude and latitude*, in degrees and hundredths of a degree.

Col. 6. *Space station transmitting antenna characteristics (elliptical beams)*. This column contains three numerical values corresponding to the major axis, the minor axis and the major axis orientation respectively of the elliptical cross-section half-power beamwidth, in degrees and hundredths of a degree. Orientation of the ellipse determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse, to the nearest degree.

Col. 7. S*pace station transmitting antenna pattern code*.

Col. 8. *Space station transmitting antenna shaped (non-elliptical) beam identification.*

Col. 9. *Maximum space station transmitting antenna co-polar and cross-polar (in the case of shaped beam) isotropic gain*, in dBi.

Col. 10. *Earth station receiving antenna pattern code*.

Col. 11. *Polarization* (CL - circular left, CR - circular right, LE - linear referenced to the equatorial plane) and polarization angle in degrees and hundredths of a degree (in the case of linear polarization only).

Col. 12. *E.i.r.p*. in the direction of maximum radiation, in dBW.

Col. 13. *Designation of emission*.

Col. 14. *Identity of the space station*.

Col. 15. *Group code* (An identification code which indicates that all assignments with the same group identification code will be treated as a group.)

Col. 16. *Assignment status*.

Col. 17. *Remarks*.

The codes used for the antenna pattern of the transmitting space station (downlink) antenna are defined as follows:

R13TSS	Figure 9 and Section 3.13.3 in Annex 5 of Appendix 30
R123FR	Figure 11 and Section 3.13.3 in Annex 5 of Appendix 30
RAD_TSS	RADIOSAT-3 antenna pattern (antenna pattern data supplied by the Administration of France)

In cases where the space station transmitting antenna pattern field is blank, the necessary antenna pattern data is provided by shaped beam data submitted by the administration. This data is stored in column 8. A particular shaped beam is identified by the combination of column 1, column 8 and column 14. In such cases the maximum cross polar gain is given in the "Cross-polar gain" field.

The codes used for receiving earth station (downlink) antenna pattern are defined as follows:

R13RES	Figure 7 and Section 3.7.2 in Annex 5 of Appendix 30
MODRES	Recommendation ITU-R BO.1213

The assignment status codes used for beams are defined as follows:

P	Assignment in the Plan for which provision 4.3.5 (in terms of 8 years lapsing period) of this appendix does not apply.
PE	Assignment in the Plan for which provision 4.3.5 (in terms of 8 years lapsing period) of this appendix does not apply. These assignments have been notified, brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, parameters in force before WRC-97 are applied.
A	Assignment in the Plan for which provision 4.3.5 (in terms of 8 years lapsing period) of this appendix applies.
AE	Assignment in the Plan for which provision 4.3.5 (in terms of 8 years lapsing period) of this appendix applies. These assignments have been notified, brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, parameters in force before WRC-97 are applied.

Group code: if an assignment is part of the group:

a) The equivalent protection margin to be used for the application of Article 4 of this appendix shall be calculated on the following basis:

- for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; and
- for the calculation of interference from assignments belonging to a group of assignments that are not part of that same group, only the worst-interference contribution from that group shall be used on a test point to test point basis.

b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the aggregate *C/I* produced by all emissions from that group shall not exceed the *C/I* calculated on the basis of *a)* above.

11.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

1. To be dedicated to the Islamic programme envisaged in the Conference[1] documents.

2. This assignment results from a common requirement of the Administrations of Denmark and Iceland. The service area includes the Faeroe Islands and Iceland. The assignment may, after consultations between the two Administrations, be used by either of them.

3. Provisional Beam*. This assignment has been included in the Plan by WRC-97. This assignment is for exclusive use by Palestine, subject to the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution **741** of the ITU Council notwithstanding.

4. Assignment intended to ensure coverage of Algeria, Libya, Morocco, Mauritania and Tunisia, with the agreement of the countries concerned. If required, this assignment may be used with the characteristics of the beam TUN 150.

5. This assignment shall be brought into use only when the limits given in Table 1 are not exceeded or with the agreement of the affected administrations identified in Table 2 with respect to:

a) assignments in the Region 2 Plan on 27 October 1997; or

b) assignments in the terrestrial services which are recorded in Master Register with a favourable finding or received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997; or

c) assignments in the FSS that: are recorded in the Master Register with a favourable finding; or those which have been coordinated under the provisions of No. **1060** of the Radio Regulations or paragraph 7.2.1 of Appendix **30**; or those that are in process of coordination under the provisions of No. **1060** of the Radio Regulations or paragraph 7.2.1 of Appendix **30** prior to 27 October 1997.

These administrations shall be informed by the notifying administration of changes in characteristics before these beams are brought into use.

6. This assignment shall not claim protection from the assignment of the administration indicated in Table 3 which is in conformity with Region 2 Plan on 27 October 1997.

7. This assignment shall not claim protection from the assignments of the administration indicated in Table 3 which are recorded in the Master Register with a favourable finding prior to 27 October 1997 [to which **S5.487**/RR 838 and **S5.43**/RR 435 do not apply]. *[This item is to be considered when the text of the footnote **S5.487**/RR 838 is finally agreed]*.

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[1] The World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

TABLE 1

Symbol	Criteria
a	Paragraph 3 of Annex 1*
b	Paragraphs 4, 5a) and 5b) of Annex 1 (see relevant paragraph cited below) *
c	Paragraph 6 of Annex 1 *

TABLE 2

Beam name	Channels	Limit Crit. Ref. Table 1	Countries or geographical area affected
XXX00000	e.g. 1, 5, 9, 13, 17	a	ABC, DEF, GHI
	e.g. All channels	b	JKL
	e.g. For channels 2 to 4	c	MNO
XXX11111	e.g. 3, 7, 11, 15, 19	a	PQR

TABLE 3

Beam name	Channels	Countries or geographical area affected
XXX00000	e.g. 1, 5, 9, 13, 17	ABC, DEF, GHI

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm.	Beam	Orbital	Channel	Boresight		Space Antenna Character.			Space	Shap.	Space Ant.		Earth	Polarization		EIRP	Designation	Satellite	Gro	Status	Re-
Symb	Identification	Position °		Long. °	Lat. °	Major	Minor °	Orient. °	Antenna	Beam	Co-pol.	X-pol.	Antenna	Typ.	Angle °	dBW	of Emission	Identification	Code		marks
AFG	AFG24600	50.00	1	64.50	33.10	1.44	1.40	21.00	R13TSS		41.40		MODRES	CR		58.40	27M0F8W			P	
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
EST	EST06100	23.00	1	25.01	58.47	0.72	0.60	9.93	R13TSS		48.09		MODRES	CL		58.89	27M0F8W			A	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
F	F3_D2762	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
J	000BS-3N	109.85	3	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	3	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W		33	PE	
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KOR	KO11201D	116.00	4	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.60	27M0G7W	KOREASAT-1	20	AE	
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
E	HISPASA4	-30.00	23	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
E	HISPASA4	-30.00	27	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
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S	S 13902	5.00	40	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		R13RES	CL		68.24	27M0F8W			PE	
SDN	SDN23200	-7.00	40	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.45	27M0F8W			P	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
S	S 13902	5.00	40	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		R13RES	CL		68.24	27M0F8W			PE	
SDN	SDN23200	-7.00	40	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.45	27M0F8W			P	
E	HISPASA4	-30.00	23	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
E	HISPASA4	-30.00	27	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
S	S 13902	5.00	40	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		R13RES	CL		68.24	27M0F8W			PE	
SDN	SDN23200	-7.00	40	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.45	27M0F8W			P	

ARTICLE 9A

Plan for Feeder Links for the Broadcasting-Satellite Service in the Fixed-Satellite Service in the Frequency Bands 14.5 - 14.8 GHz and 17.3 - 18.1 GHz in Regions 1 and 3

9A.1 COLUMN HEADINGS OF THE PLAN

Col. 1. *Notifying administration symbol*.

Col. 2. *Beam identification* (Column 2, normally, contains the symbol designating the country or the geographical area taken from Table B1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 3. *Nominal orbital position*, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).

Col. 4. *Channel number*.

Col. 5. *Assigned frequency*, in MHz.

Col. 6. *Nominal intersection of the beam axis with the Earth (boresight or aim point in the case a non-elliptical beam) longitude and latitude*, in degrees and hundredths of a degree.

Col. 7. *Space station receiving antenna characteristics (elliptical beams).* This column contains three numerical values corresponding to the major axis, the minor axis and the major axis orientation respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree. Orientation of the ellipse determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse, to the nearest degree.

Col. 8. S*pace station receiving antenna pattern code*.

Col. 9. *Space station receiving antenna shaped (non-elliptical) beam identification.*

Col. 10. *Maximum space station receiving antenna co-polar and cross-polar (in the case of shaped beam) isotropic gain*, in dBi.

Col. 11. *Earth station transmitting antenna pattern code*.

Col. 12. *Polarization* (CL - circular left, CR - circular right, LE - linear referenced to the equatorial plane) and polarization angle in degrees and hundredths of a degree (in the case of linear polarization only).

Col. 13. *E.i.r.p*. in the direction of maximum radiation, in dBW.

Col. 14. *Permitted increase in earth station e.i.r.p.* in dB for the purpose of power control (see Section 3.11 of Annex 3 to this appendix)[2].

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[2] Because the applicable versions of ITU-R Recommendations related to propagation loss due to rain and depolarization have not been defined, the power control values will be calculated following the Conference.

Col. 15. *Designation of emission.*

Col. 16. *Identity of the space station.*

Col. 17. *Group code* (An identification code which indicates that all assignments with the same group identification code will be treated as a group.)

Col. 18. *Assignment status.*

Col. 19. *Remarks*.

The codes used for the antenna pattern of the receiving space station (feeder link) antenna are defined as follows:

R13RSS	Figure B and Section 3.7.3 in Annex 3 of Appendix 30A
R123FR	Figure C and Section 3.7.3 in Annex 3 of Appendix 30A
MODRSS	Recommendation ITU-R BO.1296

In cases where the space station receiving antenna pattern field is blank, the necessary antenna pattern data is provided by shaped beam data submitted by the administration. This data is stored in column 8. A particular shaped beam is identified by the combination of column 1, column 9 and column 16. In such cases the maximum cross polar gain is given in the "Cross-polar gain" field.

The codes used for transmitting earth station (feeder link) antenna pattern are defined as follows:

R13TES	Figure A and Section 3.5.3 in Annex 3 of Appendix 30A
MODTES	Recommendation ITU-R BO.1295

The assignment status codes used for beams are defined as follows:

P	Assignment in the Plan for which provision 4.2.5 (in terms of 8 years lapsing period) of this appendix does not apply.
PE	Assignment in the Plan for which provision 4.2.5 (in terms of 8 years lapsing period) of this appendix does not apply. These assignments have been notified, brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, parameters in force before WRC-97 are applied.
A	Assignment in the Plan for which provision 4.2.5 (in terms of 8 years lapsing period) of this appendix applies.
AE	Assignment in the Plan for which provision 4.2.5 (in terms of 8 years lapsing period) of this appendix applies. These assignments have been notified, brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, parameters in force before WRC-97 are applied.

Group code: if an assignment is part of the group:

a) The equivalent protection margin to be used for the application of Article 4 of this appendix shall be calculated on the following basis:

- for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; *and*
- for the calculation of interference from assignments belonging to a group of assignments that are not part of that same group, only the worst-interference contribution from that group shall be used on a test point to test point basis.

b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the overall *C/I* produced by all emissions from that group shall not exceed the *C/I* calculated on the basis of *a)* above.

9A.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

1. India may also locate feeder-link earth stations near the point 29° N, 77.3° E on the condition that this does not affect the equivalent protection margins of other administrations.

2. The assignment of the Federal Republic of Germany and Switzerland have agreed that their feeder-link channels can be interchanged for a limited period of time ending in the year 2001 as follows:

2 with 22, 6 with 26, 10 with 30, 14 with 34, 18 with 38.

3. Before an administration notifies to the Bureau or brings into use this frequency assignment to a transmitting feeder-link earth station in the bands 17.7 - 18.1 GHz, it shall effect coordination of this assignment with each administration, using the method described in Annex 4 of Appendix 30A, in respect of specific earth station in the fixed-satellite service (space-to-Earth) in the band 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or

b) received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997.

4. Before an administration notifies to the Bureau or brings into use this frequency assignment to a transmitting feeder-link earth station in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz, it shall effect coordination of this assignment with each administration whose territory lies wholly or partly within the coordination area of the feeder-link earth station, using the method detailed in Appendix 28 in respect of notices concerning stations of the fixed and mobile services in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or

b) received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997.

5. This assignment shall be brought into use only when the limits given paragraph 5 of Annex 1 are not exceeded, or with the agreement of administrations identified in Table 1A with respect to assignments which are in conformity with the Region 2 Plan on 27 October 1997.

These administrations shall be informed by the notifying administration of changes in characteristics before these beams are brought into use.

6. This assignment shall not claim protection from the assignment of the administration indicated in Table 1B which are in conformity with the Region 2 Plan on 27 October 1997.

7. This assignment shall not claim protection from the assignments of the administration indicated in Table 1B which are recorded in the Master Register with a favourable finding prior to 27 October 1997 [to which **S5.487**/RR 838 and **S5.43**/RR 435 do not apply. *This item is to be considered when the text of the footnote **S5.487**/RR 838 is finally agreed*].

8. Provisional Beam*. This assignment has been included in the Plan by WRC-97. This assignment is for exclusive use by Palestine, subject to the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution 741 of the ITU Council notwithstanding.

TABLE 1A

Beam name	**Channels**	**Countries or geographical area affected**
XXX00000	e.g. 1, 5, 9, 13, 17	ABC, DEF, GHI
....	.....	....

TABLE 1B

Beam name	**Channels**	**Countries or geographical area affected**
XXX00000	e.g. 1, 5, 9, 13, 17	ABC, DEF, GHI
.....	.....	.....

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position °	Channel	Centre Frequency	Boresight Long. °	Boresight Lat. °	Space Antenna Character. Major	Space Antenna Character. Minor °	Space Antenna Character. Orient. °	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	Space Ant. Gain X-pol.	Earth Antenna	Polarization Typ	Polarization Angle °	EIRP dBW	Power Contro	Designation of Emission	Satellite Identification	Group Code	Status	Re-mark
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
AFS	AFS02100	5.00	1	14525.30	24.50	28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	CR		82.00		27M0F8W			P	
ARS	ARS34001	17.00	1	14525.30	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		82.00		27M0F8W			P	
IND	IND04301	56.00	1	14525.30	77.80	11.10	1.36	1.28	172.00	MODRSS		42.04		MODTES	CL		82.00		27M0F8W			P	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
KOR	KO11201D	116.00	2	14544.48	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0G7W	KOREASAT-1	20	AE	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
E	E 12900	-30.00	1	17327.48	-3.10	39.90	2.10	1.14	154.00	MODRSS		40.66		MODTES	CR		84.00		27M0F8W		17	P	
E	HISPASA4	-30.00	1	17327.48	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		82.50		27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	1	17327.48	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		83.50		27M0F8W	HISPASAT-1	17	AE	
EST	EST06100	23.00	1	17327.48	25.36	59.31	0.68	0.60	2.17	MODRSS		48.37		MODTES	CR		84.00		27M0F8W			P	
F	E2WA7DA1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
J	000BS-3N	109.85	1	17327.48	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	1	17327.48	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
LBY	LBY28000	-25.00	1	17327.48	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
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F	F2_A2722	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
F	F3_A3322	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
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...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S	S 13902	5.00	40	18075.50	17.00	61.50	2.00	1.00	10.00	R13RSS		41.44		R13TES	CR		84.00		27M0F8W			PE	
SDN	SDN23200	-7.00	40	18075.50	29.60	18.40	2.54	2.09	167.00	MODRSS		37.20		MODTES	CR		86.00		27M0F8W			P	

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 337-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

TWELFTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5
TO THE EDITORIAL COMMITTEE

The following corrections should be made to the texts forwarded with document 337:

ADD S5.551C *Alternative allocation:* in the French overseas territories in Regions 2 and 3, the Republic of Korea and India the band 40.5 - 42.5 GHz is allocated to the broadcasting, broadcasting-satellite and fixed services on a primary basis.

ADD S5.551D *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Benin, Cameroon, Egypt, United Arab Emirates, Israel, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Qatar, Syria, Tunisia and Yemen the band 40.5 - 42.5 GHz is also allocated to the fixed-satellite (space-to-Earth) service on a primary basis. The use of this band by the fixed-satellite service shall be in accordance with Resolution [COM5-29].

DRAFT RESOLUTION [COM5-12]

considering

g) that the band 37 - 38 GHz is being planned for use by the space research service to provide very long baseline interferometry;

SUP RESOLUTION 211

SUP RESOLUTION 643

SUP RESOLUTION 710

V. RAWAT
Chairman of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 337-E
18 November 1997
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

TWELFTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5 TO THE EDITORIAL COMMITTEE

Committee 5 has completed its consideration of allocation issues relating to the high-density fixed service and to space science services. As a result of these deliberations, it has unanimously adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

V. RAWAT
Chairman of Committee 5

Annex: 1

ARTICLE S5

MOD

MHz
410 – 420

Allocation to Services		
Region 1	Region 2	Region 3
410 – 420	FIXED MOBILE except aeronautical mobile ~~Space Research (space-to-space) S5.268~~ SPACE RESEARCH (space-to-space) MOD S5.268	

MOD S5.268 Use of the band 410 - 420 MHz by the space research service is limited to communications within 5 km of an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from extra-vehicular activities shall not exceed -153 dB(W/m^2) for $0° \leq \Phi \leq 5°$, $-153 + 0.077 (\Phi-5)$ dB(W/m^2) for $5° \leq \Phi \leq 70°$ and -148 dB(W/m^2) for $70° \leq \Phi \leq 90^o$ where Φ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. **S4.10** does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile service.

ARTICLE S5

MOD

GHz
29.9 – 31.8

Allocation to Services		
Region 1	Region 2	Region 3
31.5 – 31.8	**31.5 – 31.8**	**31.5 – 31.8**
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	SPACE RESEARCH (passive)
Fixed		Fixed
Mobile except aeronautical mobile		Mobile except aeronautical mobile
S5.149 MOD S5.546	S5.340	S5.149

MOD S5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, Iran (Islamic Rep. of), Israel, Jordan, Kazakstan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, Russia, Tajikistan, Turkmenistan, Turkey and Ukraine, the allocation of the band 31.5 - 31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **S5.33**).

ARTICLE S5

ADD S5.547 The bands 31.8 - 33.4 GHz, 51.4 - 52.6 GHz, 55.78 - 59 GHz and 64 - 66 GHz are available for high-density applications in the fixed service (see Resolution [**COM5-12**]).

ADD S5.547A Use of the band 31.8 - 33.4 GHz by the fixed service shall be in accordance with Resolution [**COM5-11**].

MOD **GHz**
31.8 – 37

Allocation to Services		
Region 1	Region 2	Region 3
31.8 – 32	RADIONAVIGATION FIXED ADD S5.547A SPACE RESEARCH (deep space) (space-to-Earth) S5.548 ADD S5.547 ADD S5.547B	
32 – 32.3	INTER-SATELLITE FIXED ADD S5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) S5.548 ADD S5.547 ADD S5.547C	
32.3 – 33	INTER-SATELLITE FIXED ADD S5.547A RADIONAVIGATION S5.548 ADD S5.547 ADD S5.547D	
33 – 33.4	RADIONAVIGATION FIXED ADD S5.547A ADD S5.547 ADD S5.547E	

ADD S5.547B *Alternative allocation*: in the United States, the band 31.8 - 32 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis.

ADD S5.547C *Alternative allocation*: in the United States, the band 32 - 32.3 GHz is allocated to the inter-satellite, radionavigation and space research (deep space) (space-to-Earth) services on a primary basis.

ADD S5.547D *Alternative allocation*: in the United States, the band 32.3 - 33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis.

ADD S5.547E *Alternative allocation*: in the United States, the band 33 - 33.4 GHz is allocated to the radionavigation service on a primary basis.

MOD

GHz
31.8 – 37

Allocation to Services		
Region 1	Region 2	Region 3
35.2 – ~~36~~35.5	METEOROLOGICAL AIDS RADIOLOCATION S5.549 ~~S5.551~~	
~~35.2~~35.5 – 36	EARTH EXPLORATION-SATELLITE (active) METEOROLOGICAL AIDS RADIOLOCATION SPACE RESEARCH (active) S5.549 ~~S5.551~~ADD S5.551A	

SUP **S5.551**

ADD **S5.551A** In the band 35.5 - 36.0 GHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, meteorological aids and other services allocated on a primary basis.

MOD

GHz
40.5 – 42.5

Allocation to Services		
Region 1	Region 2	Region 3
40.5 – 42.5 BROADCASTING BROADCASTING-SATELLITE ~~Fixed~~ FIXED Mobile ADD S5.551B ADD S5.551D	**40.5 – 42.5** BROADCASTING BROADCASTING-SATELLITE ~~Fixed~~ FIXED Mobile FIXED-SATELLITE (space-to-Earth) ADD S5.551B ADD S5.551C	**40.5 – 42.5** BROADCASTING BROADCASTING-SATELLITE ~~Fixed~~ FIXED Mobile FIXED-SATELLITE (space-to-Earth) ADD S5.551B ADD S5.551E ADD S5.551C ADD S5.551F

ADD **S5.551B** The use of the band 41.5 - 42.5 GHz by the fixed-satellite service (space-to-Earth) is subject to Resolution [COM5-16].

ADD **S5.551C** *Alternative allocation:* in the French overseas territories in Regions 2 and 3 the band 40.5 - 42.5 GHz is allocated to the broadcasting, broadcasting-satellite and fixed services on a primary basis.

ADD **S5.551D** *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Benin, Cameroon, Egypt, United Arab Emirates, Israel, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Qatar, Syria, Tunisia and Yemen the band 40.5 - 42.5 GHz is also allocated to the fixed-satellite service on a primary basis. The use of this band by the fixed-satellite service shall be in accordance with Resolution [COM5-29].

ADD **S5.551E** Use of the band 40.5 - 42.5 GHz by the fixed-satellite service shall be in accordance with Resolution [COM5-29].

ADD **S5.551F** *Different category of service*: in Japan the allocation of the band 41.5 - 42.5 GHz to the mobile service is on a primary basis (see No. **S5.33**).

MOD

GHz
42.5 – 54.25

Allocation to Services		
Region 1	Region 2	Region 3
50.2 – 50.4	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ SPACE RESEARCH (passive) <u>MOD S5.340 ADD S5.555A</u>	

MOD

GHz
42.5 – 54.25

Allocation to Services		
Region 1	Region 2	Region 3
51.4 – ~~54.25~~52.6	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE ~~SPACE RESEARCH (passive)~~ ~~S5.340~~ S5.556 ADD S5.547	
~~51.4~~52.6 – 54.25	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) MOD S5.340 S5.556	

MOD

GHz
54.25 – 71

Allocation to Services		
Region 1	Region 2	Region 3
54.25 – ~~58.2~~55.78	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.556A ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.557~~ADD S5.557A	
~~54.25 – 58.2~~55.78 – 56.9	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
~~54.25 – 58.2~~56.9 – 57	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556B MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	

Allocation to Services		
Region 1	Region 2	Region 3
~~54.25~~57 – 58.2	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
58.2 – 59	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) ~~S5.340~~ S5.556 ADD S5.547	
59 – ~~64~~59.3	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 RADIOLOCATION S5.559 ~~S5.138~~	
59.3 – 64	FIXED INTER-SATELLITE MOBILE MOD S5.558 RADIOLOCATION S5.559 S5.138	
64 – 65	~~EARTH EXPLORATION-SATELLITE (passive)~~ ~~SPACE RESEARCH (passive)~~ FIXED INTER-SATELLITE MOBILE except aeronautical mobile ~~S5.340~~ S5.556 ADD S5.547	

Allocation to Services		
Region 1	Region 2	Region 3
65 – 66	EARTH EXPLORATION-SATELLITE SPACE RESEARCH INTER-SATELLITE ~~Fixed~~FIXED ~~Mobile~~MOBILE except aeronautical mobile ADD S5.547	
66 – 71	MOBILE S5.553 MOD S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE INTER-SATELLITE S5.554	

MOD S5.340 All emissions are prohibited in the following bands:

1 400 - 1 427 MHz,

2 690 - 2 700 MHz except those provided for by Nos. **S5.421** and **S5.422**,

10.68 - 10.7 GHz except those provided for by No. **S5.483**,

15.35 - 15.4 GHz except those provided for by No. **S5.511**,

23.6 - 24 GHz,

31.3 - 31.5 GHz,

31.5 - 31.8 GHz in Region 2,

48.94 - 49.04 GHz from airborne stations,

50.2 - 50.4 GHz[1], except those provided for by No. **S5.555A**,

~~51.4~~52.6 - 54.25 GHz,

~~58.2 - 59 GHz,~~

~~64 - 65 GHz,~~

86 - 92 GHz,

105 - 116 GHz,

140.69 - 140.98 GHz from airborne stations and from space stations in the space-to-Earth direction,

182 - 185 GHz except those provided for by No. **S5.563**,

217 - 231 GHz.

[1] The allocation to the earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2- 50.4 GHz should not impose undue constraints on the use of the adjacent bands by theprimary allocated services in those bands.

ADD S5.555A The band 50.2 - 50.4 GHz is also allocated, on a primary basis to the fixed and mobile services until 1 July 2000.

ADD S5.556A Use of the bands 54.25 - 56.9 GHz, 57.0 - 58.2 GHz and 59.0 - 59.3 GHz by the inter-satellite service is limited to satellites in the geostationary satellite orbit. The single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m^2/100 MHz) for all angles of arrival.

ADD S5.556B Use of the band 56.9 - 57 GHz by inter-satellite systems is limited to links between satellites in geostationary satellite orbit and transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary satellite orbit, the single entry

power flux-density at all altitudes from 0 km to 1000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m^2/100 MHz) for all angles of arrival.

ADD S5.557A *Additional allocation:* in Japan, the band 54.25 - 55.78 GHz is also allocated to the mobile service on a primary basis for low density use.

MOD S5.557 *Additional allocation:* in Japan ~~and the United Kingdom~~, the band ~~54.25~~55.78 - 58.2 GHz is also allocated to the radiolocation service on a primary basis.

MOD S5.558 In the bands ~~54.25~~55.78 - 58.2 GHz, 59 - 64 GHz, 66 - 71 GHz, 116 - 134 GHz, 170 - 182 GHz and 185 - 190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

DRAFT RESOLUTION [COM5-11]

USE OF THE FREQUENCY BAND 31.8 - 33.4 GHz FOR HIGH DENSITY SYSTEMS IN THE FIXED SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that in the frequency band 31.8 - 33.4 GHz, the deployment of high density systems in the fixed service might cause interference into or receive interference from stations in the existing services and that the priority and degree of protection afforded to each service is a matter for each administration to consider;

b) that the band 31.8 - 33.4 GHz is allocated on a primary basis to the radionavigation service and that portions of the band are allocated on a primary basis to the space research (deep space) and inter-satellite services;

c) that sharing criteria for the fixed and other services in the frequency band 31.8 - 33.4 GHz have not yet been developed within the ITU-R,

resolves

1 that the allocation to the fixed service in the frequency band 31.8 - 33.4 GHz shall not ~~enter into force~~ be provisionally applied before 1 January 2001;

2 that [WRC-99] should review this allocation including the date of 1 January 2001, taking full account of the future requirements and development of the ~~radionavigation service~~ other services to which the band is allocated and available ITU-R studies,

request ITU-R

to conduct, as a matter of urgency, the appropriate studies in time for [WRC-99] to determine what criteria would be necessary for sharing between stations in the fixed service and stations in the other services to which the frequency band 31.8 - 33.4 GHz is allocated.

DRAFT RESOLUTION [COM5-12]

FREQUENCY BANDS ABOVE 30 GHz AVAILABLE FOR USE BY THE FIXED SERVICE IN HIGH-DENSITY APPLICATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that there is a dramatically increasing demand for the fixed service in high-density applications resulting from the deployment of new mobile networks and from the rapid worldwide deregulation in the provision of local broadband services, including multimedia;

b) that the frequency range from 30 to about 50 GHz is preferred to satisfy initial requirements, as indicated in *considering* a), while the bands above about 50 GHz are preferred for similar applications but which take technical advantage of high atmospheric absorption characteristics;

c) that the lower part of the spectrum above 30 GHz has advantages for the fixed service in areas where longer path lengths are necessary;

d) that the 38 GHz band range is already heavily used by many administrations for fixed service in high-density applications;

e) that the needs of other services to which the relevant frequency bands are already allocated must be taken into account;

f) that the band 37 - 37.5 GHz is being planned for use by the space research service (space-to-Earth) to provide moon-to-Earth and inter-planetary communication links;

g) that the band 37 - 38 GHz is being planned for use by the space very long baseline interferometry;

~~g~~h) that the deployment of the fixed service in high-density applications in some bands potentially presents sharing difficulties with other primary services allocated to the same band, e.g., the fixed-satellite service;

~~h~~i) that operations in the space services, such as in the fixed-satellite service, in those bands used by high-density fixed service applications may lead to potential sharing difficulties;

~~i~~j) that there is a need for global harmonization of new and existing radio frequency bands to facilitate coordination between administrations, encourage development of competitive products through economies of scale, and the worldwide introduction of new telecommunication services, including the provision of reliable global information infrastructure (GII) access at an affordable cost,

resolves

that administrations should take into account that the bands 31.8 - 33.4 GHz*, 51.4 - 52.6 GHz, 55.78 - 59 GHz and 64 - 66 GHz are available for high-density applications in the fixed service, when considering allocations or other regulatory provisions in relation to these bands,

requests ITU-R

1 to undertake studies leading to the identification of system characteristics of high-density systems in the fixed service in the bands listed in the *resolves*;

2 to undertake, as a matter of urgency, studies of technical and operational criteria and methods to facilitate sharing between high-density systems in the fixed service and other services in the bands listed in the *resolves*,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

RESOLUTION [COM5-16]

ALLOCATION TO THE FIXED-SATELLITE (SPACE-TO-EARTH) SERVICE IN THE 41.5 - 42.5 GHz BAND AND THE PROTECTION OF THE RADIO ASTRONOMY SERVICE IN THE 42.5 - 43.5 GHz BAND

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in the band 41.5 - 42.5 GHz in Regions 2 and 3 and to certain countries in Region 1 and that this band is adjacent to the 42.5 - 43.5 GHz band which is allocated, *inter alia*, to the radio astronomy service for both continuum and spectral line observations;

b) that unwanted emissions from space stations in the fixed-satellite (space-to-Earth) service in the 41.5 - 42.5 GHz band may result in harmful interference to the radio astronomy service in the 42.5 - 43.5 GHz band;

c) that various technical means may reduce these unwanted emissions from space stations in the fixed-satellite service;

d) that a limited number of radio astronomy stations worldwide require protection, and that there may be means to limit the susceptibility of radio astronomy receivers to interference,

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* The date of provisional application of this allocation shall be in conformity with Resolution [COM5-11].

taking into account

the relevant provisions of the Radio Regulations,

resolves

that administrations shall not implement fixed-satellite systems in the band 41.5 - 42.5 GHz until technical and operational measures have been identified to protect the radio astronomy service from harmful interference in the band 42.5 - 43.5 GHz,

resolves to invite ITU-R

1 to study, as a matter of urgency, the potential for harmful interference that space stations in the fixed-satellite (space-to-Earth) service operating in the 41.5 - 42.5 GHz band may cause to stations in the radio astronomy service operating in the 42.5 - 43.5 GHz band;

2 to identify technical and operational measures that may be used to protect stations in the radio astronomy service operating in the 42.5 - 43.5 GHz band, including means of geographical separation and out-of-band emission limits to be applied to space stations operating in the fixed-satellite service in the 41.5 - 42.5 GHz band, as well as measures that stations in the radio astronomy service may implement to reduce their susceptibility to harmful interference;

3 to report on the results of these studies to the [CPM] of [WRC-99],

urges administrations

to participate actively in the aforementioned studies by submitting contributions to the ITU-R,

requests

[WRC-99] to take appropriate action based on these studies.

RESOLUTION [COM5-17]

CRITERIA AND METHODOLOGIES FOR SHARING BETWEEN THE FIXED-SATELLITE SERVICE AND OTHER ALLOCATED SERVICES IN THE BAND 40.5 - 42.5 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in Regions 2 and 3 and to certain countries in Region 1 and to the fixed service in the band 40.5 - 42.5 GHz;

b) that these allocations will provide flexibility to those administrations that seek to implement systems in the bands between 36 and 50 GHz;

c) that space services networks (fixed-satellite service and broadcasting-satellite service) will share the band 40.5 - 42.5 GHz on a primary basis with the fixed and broadcasting services;

d) that Chapter 7.5 of the Report of the Conference Preparatory Meeting to this Conference recognized that sharing of spectrum in frequency bands above 30 GHz between the fixed service and one or more other services could result in service impairments, and that there may be utility in further study of the feasibility of co-frequency sharing between the fixed service and other allocated services in these bands;

e) that it may be useful to consider the identification of this spectrum range for high-density fixed service applications;

~~e~~f) that given *considerings* a) through ~~d~~e), it would be useful to conduct such studies in the band 40.5 - 42.5 GHz;

~~f~~g) that the new co-primary allocations to the fixed-satellite service and fixed service referenced in *considering* a) above are in the band adjacent to the 42.5 - 43.5 GHz, which is the subject of an ITU study programme under draft Resolution [COM5-16] (WRC-97);

~~g~~h) that there is a need to establish sharing criteria, including power flux-density limits, to facilitate the co-existence of the allocated space and terrestrial services,

resolves to invite ITU-R

1 to undertake, as a matter of urgency, studies of appropriate criteria and methodologies for sharing including power flux-density limits between the fixed-satellite service and other allocated services in the band 40.5 - 42.5 GHz;

2 to report on the results of these studies to the [CPM] of [WRC-99],

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

requests

[WRC-99] to take appropriate action based on the completed studies.

RESOLUTION [COM5-28]

SHARING BETWEEN THE FIXED SERVICE AND OTHER SERVICES IN THE BAND 37 - 40 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the fixed service is allocated on a primary basis in the band 37 - 40 GHz and an increasing number of FS stations are deployed or being planned for use;

b) that the fixed-satellite service is allocated on a primary basis in the band 37.5 - 40.0 GHz and an increasing number of FSS systems are being planned for use;

c) that the deployment of high-density systems in either the fixed or fixed-satellite service might ~~cause~~result in interference into~~, or receive interference~~ the fixed-satellite service from~~,~~ stations in the ~~other~~fixed service, and that the priority and degree of protection afforded to ~~each service~~the fixed-satellite service is a matter for each administration to consider;

d) that although sharing is feasible between earth stations in the fixed-satellite service and terrestrial stations provided appropriate coordination procedures and/or operational techniques are employed, sharing may in practice become difficult when high geographic densities of such stations are deployed in bands heavily used by either service;

e) that sharing could be facilitated by the adoption of appropriate frequency sub-bands, such as the gaps between fixed service ITU-R recommended channelling plans;

f) that it may be useful to consider the ~~designation of all or a portion~~identification of this spectrum range for high-density fixed service applications,

resolves to request ITU-R

1 to conduct appropriate studies in time for [WRC-99] to determine whether the power flux-density limits included in Article **S21** adequately protect terrestrial services from fixed-satellite service networks;

2 to conduct other studies leading to technical and operational recommendations to facilitate sharing between terrestrial and space services,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

requests

[WRC-99] to consider the identification of ~~parts or all of the~~ spectrum in the band 37 - 40 GHz for use by the fixed service in high-density applications.

RESOLUTION [COM5-29]

(Required only if footnote S5.XXB is adopted)

USE OF THE FREQUENCY BAND 40.5 - 42.5 GHz BY THE FIXED-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the band 40.5 - 42.5 GHz is allocated on a primary basis to the broadcasting, broadcasting-satellite~~, and~~ fixed and fixed-satellite services;

b) that sharing criteria for the use of the band 40.5 - 42.5 GHz by the fixed-satellite service have not been studied within the ITU-R,

recognizing

that Resolution [COM5-17] invites the ITU-R to undertake, as a matter of urgency, studies of appropriate criteria and methodologies for sharing between the fixed-satellite service and the other allocated services in the band 40.5 - 42.5 GHz,

resolves

1 that the allocation to the fixed-satellite service in Regions 1 and 3 in the 40.5 - 42.5 GHz band shall not ~~enter into force~~ be applied provisionally before 1 January 2001;

2 that [WRC-99] should review this allocation including the date of 1 January 2001, taking full account of the requirements of the other allocated services and available ITU-R studies.

SUP RESOLUTION 711

SUP RESOLUTION 712

NOC RECOMMENDATION 706

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

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18 November 1997
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Note by the Secretary-General

FOR INFORMATION

FINAL DAYS OF THE CONFERENCE

The Steering Committee has established a program for the termination of the Conference on 21st November 1997. In this connection attention is invited to the following :

1. Final Acts

The copies of the Final Acts will be distributed, in principle one copy per delegate, in the document distribution boxes before the signing ceremony.

Note - Delegates who leave the Conference before the signing ceremony are requested to fill in a form available at the Document Distribution Service to enable the Secretariat to dispatch their copies after the Conference.

2. Declarations concerning the Final Acts

When the last text to be included in the Final Acts of the Conference has been approved in second reading by the Plenary Meeting, a time limit of two hours will be set for the deposit of declarations/reservations concerning the Final Acts.

The declarations/reservations concerning the Final Acts are to be handed in to the Document Control Service (Office J.121) for publication in a consolidated document.

The Plenary Meeting will take note (without debate) of the declarations/reservations concerning the Final Acts and fix a second deadline of 1.30 hours for the deposit of additional declarations/reservations **having regard to the first set of declarations/reservations**.

A subsequent Plenary Meeting will take note (without debate) of the additional declarations/reservations.

.../...

3. Signing ceremony

Between the final adoption, in second reading, of the last texts of the Final Acts and the signing ceremony, a period of approximately up to 24 hours is required :

- for the preparation and printing of the Final Acts, and

- for the deposit and publication of the declarations/reservations and additional declarations/reservations, as well as for the Plenary Meeting held to take note of them.

The time of the opening of the signing ceremony will therefore depend on when the last text is cleared in Plenary and will be notified to delegates in the usual manner (i.e. on the daily programme and on the notice board).

Note - Delegations (or members thereof) wishing to sign the Final Acts before the signing ceremony may do so by application to Office J.155 (Mrs. B. Bux).

Pekka TARJANNE
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

SEVENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4
TO THE EDITORIAL COMMITTEE

Committee 4 adopted the following actions with regard to Resolutions and Recommendations.

Res. *	**Subject**	~~**Proposed**~~ **A~~a~~ction**
8	Transfer procedures/changes in HF-FX	NOC
~~39~~	~~Decisions of WARCs and use of monitoring facilities~~	~~NOC~~
500	New carrier for LFBC in R1	NOC
508	WRC for HFBC	SUP
511	Planning system for HFBC	SUP
512	HF transmitters in bands governed by RR 531	SUP
513	Harmful interference in HFBC bands	SUP
514	Technical standards for HFBC	SUP
515	HFBC Planning System/consultation procedure	SUP
516	Antennas in HFBC	SUP
~~517~~	~~Transition from DSB to SSB in HFBC~~	~~MOD (Attached)~~
523	Planning for HFBC	SUP
529	HFBC	SUP
530	Application of AR17	SUP
641	Use of the band 7 000 - 7 100 kHz	NOC

Rec. *	Subject	~~Proposed~~ Aaction
~~503~~	~~HFBC~~	~~MOD (Attached)~~
509	Experts in HFBC	SUP
510	Planning parameters for HFBC	SUP
512	Propagation prediction method for HFBC	SUP
513	National coverage in HFBC	SUP
514	Propagation prediction method for HFBC	SUP
~~515~~	~~DSB/SSB in HFBC~~	~~MOD (Attached)~~
516	Synchronized transmitters in HFBC	SUP
517	SSB PR in HFBC	NOC
518	HFBC receivers	NOC
519	Introduction of SSB	NOC
520	Elimination of out-of-band HFBC emissions	NOC

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

FOURTH SERIES OF TEXTS SUBMITTED BY WORKING GROUP 1 OF THE PLENARY TO THE EDITORIAL COMMITTEE

Working Group 1 of the Plenary has concluded its consideration of Document DT/135 + Corr.1 and adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairman of Working Group 1 of the Plenary

Annex: 1

RESOLUTION 26 (Rev.WRC-~~95~~97)

FOOTNOTES TO THE TABLE OF FREQUENCY ALLOCATIONS IN ARTICLE S5 OF THE RADIO REGULATIONS

The World Radiocommunication Conference (Geneva, ~~1995~~1997),

considering

a) that footnotes are an integral part of the Table of Frequency Allocations in the Radio Regulations and as such form part of an international treaty text;

~~*a*~~*b)* that footnotes to the Table of Frequency Allocations should be clear, concise and easy to understand;

~~*b*~~*c)* that footnotes should relate directly to matters of frequency allocation;

~~*c) that there is a need to review footnotes regularly in order to ensure that any which are no longer required are deleted;*~~

d) that, in order to ensure that footnotes allow modification of the Table of Frequency Allocations without introducing unnecessary complications, principles relating to the use of footnotes are needed~~,~~;

e) that, currently, footnotes are adopted by competent world radiocommunication conferences and any additions, modifications and deletions of these footnotes are considered and decided by the appropriate conferences;

f) that some problems concerning the country footnotes may be resolved by the application of a Special Agreement envisaged by Article **S6** of the Radio Regulations;

g) that, in certain cases, administrations are confronted with major difficulties due to inconsistencies or omissions in footnotes;

h) that in order to keep the footnotes to the Table of Frequency Allocations up to date there should be clear and effective guidelines for additions, modifications and deletions of footnotes,

resolves

1. that, wherever possible, footnotes to the Table of Frequency Allocations should be confined to altering, limiting, or otherwise changing the relevant allocations rather than dealing with the operation of stations, assignment of frequencies or other matters;

2. that the Table of Frequency Allocations should include only those footnotes which have international implications for the use of the radio-frequency spectrum;

3. that new footnotes to the Table of Frequency Allocations should only be adopted in order to:

a) achieve flexibility in the Table of Frequency Allocations;

b) protect the relevant allocations in the body of the Table and in other footnotes in accordance with Section II of Article **S5** of the Radio Regulations;

c) introduce either transitional or permanent restrictions on a new service to achieve compatibility; or

d) meet the specific requirements of a country or area when it is impracticable to satisfy such needs otherwise within the Table of Frequency Allocations;

4. that footnotes serving a common purpose should be in a common format, and, where possible, be grouped into a single footnote with appropriate references to the relevant frequency bands~~;~~,

further resolves

1. that any addition of new footnotes or modification of existing footnotes should be considered by a world radiocommunication conference only when:

a) the agenda of that world radiocommunication conference explicitly indicates the frequency band to which the proposed additional or modified footnote relates; or

b) during the work of the world radiocommunication conference, the frequency bands to which the desired additions or modifications of the footnote belongs is considered [and is reflected in the decisions of the Conference]; or

c) the addition or modifications of footnotes is included specifically in the agenda of the world radiocommunication conference as a result of consideration of proposals by interested administration(s);

~~5.~~2. that recommended agendas for future world radiocommunication conferences should include a~~n~~ standing agenda item which would enable consideration of country footnotes, or country names in footnotes, ~~to be~~ proposed by administrations for ~~deleted~~deletion, if no longer required~~,~~;

3. in cases not covered by *further resolves* 1 and 2, proposals for new footnotes or modification of existing footnotes could exceptionally be considered by a world radiocommunication conference if the proposal concerns corrections or obvious omissions, inconsistencies, ambiguities or editorial deficiencies, [and which have been submitted to the ITU not later than [x] months prior to the Conference],

urges administrations

~~that,~~ to review footnotes periodically and to propose the deletion of their country footnotes, or their own names from footnotes, as appropriate. ~~i~~In making proposals to world radiocommunication conferences, account should be taken of *further resolves* ~~1 to 5~~above~~,~~.

~~*instructs the Director of the Radiocommunication Bureau*~~

~~to review footnotes periodically, in consultation with concerned administrations, and communicate the results to future world radiocommunication conferences, in order to enable administrations to propose the deletion of their country footnotes, or their own country names from footnotes, as appropriate.~~

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zINTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 341-E
18 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.7 **PLENARY MEETING**

SEVENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
GTPLEN-1	308	**Proposed actions with regard to WARC/WRC resolutions and recommendations**
COM 5	316	**ARTICLE S5** – Table of allocations band 1 525 - 1 530 MHz – Numbers S5.352 and S5.352A – Table of allocations band 1 530 - 1 535 MHz band 1 535 - 1 559 MHz – Numbers S5.353, S5.353A, S5.356, S5.358, S5.360 to S5.362B – Table of allocations band 1 626.5 - 1 631.5 MHz band 1 631.5 - 1 660.5 MHz – Numbers S5.373A, S5.374, S5.375 and S5.376A **RESOLUTION COM5-10 (WRC-97)** **RESOLUTION COM5-24 (WRC-97)** **RESOLUTION 115 (WRC-95)**
GTPLEN-1	322	**RESOLUTION GTPLEN1-2**

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COM 4 324

ARTICLE S8
ARTICLE S9
ARTICLE S13
– Numbers S13.5 to S13.23C
ARTICLE S14
ARTICLE S19
– Numbers S19.35 and S19.99
APPENDIX S4
ANNEX 1A (items 6C, 7AA, 8B, 9E, 9EA, 9R, 10C, 10CA to 10CC)
ANNEX 1B
RESOLUTION 13 (Rev.WRC-97)
List of Resolutions and Recommendations of WARC/WRC which are proposed for deletion

A.-M. NEBES
Chairman of Committee 6

Annex: 39 pages

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Proposed action with regard to WARC/WRC resolutions

Resolution No.	Subject	Proposed action
16 (WARC-79)	Telecommunications for rural development	SUP
17 (WARC-79)	Conference structure	SUP
19 (Mob-87)	Regional conferences	SUP
22 (WARC-92)	Changes in allocations/assistance	SUP
37 (WARC-79)	Automated Frequency Management	SUP
38 (Rev.Mob-87)	Reassignment of frequencies in 2 MHz (R1)	SUP
45 (Orb-88)	Improved accuracy of MIFR, IFL, List VIIIA	SUP
47 (WRC-95)	Immediate application of RS46 in some bands	SUP
61 (WARC-79)	Division of the world into climatic zones	SUP
65 (WARC-79)	Cross-referencing of ITU-R Recommendations in RR	SUP
69 (Orb-88)	Simplified methods for interference assessment	SUP
93 (WARC-92)	Treatment of Resolutions/Recommendations	SUP
94 (WARC-92)	**Review of Resolutions/Recommendations**	SUP
104 (Orb-88)	Application of RR1550	SUP
106 (Orb-88)	Provisional application of AP30A	SUP
107 (Orb-88)	Existing networks AP30B	SUP
109 (Orb-88)	AP30A in MIFR	SUP
113 (WARC-92)	Adjustment to FX in 1 - 3 GHz	SUP
403 (WARC-79)	Aeronautical frequencies (3 023 kHz and 5 680 kHz)	SUP
409 (Mob-87)	Aeronautical public correspondence	SUP
410 (WARC-92)	Development of AP26 Plan	SUP
505 (WARC-79)	BSS (sound) in 1.5 GHz	SUP
507 (WARC-79)	Agreements/Plans for BSS	SUP
640 (WARC-79)	Disaster communications	SUP

702 (WARC-79)	RARC for VHF/UHF bands in R3	SUP
704 (Mob-83)	Planning of MMS/Aero. Nav. in LF/MF	SUP
718 (WRC-95)	**Agenda for WRC-97**	SUP
719 (WRC-95)	**Urgent studies for WRC-97**	SUP

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Proposed action with regard to WARC/WRC recommendations

Recommendation No.	Subject	Proposed action
1 (WARC-79)	Use of space systems in disasters ...	SUP
2 (WARC-79)	**Spectrum occupation by space services**	SUP
6 (WARC-79)	Assistance to developing countries	SUP
10 (WARC-79)	Presentation of draft amendments to RR	SUP
11 (WARC-79)	Marginal numbering of the RR	SUP
13 (WARC-79)	WARC for partial revision of RR	SUP
15 (Orb-88)	Review of Article 14 of the RR	SUP
30 (WARC-79)	International monitoring	SUP
31 (WARC-79)	Handbook on Frequency Management	SUP
60 (WARC-79)	Technical standards of the IFRB	SUP
62 (WARC-79)	Classification of emissions	SUP
65 (WARC-79)	Spectrum sharing	SUP
68 (WARC-79)	Studies on propagation and noise	SUP
69 (WARC-79)	Frequency tolerances	SUP
72 (WARC-79)	Terminology	SUP
73 (WARC-79)	Use of term "channel"	SUP
74 (WARC-79)	Use of SI	SUP
103 (WARC-79)	Energy dispersal in FSS systems	SUP
403 (WARC-79)	Congestion in HF - AM(R)S	SUP
406 (WARC-79)	Revision of AP26	SUP
407 (WARC-79)	Definition of sub-area 5B in AP27	SUP
502 (WARC-79)	Specification of low-cost TV receivers	SUP
505 (WARC-79)	Propagation studies in 12 GHz, BSS	SUP
508 (WARC-79)	BSS transmitting antennae	SUP
601 (WARC-79)	Frequency band for collision avoidance system	SUP

607 (Mob-87)	Requirements for MLS in 5 GHz	SUP
620 (WARC-79)	Meteo Aids in 27 MHz	SUP
704 (WARC-79)	Sharing BC/Radionav. at VHF	SUP
712 (WARC-79)	Design characteristics for BSS	SUP
714 (Mob.87)	Compatibility BC/AM(R)S in VHF	SUP

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1 MSS generic allocation in the 1.5 - 1.6 GHz range

ARTICLE S5

MOD

MHz
1 452 – 1 530

Allocation to Services		
Region 1	Region 2	Region 3
1 525 – 1 530	**1 525 – 1 530**	**1 525 – 1 530**
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)
FIXED	MOBILE-SATELLITE (space-to-Earth)	FIXED
MOBILE-SATELLITE (space-to-Earth)	Earth Exploration-Satellite	MOBILE-SATELLITE (space-to-Earth)
Earth Exploration-Satellite	Fixed	Earth Exploration-Satellite
Mobile except aeronautical mobile S5.349	Mobile S5.343	Mobile S5.349
S5.341 S5.342 S5.350 S5.351 ADD S5.352A S5.354	S5.341 S5.351 S5.354	S5.341 S5.351 ADD S5.352A S5.354

SUP S5.352

ADD S5.352A In the band 1 525 - 1 530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in France and French overseas territories in Region 3, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Malta, Morocco, Mauritania, Nigeria, Oman, Pakistan, Philippines, Qatar, Syria, Tanzania, Viet Nam and Yemen notified prior to 1 April 1998.

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MOD

MHz
1 530 – 1 535

Allocation to Services		
Region 1	Region 2	Region 3
1 530 – 1 533 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530 – 1 533** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	
1 533 – 1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 533 – 1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	

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MOD

MHz
1 535 – 1 610.6

Allocation to Services		
Region 1	Region 2	Region 3
1 535 – 1 544	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 ADD S5.353A S5.354 S5.355	
1 544 – 1 545	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.354 S5.355 S5.356	
1 545 – 1 555	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 S5.354 S5.355 S5.357 S5.359 ADD S5.362A	
1 555 – 1 559	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 S5.354 S5.355 S5.359 ADD S5.362B	

SUP S5.353

ADD S5.353A In applying the procedures of No. **S9.11A** to the mobile-satellite service in the bands 1 530 - 1 544 MHz and 1 626.5 - 1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (See Resolution [COM5-24].)

NOC S5.356

SUP S5.358

SUP S5.360

SUP S5.361

SUP S5.362

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ADD **S5.362A** In applying the procedures of No. **S9.11A** to the mobile-satellite service in the bands 1 545 - 1 555 MHz and 1 646.5 - 1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service (AMS(R)S) providing transmission of messages with priority 1 to 6 in Article **S44**. AMS(R)S communications with priority 1 to 6 in Article **S44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, AMS(R)S communications with priority 1 to 6 in Article **S44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (See Resolution [COM5-24].)

ADD **S5.362B** In the United States, in the bands 1 555 - 1 559 MHz and 1 656.5 - 1 660.5 MHz, the aeronautical mobile-satellite (R) service (AMS(R)S) shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, AMS(R)S communications with priority 1 to 6 in Article **S44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services.

MOD

MHz
1 610.6 – 1 631.5

Allocation to Services		
Region 1	Region 2	Region 3
1 626.5 – 1 631.5	**1 626.5 – 1 631.5**	
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	
S5.341 S5.351 S5.354 S5.355 S5.359 ADD S5.353A	S5.341 S5.351 S5.354 S5.355 S5.359 ADD S5.353A	

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MOD **MHz**
1 631.5 – 1 670

Allocation to Services		
Region 1	Region 2	Region 3
1 631.5 – 1 636.5	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 S5.354 S5.355 S5.359 MOD S5.374 ADD S5.353A	
1 636.5 – 1 645.5	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 ADD S5.353A S5.354 S5.355 S5.359	
1 645.5 – 1 646.5	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.354 S5.375	
1 646.5 – 1 656.5	MOBILE-SATELLITE (Earth-to-space) ADD S5.362A S5.341 S5.351 S5.354 S5.355 S5.359 S5.376	
1 656.5 – 1 660	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 S5.354 S5.355 S5.359 MOD S5.374 ADD S5.362B	
1 660 – 1 660.5	MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 ADD S5.376A ADD S5.362B	

SUP **S5.373A**

MOD **S5.374** Mobile earth stations in the mobile-satellite service operating in the bands 1 631.5 - 1 634.5 MHz and 1 656.5 - 1 660 MHz shall not cause harmful interference to stations in the fixed service operating in the countries listed in No. **S5.359**.

NOC **S5.375**

ADD **S5.376A** Mobile earth stations operating in the band 1 660.0 - 1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service.

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RESOLUTION COM5-24 (WRC-97)

USE OF THE BANDS 1 525 - 1 559 MHz AND 1 626.5 - 1 660.5 MHz BY THE MOBILE-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference allocated the bands 1 525 - 1 559 MHz (space-to-Earth) and 1 626.5 - 1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple mobile-satellite systems in a flexible and efficient manner;

b) that prior to this Conference there was a generic allocation by footnote provisions in some countries for the use of the bands 1 530 - 1 544 MHz and 1 631.5 - 1 645.5 MHz by the mobile-satellite service, on condition that maritime mobile-satellite distress and safety communications have priority access over all other communications;

c) that prior to this Conference, there was a generic allocation by two footnotes for the use of the bands 1 555 - 1 559 MHz and 1 656.5 - 1 660.5 MHz by the mobile-satellite service, and in one of these footnotes the following conditions applied in two countries:

– the aeronautical mobile-satellite (R) service has priority access and immediate availability over all other communications within a network;

– mobile-satellite systems should be interoperable with the aeronautical mobile-satellite (R) service;

– account shall be taken of the priority of safety-related communications in the other mobile-satellite services;

d) that there is at least one global mobile-satellite system that is capable of providing global maritime mobile-satellite distress and safety communications according to Article **S53** and global AMS(R)S communications with priorities 1 to 6 of Article **S44** in accordance with IMO and ICAO requirements;

e) that technical considerations for sharing satellite network resources between MSS (other than AMS(R)S) and AMS(R)S have been developed by ITU-R (see Recommendation ITU-R **M.[8/17]**);

f) that global and regional mobile-satellite systems are being multilaterally coordinated in the bands 1 525 - 1 559 MHz (space-to-Earth) and 1 626.5 - 1 660.5 MHz (Earth-to-space) and that the ITU Radio Regulations provide the international framework for multilateral agreements;

g) that in Nos. **S5.362A** and **S5.353A** priority has been given to accommodating the spectrum requirements for distress, urgency and safety communications of GMDSS and AMS(R)S communications with priorities 1 to 6 of Article **S44** of AMS(R)S. See No. **S9.11A**, [except No. **S9.13]**,

further considering

a) that the Convention on International Civil Aviation requires that stations of the AMS(R)S shall be in compliance with the internationally agreed Standards and Recommended Practices (SARP) and Procedures for Air Navigation Services (PANS);

b) that ICAO has developed a global Air Traffic Management system (ATM) which requires interoperability between stations operating in accordance with the ICAO Convention for those mobile-satellite systems providing AMS(R)S with the priority message structure of Article **S44**;

c) that this Conference modified provisions for the operational use of the Global Maritime Distress and Safety System (GMDSS) which is fully defined in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended (see No. MOD **S30.1**);

d) that IMO may also place similar requirements of interoperability for those mobile-satellite systems providing GMDSS communications with the priority message structure of Article **S53**,

recognizing

that Appendix **S15.2** identifies the bands 1 530 - 1 544 MHz (space-to-Earth) and 1 626.5 - 1 645.5 MHz (Earth-to-space) for distress and safety purposes in the maritime mobile-satellite service as well as for routine non-safety purposes,

noting

that some countries in Region 2 use the bands 1 525 - 1 544 MHz, 1 545 - 1 559 MHz, 1 626.5 - 1 645.5 MHz and 1 646.5 - 1 660.5 MHz to provide national MSS on a generic basis and, where agreements with other administrations concerned are in place, provide multinational service,

resolves

1 that the future spectrum requirements for the provision of distress, urgency and safety communications in the GMDSS by the mobile-satellite service and AMS(R)S communications with priority 1 to 6 of Article **S44** should take into account internationally agreed assumptions and methodologies and information on actual GMDSS and AMS(R)S communication traffic usage and growth;

2 that the feasibility of prioritization, real-time pre-emptive access and, if necessary, interoperability between different mobile-satellite systems for GMDSS and AMS(R)S should be determined, in order to achieve the most flexible and practical use of the generic allocations,

requests ITU-R

1 to develop assumptions and methodologies and gather information on actual GMDSS and AMS(R)S communication traffic usage and growth, in order to determine the future spectrum requirements for the provision of distress, urgency and safety communications in the GMDSS by the mobile-satellite service and AMS(R)S communications with priority 1 to 6 of Article **S44**;

2 to determine the feasibility of prioritization, real-time pre-emptive access and, if necessary, interoperability between different mobile-satellite systems for GMDSS and AMS(R)S, in order to achieve the most flexible and practical use of the generic allocations;

3 to complete and report the results of the studies called for in *resolves* 1 and 2 above by [WRC-99 or a future competent conference],

requests the next competent WRC

to take into account the outcome of ITU-R studies and take appropriate action on this subject,

invites

ICAO, IMO, IALA, administrations and other organizations concerned to participate in the studies identified in *requests ITU-R* 1 and 2 above.

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RESOLUTION COM5-10 (WRC-97)

FREQUENCY SHARING IN THE BANDS 1 610.6 - 1 613.8 MHz AND 1 660 - 1 660.5 MHz BETWEEN THE MOBILE-SATELLITE SERVICE AND THE RADIO ASTRONOMY SERVICE

The World Radiocommunication Conference (Geneva, 1997),

with a view

to enabling the mobile-satellite service (MSS) and the radio astronomy service to make the most efficient use of frequency bands allocated to them, having due regard to the other services to which those bands are also allocated,

considering

a) that the bands 1 610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz are allocated to the radio astronomy service and the mobile-satellite service (Earth-to-space) on a co-primary basis;

b) that No. **[733E] S5.372** of the Radio Regulations states that "harmful interference shall not be caused to stations of the radio astronomy service using the band 1 610.6 - 1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services ([No. **2904**] **S29.13** applies)"; and that Article **[36] S29** also points out that emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service;

c) that the nature of objects studied by the radio astronomy service in the bands 1 610.6 - 1613.8 MHz and 1 660 - 1 660.5 MHz demands maximum flexibility in the planning of observation frequencies;

d) that, in the bands 1 610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz, which are shared between the radio astronomy service and the mobile-satellite service, operational constraints are necessary for mobile earth stations of the mobile-satellite service;

e) that a former ITU-R Recommendation relating to sharing between the mobile-satellite service and the radio astronomy service in the band 1 660 - 1 660.5 MHz noted that further studies were required, particularly in the areas of propagation models and assumptions used for the determination of separation distances;

f) that Recommendation ITU-R M.1316 may be used in order to facilitate coordination between mobile earth stations and radio astronomy stations in the bands 1 610.6 - 1 613.8 and 1 660 - 1 660.5 MHz;

g) that no experience has been gained up to now with the use of the Recommendation mentioned in *considering* f);

h) that the threshold levels of interference detrimental to the radio astronomy service are given in Recommendation ITU-R RA.769-1,

resolves

that a future competent conference should evaluate frequency sharing in the bands 1 610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz between the mobile-satellite service (MSS) and the radio astronomy service, based upon the experience gained with the use of ITU-R M.1316 and other relevant ITU-R Recommendations,

invites ITU-R

to submit a report to that future conference on evaluating the effectiveness of Recommendations aiming to facilitate sharing between the mobile-satellite service and the radio astronomy service,

urges administrations

to participate actively in this evaluation.

SUP RESOLUTION 115 (WRC-95)

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RESOLUTION GTPLEN1-2 (WRC-97)

INTERVAL BETWEEN WORLD RADIOCOMMUNICATION CONFERENCES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the Additional Plenipotentiary Conference (Geneva, 1992) concluded that, in general, world radiocommunication conferences should be held every two years in order for ITU to close the widening gap between its Radio Regulations and the current radiocommunication environment;

b) that No. **90** of the ITU Constitution states that world radiocommunication conferences shall normally be convened every two years; however, following the application of the relevant provisions of the Convention, such a conference need not be convened or an additional one may be convened;

c) that serious concerns were expressed at this Conference about the extent of the agendas of the forthcoming world radiocommunication conferences, the limited time available for their preparation and the tendency to reconsider major issues at a subsequent conference,

recognizing

a) the argument that extending the interval between world radiocommunication conferences to two and a half or three years would increase the time available for preparatory studies by Member States, Sector Members and the Radiocommunication Bureau;

b) the counter-argument that efforts should be focused on establishing realistic and manageable agendas, rather than on extending the interval between conferences;

c) the strategies enunciated in contributions to WRC-97 for limiting conference agendas to items requiring urgent regulatory action for which the necessary technical preparatory work can be completed;

d) the further view that, if it is determined during the course of preparations for any given conference that preparatory studies related to a particular agenda item are not sufficiently mature to lead to substantive results, action on that item could include possible deferral until the following conference,

noting

that a decision to change the interval between world radiocommunication conferences will need to be based on a thorough analysis of the impact of such a change on the future financial plans of the Union and on the extent of the resources available to the Secretariat to support such conferences,

resolves to invite

1 the ITU Council, at its 1998 session, on the basis of information provided by the Radiocommunication Bureau and the General Secretariat and taking into account the views of the relevant organs of the Union, undertake an analysis as outlined under *noting* above, with a view to recommending a definitive course of action to the 1998 Plenipotentiary Conference on the feasibility of extending the interval between world radiocommunication conferences;

2 the 1998 Plenipotentiary Conference to determine an appropriate strategy and indicate in its decision whether changes to the Constitution and Convention will be required;

3 the 1998 Plenipotentiary Conference also to consider the feasibility of scheduling conferences in the future on a single theme or a limited number of themes,

invites the Secretary-General

to include this issue, as a matter of urgency, on the agenda of 1998 session of the ITU Council.

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ARTICLE S8

NOC **S8.1**

MOD **S8.1.1** [1] The expression "frequency assignment", wherever it appears in this Chapter, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register. Additionally, wherever the expression relates to a space station in the geostationary-satellite orbit or in a non-geostationary-satellite orbit, it shall be associated with item A.4 of Annex 2A to Appendix **S4**, as relevant.

(S8.2 not used)

MOD **S8.3** Any frequency assignment recorded in the Master Register with a favourable finding under No. **S11.31** shall have the right to international recognition. For such an assignment, this right means that other administrations shall take it into account when making their own assignments, in order to avoid harmful interference. In addition, frequency assignments in frequency bands subject to coordination or to a plan shall have a status derived from the application of the procedures relating to the coordination or associated with the plan.

MOD **S8.4** A frequency assignment shall be known as a non-conforming assignment when it is not in accordance with the Table of Frequency Allocations or the other[2] provisions of these Regulations. Such an assignment shall be recorded for information purposes, only when the notifying administration states that it will be operated in accordance with No. **S4.4** (See also No. **S8.5**).

NOC **S8.4.1 - S8.5**

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ARTICLE S9

MOD **Procedure for Effecting Coordination With or Obtaining Agreement of Other Administrations**[1, 2, 3, 4]

MOD A.S9.1 [1] For the application of the provisions of this Article with respect to stations in a space radiocommunication service using frequency bands covered by the fixed-satellite service allotment Plan, see also Appendix **S30B**.

MOD A.S9.3 [3] See Appendices **S30** and **S30A**, as appropriate, for the coordination of:

a) proposed modifications to the Appendix **S30** Plans for the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

b) frequency assignments in other services to which the frequency bands referred to in a) above are allocated, with respect to assignments in the broadcasting-satellite service which are subject to the Appendix **S30** Plans;

c) proposed modifications to the Appendix **S30A** Plans for the feeder links to the broadcasting-satellite service in the frequency bands 17.3 - 17.8 GHz (in Region 2), and 14.5 - 14.8 GHz and 17.3 - 18.1 GHz (in Regions 1 and 3), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

d) frequency assignments in other services to which the frequency bands referred to in c) above are allocated, with respect to assignments in the fixed-satellite service (Earth-to-space) which are subject to the Appendix **S30A** Plans.

For the broadcasting-satellite service and for the feeder links for the broadcasting-satellite service in the fixed-satellite service in Region 2, Resolution **42** (**Orb-85**) is also applicable.

ADD AS9.4 [4] Resolution [**GTPLEN2-1**] shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

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MOD **Section I. Advance Publication of Information on Satellite Networks or Satellite Systems - General**

MOD **S9.1** Before initiating any action under this Article or under Article **S11** in respect of frequency assignments for a satellite network or a satellite system, an administration, or one[1] acting on behalf of a group of named administrations, shall, prior to the coordination procedure described in Section II of Article **S9** below, where applicable, send to the Bureau a general description of the network or system for advance publication in the Weekly Circular not earlier than five years and preferably not later than two years before the planned date of bringing into use of the network or system (see also Nos. **S11.44** and **S11.44B** to **S11.44I**). The characteristics to be provided for this purpose are listed in Appendix **S4**. The coordination or notification information may also be communicated to the Bureau at the same time; it shall be considered as having been received by the Bureau not earlier than six months after the date of receipt of the information for advance publication where coordination is required by Section II of Article **S9**. Where coordination is not required by Section II, notification shall be considered as having been received by the Bureau not earlier than six months after the date of publication of the advance publication information.

NOC **S9.1.1**

MOD **S9.2** Amendments to the information sent in accordance with the provisions of No. **S9.1** shall also be sent to the Bureau as soon as they become available. The use of an additional frequency band will require the application of the advance publication procedure for this band.

NOC **S9.2A**

NOC **S9.2B**

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ADD **Sub-Section IA. Advance Publication of Information on Satellite Networks or Satellite Systems that Are not Subject to Coordination Procedure Under Section II**

MOD **S9.3** If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration believes that interference which may be unacceptable may be caused to its existing or planned satellite networks or systems, it shall within four months of the date of the Weekly Circular communicate to the publishing administration its comments on the particulars of the anticipated interference to its existing or planned systems. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available. If no such comments are received from an administration within the aforementioned period, it may be assumed that the administration concerned has no objections to the planned satellite network(s) of the system on which details have been published.

SUP **S9.3.1**

MOD **S9.4** In the case of difficulties, the administration responsible for the planned satellite network shall explore all possible means to resolve the difficulties without considering the possibility of adjustment to networks of other administrations. If no such means can be found, it may request the other administrations to explore all possible means to meet its requirements. The administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks. An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of No. **S9.2B** shall, after the period of four months, inform the Bureau of the progress made in resolving any difficulties. If necessary, a further report shall be provided prior to the submission of notices to the Bureau under Article **S11**.

NOC **S9.5**

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MOD **S9.5A** The procedure of Section IA shall be considered mainly for the purposes of informing all administrations of developments in the use of space radiocommunications.

ADD **Sub-Section IB. Advance Publication of Information on Satellite Networks or Satellite Systems that Are Subject to Coordination Procedure under Section II**

ADD **S9.5B** If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration considers its existing or planned satellite systems or networks or terrestrial stations[1] to be affected, it may send its comments to the publishing administration, so that the latter may take those comments into consideration when initiating the coordination procedure. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available.

ADD **S9.5B.1** [1] The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. **S9.11**, **S9.11A** and **S9.21**.

ADD **S9.5C** The procedure of Section IB shall be considered mainly for the purposes of informing all administrations of developments in the use of space radiocommunications

ADD **S9.5D** If the information under No. **S9.30** has not been received by the Bureau within a period of 24 months after the date of receipt by the Bureau of the relevant information under Nos. **S9.1** and **S9.2,** the information published under No. **S9.2B** shall be cancelled, after the administration concerned has been informed at least three months before the end of the 24-month period. The Bureau shall also publish the cancellation in its Weekly Circular.

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MOD

Section II. Procedure for Effecting Coordination

Sub-Section IIA. Requirement and Request for Coordination

MOD **S9.6** Before an administration[1, 2] notifies to the Bureau or brings into use a frequency assignment in any of the cases listed below, it shall effect coordination, as required, with other administrations identified under No. S9.27:

MOD **S9.6.1** [1] In the case of coordination of an assignment in a satellite network, an administration may act on behalf of a group of named administrations. Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of the group retain the right to respond in respect of their own services which could affect or be affected by the proposed assignment.

ADD **S9.6.2** [2] In all cases, the coordination of an earth station with terrestrial stations or other earth stations operating in the opposite direction of transmission shall remain within the authority of the administration on the territory of which this station is located.

MOD **S9.7** *a)* for a station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a region where this service is not subject to a plan, in respect of any other satellite network using that orbit, in any space radiocommunication service in a frequency band and in a region where this service is not subject to a plan, with the exception of coordination between earth stations operating in the opposite direction of transmission.

NOC **S9.8** *b)*[4]

NOC **S9.9** *c)*[4]

MOD [4] Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending a decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

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MOD **S9.11** *d)* for a space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services;

NOC **S9.11A**

MOD **S9.12** i) in a satellite network using a non-geostationary-satellite orbit, in respect of any other satellite network using a non-geostationary-satellite orbit, and in respect of any other satellite network using the geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

MOD **S9.13** ii) in a satellite network using the geostationary-satellite orbit, in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

NOC **S9.15**

NOC **S9.17** *f)*[5]

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[5] Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending a decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD **S9.17A** *g)* for any specific earth station, in respect of other earth stations operating in the opposite direction of transmission, in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission and where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of another earth station, with the exception of the frequency bands subject to the Appendix **S30A** Plans;

MOD **S9.18** *h)* for any transmitting station of a terrestrial service in the bands referred to in No. **S9.17** within the coordination area of an earth station, in respect of this earth station, with the exception of the coordination under Nos. **S9.16** and **S9.19**;

MOD **S9.19** *i)* for any transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to an earth station of the broadcasting-satellite service, except where this service is subject to the Appendix **S30** Plans;

SUP

NOC **S9.32**

NOC **S9.41**

MOD **S9.43** Those administrations not responding under No. **S9.41** within the time limit specified therein shall be regarded as unaffected and the provisions of Nos. **S9.48** and **S9.49** shall apply.

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Sub-Section IIC. Action Upon a Request for Coordination

MOD **S9.50** An administration having received a request for coordination under Nos. **S9.7** to **S9.21**, or having been included in the procedure following action under No. **S9.41**, shall promptly examine the matter with regard to interference which may be caused to, or in certain cases, by its own assignments[2], identified in accordance with Appendix **S5**[3].

MOD **S9.51** Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.7** to **S9.9** shall, within four months of the date of publication of the Weekly Circular under No. **S9.38**, either inform the requesting administration and the Bureau of its agreement or act under No. **S9.52**.

MOD **S9.51A** Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.15** to **S9.19** shall, within four months of the date of dispatch of the coordination data under No. **S9.29**, either inform the requesting administration of its agreement or act under No. **S9.52**.

MOD **S9.52** If an administration, following its action under No. **S9.50**, does not agree to the request for coordination, it shall, within four months of the date of publication of the Weekly Circular under **S9.38**, or of the date of dispatch of the coordination data under No. **S9.29**, inform the requesting administration of its disagreement and shall provide information concerning its own assignments upon which that disagreement is based. It shall also make such suggestions as it is able to offer with a view to satisfactory resolution of the matter. A copy of that information shall be sent to the Bureau. Where the information relates to terrestrial stations or earth stations operating in the opposite direction of transmission within the coordination area of an earth station, only that information relating to existing radiocommunication stations or to those to be brought into use within the next three months for terrestrial stations, or three years for earth stations, shall be treated as notifications under Nos. **S11.2** or **S11.9**.

NOC S9.52C

MOD S9.60 If, within the same four-month period specified in Nos. **S9.51** or **S9.51A**, an administration with which coordination is sought under Nos. **S9.7** to **S9.9** and **S9.15** to **S9.19** fails to reply or to give a decision under Nos. **S9.51** or **S9.51A** or, following its disagreement under No. **S9.52**, fails to provide information concerning its own assignments on which its disagreement is based, the requesting administration may seek the assistance of the Bureau.

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ARTICLE S13

ADD **S13.12A** *b)* whenever it appears from reliable information available that a recorded assignment has not been brought into regular operation in accordance with the notified required characteristics as specified in Appendix **S4**, or is not being used in accordance with those characteristics, the Bureau shall consult the notifying administration and, subject to its agreement [or in the event of non-response within three months of the dispatch of a reminder,] shall either cancel, or suitably modify, or retain the basic characteristics of the entry.

SUP **S13.13**

(MOD) **S13.14** *c)* enter in the Master Register and publish in the Preface to the International Frequency List (IFL) all frequencies prescribed by these Regulations for common use;

(MOD) **S13.15** *d)* make appropriate entries in the Master Register resulting from its examinations of frequency assignment notices in accordance with Article **S11**;

(MOD) **S13.16** *e)* maintain and periodically update the Preface to the IFL.

MOD **S13.17A** The Bureau shall maintain master copies of all world frequency allotment or assignment plans contained in appendices to these Regulations, or adopted by world conferences convened by the Union, including, where applicable, the carrier-to-interference ratios, or margins, as appropriate, associated with each assignment or allotment, and incorporating any modifications resulting from the successful application of the relevant modification procedure, and shall provide such copies in an appropriate form for publication by the Secretary-General when justified by circumstances.

SUP **S13.20**

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ADD **Section IV. Board Documents**

ADD **S13.23A** The Bureau shall, where appropriate, prepare draft modifications or additions to the Rules of Procedure which shall be made available for comment before being submitted to the Board. One week beforehand, the draft agenda of each Board meeting shall be sent by facsimile, or mailed, to all administrations and shall also be made available in electronic form. At the same time, all documents which are both referenced in that draft agenda and available at that time shall be sent by facsimile, or mailed, to those administrations requesting them as well as simultaneously being made accessible in electronic form.

ADD **S13.23B** Within one week after a meeting of the Board, a summary of all decisions taken in that meeting, as well as the approved minutes of the preceding meeting, shall be published. These shall be circulated to administrations by means of a circular-letter from the Bureau and then made available in electronic form.

ADD **S13.23C** A copy of all documents considered at the Board's meetings, including the minutes, shall be available for public inspection by administrations in the offices of the Bureau and be available in electronic form.

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ARTICLE S14

MOD **S14.2** For this purpose, the administration concerned shall submit a request for a review to the Bureau; it shall also cite the relevant provisions of the Radio Regulations and other references and shall state the action it seeks.

MOD **S14.4** If the outcome of the review successfully resolves the matter with the requesting administration without adversely affecting the interests of other administrations, the Bureau shall publish an outline of the review, the arguments, the settlement and any implications affecting other administrations for the information of all Members of the Union. If this review results in a modification to a finding previously formulated by the Bureau, the Bureau shall re-apply the relevant steps of the procedure under which the previous finding had been formulated, including, if appropriate, removal of the corresponding entries from the Master Register or any consequential effect on notices subsequently received by the Bureau.

SUP **S14.8 and S14.9**

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ARTICLE S19

MOD **S19.35** § 16. The Secretary-General shall be responsible for allocating additional maritime identification digits to countries[2] within the limits specified[3], provided that he is satisfied that the possibilities offered by the MIDs allocated to an administration will soon be exhausted despite judicious ship station identity assignment as outlined in Section VI, which should be in conformity with the relevant ITU-R and ITU-T Recommendations .

MOD **S19.99** § 39. When a station[1] in the maritime mobile service or the maritime mobile-satellite service is required to use maritime mobile service identities, the responsible administration shall assign the identity to the station in accordance with the provisions described in Nos. **S19.100** to **S19.126**; in so doing, it should take into account the relevant ITU-R and ITU-T Recommendations. In accordance with **S20.16,** administrations shall notify the Radiocommunication Bureau immediately when assigning maritime mobile service identities.

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APPENDIX S4

Consolidated List and Tables of Characteristics for Use in the Application of the Procedures of Chapter SIII

ANNEX 1A

(to Appendix **S4**)

List of characteristics of stations in the terrestrial services[1]

SUP *ITEM 6C – Experimental station*

Symbol EX in this item for experimental station only.

ADD *ITEM 7AA – Type of modulation*

The choice of modulation is needed in order to specify if the requirement is to use DSB, SSB or any new broadcasting techniques recommended by ITU-R.

MOD *ITEM 8B – Radiated power (dBW)*

The radiated power expressed in dBW in one of the forms described in Nos. **S1.161** to **S1.163**. In the case of systems where automatic power control is applied, indicate the range of power control, expressed in dB relative to the transmitted power indicated above.

NOC *ITEM 9E – Height of antenna*

Information on height above ground level, in metres.

MOD *ITEM 9EA – Altitude of site above sea level*

Information on the altitude of the site above mean sea level, in metres (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments, and for all terrestrial stations in the frequency bands above 1 GHz that are shared between space radiocommunication and terrestrial radiocommunication services).

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[1] The Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the International Frequency List.

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ADD *ITEM 9R – Slew angle*

The slew angle represents the difference between the azimuth of maximum radiation and the direction of unslewed radiation.

SUP *ITEM 10C – Seasons and solar activity*

The season or month of the year and the level of solar activity, expressed by appropriate symbols.

ADD *ITEM 10CA – Start date*

Used in the case that the requirement starts after the start of the schedule.

ADD *ITEM 10CB – Stop date*

Used in the case that the requirement stops before the end of the schedule.

ADD *ITEM 10CC – Days of operation*

Used when the station does not transmit every day of the week.

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ANNEX 1B

(to Appendix **S4**)

Table of characteristics to be submitted for stations in the terrestrial services

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	B
SYNC									X					X				SYNC
1A	X	X	X	X	X	X	X	X	X	X	X[5)]	X	X[5)]	X	X		X	1A
1B	+	+	+	+	+	+	+	+			X[5)]				+			1B
1C				+											X	+		1C
1D											X		X					1D
1E											X		X					1E
1G															O			1G
1H															X			1H
1X																X		1X
1Y																O		1Y
1Z																+		1Z
2C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	+	X	X	2C
3A	X	X	X	X	X				X	O	O	O	O		X		X	3A
4A	X	X	X	X	X				X	X	X	X	X	X	X	+	X	4A
4B	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	4B
4C	X	X	X	X	X	*1)	*1)	*1)	X	X	X	X	X	X	X	+	X	4C
4D						*1)	*1)	*1)										4D
4E						*	*	*										4E
4F																	X	4F
4G									X									4G
5A				X		X	X											5A
5B				X		X	X											5B
5C				X		X	X										*	5C
5D		*2)	*2)												X	*3)	*	5D
5E	X	*	*		X											*		5E

X Mandatory * One of the items + Required in specific cases O Optional

1) (4C and 4D) or (4E).
2) (5D) or (5E and 5F).
3) (5D and 5F) or (5E and 5F).
5) May not be required with the new TerRaSys.

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Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
5F	X	*	*		X											*		5F
5G	+	+	+	+	+											+	+	5G
6A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6A
6B	+	+	X	X		X	X	+								X		6B
7A	X	X	X	X	X	X	X	X	X	X[5)]	X[5)]	X[5)]	X[5)]	X	X	X	X	7A
7AA															X			7AA
7B				X					X					X				7B
7C1									X[4)]		X		X					7C1
7C2											X		X					7C2
7D												X						7D
7E				+[7)]														7E
7F				+[7)]														7F
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8
8A	*	*	X	*	X	*	*	*	X					X	X	X	*	8A
8AB				+[7)]														8AB
8B	*	*		*		*	*	*		X	X	X	X				*	8B
8BH										X	X	X	X					8BH
8BV										X	X	X	X					8BV
8D											X		X					8D
9	X	X	X	X	X				X	X	X	X	X		X	X	X	9
9A	X	X	X	X	X				X	X	X	X	X		X	X	X	9A
9AA														X				9AA
9AB	+	+	+	+	+				+						+	+	+	9AB
9B				+											X			9B
9C	+	+	+	+	+											+		9C
9CA														X				9CA
9D				+						X	X	X	X					9D
9E	+	+	+	+	+				X	X	X	X	X					9E
9EA	+	+	+	+	+					X	X	X	X					9EA
9EB										X	X	X	X					9EB
9EC										X	X	X	X					9EC

X Mandatory * One of the items + Required in specific cases O Optional

4) For low power channels.

5) May not be required with the new TerRaSys.

7) This information need only to be furnished when such information has been used as a basis to effect coordination with another administration. This information may be optionally provided in a request for coordination under Nos. **S9.16**, **S9.18** and **S9.19**.

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Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
9F														X				9F
9G	+	+	+	+	+			+							+	+		9G
9GH									X									9GH
9GV									X									9GV
9H									X	X[5)]	X[5)]	X[5)]		+		+		9H
9I									X					X				9I
9IA														X				9IA
9J				+, +[7)]											X	+		9J
9K				+[7)]														9K
9N												X[5)]						9N
9NA														X				9NA
9NH										X[6)]	X[6)]	X[6)]	X					9NH
9NV										X[6)]	X[6)]	X[6)]	X					9NV
9O														X	X	X		9O
9P														X				9P
9Q									X					X				9Q
9R															X			9R
9T1														X				9T1
9T2														X				9T2
9T3														X				9T3
9T4														X				9T4
9T5														X				9T5
9T6														X				9T6
9T7														X				9T7
9T8														X				9T8
9T9A														+				9T9A
9T9B														X				9T9B
9T9C														+				9T9C

X Mandatory * One of the items + Required in specific cases O Optional

5) May not be required with the new TerRaSys.

6) To be used in the future TerRaSys.

7) This information need only to be furnished when such information has been used as a basis to effect coordination with another administration. This information may be optionally provided in a request for coordination under Nos. **S9.16**, **S9.18** and **S9.19**.

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Table of characteristics to be submitted for stations in the terrestrial services *(end)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
9T9D														+				9T9D
10A				+														10A
10B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10B
10CA															O			10CA
10CB															O			10CB
10CC															O			10CC
10D																X		10D
10E																X		10E
10F																	X	10F
11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	O	X	11
12A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	12A
12B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	12B

X Mandatory * One of the items + Required in specific cases O Optional

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RESOLUTION 13 (Rev.WRC-97)

FORMATION OF CALL SIGNS AND ALLOCATION OF NEW INTERNATIONAL SERIES

The World Radiocommunication Conference (Geneva, 1997),

considering

the increasing demand for call signs justified by the increased number of Member States of the Union and by the increased requirements of countries which are already Member States,

believing

that call signs already in use should, as far as possible, not be changed,

noting

a) that the former call-sign series formed of three letters, or a figure and two letters, having been exhausted, a new series has been introduced formed of a letter, a figure and a letter; but in no case may the figure be 0 or 1;

b) that the method mentioned in *noting* a) is not applicable to series beginning with one of the following letters: B, F, G, I, K, M, N, R, W,

resolves

1 that the Director of the Radiocommunication Bureau shall continue to urge administrations:

1.1 to make maximum use of the possibilities of the series at present allocated, in order to avoid, as far as possible, further requests;

1.2 to review the call-sign assignments they have already made from their present allocations, with a view to releasing any series and placing them at the disposal of the Union;

2 that the Director shall, upon request, furnish advice to administrations on the means of effecting the greatest economy, which should be the rule, in the use of a series of call signs;

3 that if, nevertheless, before the next competent world radiocommunication conference, it appears that all the possibilities of the present system of forming call signs will be exhausted, the Director shall:

3.1 explore the possibility of extending the present allocations of international call-sign series by lifting the limitation on use of the letter "Q" and the digits "0" and "1";

3.2 issue a circular-letter:

3.2.1 explaining the position;

3.2.2 urging administrations to send in their proposals for possible solutions;

4 that, from the information thus submitted, the Director shall prepare a report, together with his comments and suggestions, for submission to the next competent world radiocommunication conference.

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List of Resolutions of WARC/WRC which are proposed for deletion

Resolution No.	Subject	Proposed action
17	Conference structure	SUP
19 (Mob-87)	Decisions of regional conferences	SUP
22 (WARC-92)	Assistance in implementing changes in allocations	SUP
37	Automated Frequency Management	SUP
38 (Rev.Mob-87)	Reassignment of frequencies in 2 MHz (R1)	SUP
47 (WRC-95)	Immediate application of RS46 in some bands	SUP
61	Division of the world into climatic zones	SUP
65	Cross-referencing of ITU-R Recommendations in RR	SUP
69 (Orb-88)	Simplified methods for assessment of interference between satellite networks	SUP
71 (WRC-95)	Identification of stations (Article 25/S19)	SUP
93 (WARC-92)	Treatment of Resolutions/Recommendations	SUP
94 (WARC-92)	Review of Resolutions/Recommendations	SUP
104 (Orb-88)	Application of RR 1550	SUP
107 (Orb-88)	Existing networks AP30B	SUP
110 (Orb-88)*	MPM	SUP
403	Use of common aeronautical frequencies (3 023 kHz and 5 680 kHz)	SUP
410 (WARC-92)	Development of AP26 Plan	SUP
702	RARC for VHF/UHF bands in R3	SUP
704 (Mob-83)	Planning of MMS/Aero.nav in LF/MF	SUP
713 (WRC-95)*	Operational matters concerning AMS and MMS	SUP

List of Recommendations of WARC/WRC which are proposed for deletion

Recommendation No.	Subject	Proposed action
6	Assistance to developing countries	SUP
10	Presentation of draft amendments to RR	SUP
11	Marginal numbering of the RR	SUP
13	WARC for partial revision of RR	SUP
15 (Orb-88)	Review of Article 14 of the RR	SUP
31	Handbook on Frequency Management	SUP
60	Technical standards of the IFRB	SUP
72	Terminology	SUP
73	Use of term "channel"	SUP
74	Use of SI	SUP

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 342-E
18 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.3 **PLENARY MEETING**

THIRD SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**
COM 6	288 (B.6)	**ARTICLE S12** **ARTICLE S19** – Number S19.96A
	277 (B.5)	**RESOLUTION 215 (Rev.WRC-97)** **ANNEX TO RESOLUTION 312 (Rev.WRC-97)**
	288 (B.6)	**RESOLUTION 715 (Rev.WRC -97)**
	277 (B.5)	**RESOLUTION GTPLEN1-1 (WRC-97)**
	288 (B.6)	**RESOLUTION COM4-9 (WRC-97)** **RESOLUTION COM4-10 (WRC-97)** **RESOLUTION COM4-11 (WRC-97)** **RESOLUTION COM4-12 (WRC-97)**
	277 (B.5)	**RESOLUTION COM5-8 (WRC-97)**
	288 (B.6)	**RECOMMENDATION COM5-A (WRC-97)**
	277 (B.5)	**RESOLUTION 115 (WRC-95)** **RESOLUTION 116 (WRC-95)** **RESOLUTION 117 (WRC-95)**
	288 (B.6)	**RESOLUTION 210 (Mob-87)** **RESOLUTION 330 (Mob-87)** **RESOLUTION 711 (WARC-92)** **RESOLUTION 714 (WRC-95)**

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277 B.5

RESOLUTION 716
RESOLUTION 717
RECOMMENDATION 717
RECOMMENDATION 721

A.-M. NEBES
Chairman of Committee 6

Annex: 22 pages

PINK PAGES

ADD

ARTICLE S12

Seasonal Planning of the HF Bands Allocated to the Broadcasting Service Between 5 900 kHz and 26 100 kHz

Section I. Introduction

S12.1 The use of the frequency bands allocated to the high-frequency broadcasting (HFBC) between 5 900 and 26 100 kHz shall be based on the principles given below and shall be in conformity with seasonal planning based on a coordination procedure between administrations (referred in this Article as the Procedure) described in **S12.2** to **S12.45**. An administration may authorize a broadcasting organization (referred to in this Article as a broadcaster), among others, to act on its behalf in this coordination.

Section II. Principles

S12.2 (1) The Procedure shall be based on the principle of equal rights of all countries, large or small, to equitable access to these bands. Attempts shall also be made to achieve efficient use of these frequency bands, account being taken of the technical and economic constraints that may exist in certain cases. On the basis of the foregoing, the following principles shall be applied.

S12.3 (2) All broadcasting requirements, formulated by administrations, shall be taken into account and treated on an equitable basis, so as to guarantee the equality of rights referred to in No. **S12.2**, and to enable each administration to provide a satisfactory service.

S12.4 (3) The Procedure shall be based solely on the broadcasting requirements expected to become operational during the schedule period. It shall furthermore be flexible in order to take into account new broadcasting requirements and modifications to the existing broadcasting requirements.

S12.5 (4) All broadcasting requirements, national[1] and international, shall be treated on an equal basis, with due consideration of the differences between these two kinds of broadcasting requirements.

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[1] An HF broadcasting requirement is considered as being for the purposes of national coverage when the transmitting station and its associated required service area are both located within the territory of the same country.

S12.6 (5) In the Procedure, an attempt shall be made to ensure, as far as practicable, continuity of use of a frequency or of a frequency band.

S12.7 (6) The Procedure shall be based on double-sideband or single-sideband emissions. Other modulation techniques recommended by ITU-R shall be permitted in place of double-sideband or single-sideband emissions, provided that the level of interference caused to existing emissions is not increased.

S12.8 (7) To promote efficient spectrum use, the number of frequencies used shall be the minimum necessary to provide a satisfactory quality of reception. Whenever practicable, only one frequency should be used.

S12.9 (8) The Procedure shall include a technical analysis, as specified in the RRB Rules of Procedure.

S12.10 (9) The Procedure should encourage administrations or broadcasters empowered to make changes to pursue a continual coordination process to resolve incompatibilities, at meetings (regional[2] or worldwide, bilateral or multilateral) or by correspondence.

S12.11 (10) Regional coordination groups, which will facilitate bilateral and multilateral coordination among administrations and broadcasters in various regions of the world, shall identify themselves to the Bureau. Administrations and broadcasters shall be urged to participate in the relevant regional coordination groups. However, such participation would be on a voluntary basis.

S12.12 (11) When an administration, in particular the administration of a developing country, requests assistance in the application of the Procedure, the Bureau shall take appropriate action, including, if need be, coordination of the requirements submitted by the requesting administration.

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[2] The word regional in this Article is not related to the ITU Regions.

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S12.13 (12) The regional coordination groups should follow the coordination procedures prescribed in Section III. In the process of coordinating broadcasting requirements, an attempt shall be made to obtain agreement to the maximum number of submitted requirements with the quality level acceptable to administrations or broadcasters.

SUP S12.14

S12.15 (14) In order to ensure maximum success from the Procedure, administrations and broadcasters shall show the utmost goodwill and mutual cooperation, and give due consideration to all the relevant technical and operational factors involved.

Section III. The Procedure

S12.15A The application of the Procedure shall be facilitated and coordinated by the Bureau as defined elsewhere in this Article.

S12.16 Twice yearly, administrations shall submit their projected seasonal broadcasting schedules in the relevant frequency bands to the Bureau. These schedules shall cover the following seasonal periods:

S12.17 Schedule A: Last Sunday in March to last Sunday in October

S12.18 Schedule B: Last Sunday in October to last Sunday in March

S12.19 Implementation of these schedules shall start at 0100 UTC

S12.20 If an administration considers it necessary to take account of propagation changes during the schedule period, it is recommended, for reasons of spectrum efficiency, that such requirements should be implemented on the following dates:

S12.21 First Sunday in May;

S12.22 First Sunday in September.

S12.23 Implementation of these changes shall start at 0100 UTC on these dates.

S12.24 Other start and stop dates within a schedule period may be used to accommodate requirements that have different schedule periods, e.g. special events, clock changes on different dates not coincident with the schedule period, etc.

S12.25 Administrations may include assignments in their schedules up to one year in advance of their use.

S12.26 In those cases where an administration does not indicate its requirements for a new seasonal schedule, the Bureau shall use the assignments from the previous corresponding seasonal schedule for this administration for the new schedule period. A note in the schedule shall be used to identify such requirements. The Bureau shall follow this practice for two consecutive schedule periods.

S12.27 Following the action taken in No. **S12.26**, the Bureau shall notify the administration concerned that the schedule will not include their broadcasting requirements unless the administration advises otherwise.

S12.28 When an administration decides to cease its broadcasting service in the HF bands, it shall notify the Bureau of such decision.

S12.29 The frequencies in the schedules should be those that will be used during the season concerned, and should be the minimum number required to provide satisfactory reception of the programmes in each of the areas and for each of the periods intended. In each schedule, to the maximum possible extent, the frequencies to be used in each reception area should remain unchanged from season to season.

S12.30 Administrations are encouraged to coordinate their schedules with other administrations as far as possible prior to submission. An administration may, on behalf of a group of administrations, submit their coordinated schedules, the frequencies of which shall however have no priority for use over those submitted by other administrations.

S12.31 The closing dates for receipt by the Bureau of the schedules relating to the two seasons referred to in No. **S12.17** and **S12.18** shall be established and published by the Bureau.

S12.32 The schedules shall be submitted with the relevant data as specified in Appendix **S4.**

S12.33 Upon receipt of the schedules, the Bureau shall, in accordance with the Rules of Procedure, validate the data where necessary, perform a compatibility analysis and prepare the tentative high-frequency broadcasting schedule (the Tentative Schedule). This schedule shall include all assignments where administrations gave no alternatives, the selections made by the Bureau from any alternatives given, and the frequencies selected by the Bureau in cases where the need for its assistance was indicated by their intentional omission from the individual schedules.

S12.34 The Tentative Schedule shall be published at least two months before the start of each of the two schedule periods in Nos. **S12.17** and **S12.18**.

S12.35 Administrations should examine the Tentative Schedule and should coordinate their frequency schedules to resolve or to minimize, as far as possible, any incompatibilities identified by the compatibility analysis, or by the monitoring results of similar assignments, or by a combination of both.

S12.36 Coordination shall be achieved through bilateral or multilateral meetings of administrations or broadcasters or other means acceptable to the parties concerned.

S12.37 Administrations, either jointly or separately, shall inform the Bureau, as quickly as possible, but no later than two weeks prior to the start of the schedule period, of any changes to their requirements resulting from the coordination process. The Bureau shall prepare a new consolidated high-frequency broadcasting schedule (the Schedule), and shall perform a new compatibility analysis. The Bureau shall publish the Schedule and the results of the compatibility analysis at the start of the relevant broadcasting season.

S12.38 Administrations shall notify the Bureau of changes to their schedules as quickly as possible and the Bureau shall update and make available the Schedule on a monthly basis. The Bureau shall perform new compatibility analyses and publish the updated Schedule and the results of these analyses every two months during the season.

S12.39 To facilitate the coordination process, the Bureau shall also forward the schedules to the regional coordination groups.

S12.40 Regional coordination groups should consider communicating with administrations and broadcasters through the use of any appropriate, mutually agreeable means, such as e-mail, news-groups, bulletin boards and other forms of electronic data transfer.

S12.41 Each regional coordination group should consider appointing a steering committee to ensure smooth progress of the coordination process.

S12.42 During and after the coordination process, the regional coordination groups shall exchange schedule data among themselves with a view to further enhancing the efficacy of the coordination process.

S12.43 One month after the end of a season, the Bureau shall publish the final high-frequency broadcasting schedule (the Final Schedule). If any changes have been notified to the Bureau since the previous consolidated schedule, the Bureau shall also perform a compatibility analysis and publish it with the Final Schedule.

S12.44 The Bureau should, as and when required, convene joint meetings of the representatives of all the regional coordination groups to develop strategies for further reduction of incompatibilities and to discuss related matters. The outcome of these meetings shall be circulated among the regional groups and administrations.

S12.45 In a case of harmful interference, involving the application of the provisions of Article **S15**, administrations are urged to exercise the utmost goodwill and mutual cooperation, taking into account all the relevant technical and operational factors of the case.

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ARTICLE S19

ADD **S19.96A** Five-digit ship station selective call numbers are assigned to SSFC equipment (as described in Recommendation ITU-R M.257-3) for calling in radiotelephony and for the phasing in of NBDP equipment (as described in Recommendation ITU-R M.476-5). Within one administration the same five-digit number may be used:

– for identification of ship stations fitted with both SSFC and NBDP equipment;

– for identification of ship stations of two different ships fitted with either SSFC or NBDP equipment only.

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RESOLUTION 215 (Rev.WRC-97)

COORDINATION PROCESS AMONG MOBILE-SATELLITE SYSTEMS AND EFFICIENT USE OF THE ALLOCATIONS TO THE MOBILE-SATELLITE SERVICE IN THE 1 - 3 GHz RANGE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that space-to-Earth transmissions of mobile-satellite systems are constrained to limit their power flux-density over areas where the frequency band is shared with terrestrial systems;

b) that a number of proposed mobile-satellite systems can provide a good service to users within the power flux-density limits given in Annex 2 to Resolution **46 (Rev.WRC-97)**/Annex 1 to Appendix **S5**;

c) that when maximum communication capacity is achieved by systems in the mobile-satellite service a major portion of the interference into each of these systems will come from the other mobile-satellite systems sharing the frequency band, and, consequently, if one system starts to transmit at higher power, all others need to do the same in order to overcome mutual interference;

d) that ITU-R is studying the efficient use of the radio spectrum and frequency sharing within the mobile-satellite service, that Recommendations ITU-R M.1186 and M.1187 are a basis for further study, and that additional preliminary texts are available or can be provided by administrations on this matter;

e) that, in a codirectional, co-frequency and co-coverage sharing environment, capacities of systems using spread-spectrum multiple-access techniques are affected by technical and operational characteristics of other mobile-satellite service systems using similar multiple-access techniques;

f) that in many parts of the world and in certain frequency bands in the 1 - 3 GHz range, significant congestion already exists due to use by other terrestrial and space services;

g) the need to make most efficient use of frequencies in the MSS allocations,

recognizing

that, as a means to ensure that the frequency bands allocated to the mobile-satellite service can be used in an efficient manner, there is an urgent demand for:

1. criteria to be established by ITU-R to be used in determining the need to coordinate between mobile-satellite systems; and

2. detailed methods of interference calculation to be used by administrations in the coordination process;

3. ITU-R studies which should not impede the timely deployment of any mobile-satellite service systems,

resolves to invite ITU-R

1. to continue its studies on this subject and develop, as a matter of urgency, criteria for determining the need to coordinate and calculation methods for determining levels of interference, as well as the required protection ratios between networks in the mobile-satellite service;

2. to study, as a matter of urgency, the use of technically and operationally feasible techniques to allow for improvements in spectrum efficiency in MSS systems,

further resolves

1. that ITU studies should be focused on the technical and operational characteristics of systems using spread-spectrum multiple-access techniques that can allow co-frequency, co-coverage, codirectional sharing but which involve cooperation among systems' operators to maximize the efficient use of spectrum by multiple mobile-satellite service systems using such access techniques;

2. that administrations responsible for the introduction of mobile-satellite systems are urged to implement, as practicable, the latest available technologies to improve spectrum efficiency consistent with the requirement to offer viable MSS services;

3. to recommend that administrations be encouraged to use the most advanced technology available when preparing to implement their global MSS systems in the 1 - 3 GHz range so that they may operate, if necessary, in different frequency bands in different regions, in accordance with the MSS allocations in the 1 - 3 GHz range decided by this Conference.

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MOD

ANNEX TO RESOLUTION 312 (Rev.WRC-97)

DISTRIBUTION PLAN FOR GROUP CHANNELS HF A1A MORSE COAST STATIONS BY COUNTRIES AND AREAS[1]

Group 1		Group 2		Group 3		Group 4	
AGL	LBR	ALG	GRC	ALS	LTU	AFS	MLT
AZE	MAU	ATN	HKG	ARG	LVA	ALB	NZL
AZR	MDG	ARS W[4]	HNG	BRM	MDR	ARS E[8]	PNG
B	MRT	BEL	HOL	CAN CL[7]	MOZ	AUS	POR
BAH	NCG	BEN	I	CAN E[7]	MRA	BUL	PTC
BER	NCL	BRB	KOR	CAN NE[7]	MRC	CHN[9]	RUS AN
BGD	OCE	CBG	LBN	CHN	NIG	COD	RUS EO
BHR	OMA	CHR	MEX	DNK	NOR	E	RUS NW
CAN W[2]	PHL	CKH	MRT	EST	NRU	FJI	RUS SW
CAN NW[2]	PTR	CLM	NCL	FIN	PAK	GEO	RUS W
CHL	REU	CLN	OCE	GEO	RUS EO	GNE	SEN
CNR	ROU	CME	PNR	GHA	RUS NW	IND E	SEY
CTI	RUS AS	COG	POL	GNB	RUS SW	INS	SLM
DJI	SNG	CPV	PRG	GUI	RUS W	IRQ	SMA
EQA	STP	CTR	PRU	GUM	S	J	SRL
ERI	SUI	CUB	REU	GUY	SVN	JOR	SUR
ETH	TKM	CYP	RUS NW	HRV	TRD	KWT	SYR
F	UKR	CZE	RUS EO	HWA	TUR	LVA	TGO
G	USA E[3]	DOM	SDN	IRN	UKR	LTU	TUN
IND W	VUT	EGY	SVK	ISL	USA W	MAU	UKR
IRL		F	THA	JMC	VEN	MDA	URG
ISR		FLK	USA SO[6]	LBY	YUG	MLA	VTN
KEN		G[5]	VUT				YEM
KRE		GAB	YEM				
		GMB					

NOTES

1 The meaning of the symbols is given in Tables B1 and 4E1 of the Preface to the International Frequency List and the Weekly Circular.

2 Canada (West Coast and Western Arctic).

3 United States (East Coast).

4 Saudi Arabia (West).

5 22 MHz only.

6 United States (Gulf of Mexico Coast).

7 Canada (East Coast and Eastern Arctic).

8 Saudi Arabia (East).

9 China (Province of Taiwan).

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RESOLUTION 715 (Rev.WRC-97)

STUDIES CONCERNING SHARING BETWEEN THE RADIONAVIGATION-SATELLITE SERVICE AND THE MOBILE-SATELLITE SERVICE IN THE BANDS 149.9 - 150.05 MHz AND 399.9 - 400.05 MHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz are allocated to and used by radionavigation-satellite service (RNSS) on a primary basis;

b) that this Conference allocated the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz (Earth-to-space) to the mobile-satellite service on a primary basis;

c) that requirements of the radionavigation-satellite service (RNSS) and the mobile-satellite service (MSS) should be met in these frequency bands;

d) that there may be difficulties in the sharing between the RNSS and the MSS, and studies are being carried out by ITU-R;

e) that there is a need for further study of the operational and technical means to facilitate sharing between the RNSS and the MSS (in the Earth-to-space and space-to-Earth directions) in these bands,

recognizing

that No. **953/S4.10** of the Radio Regulations applies to the use of these bands by the RNSS,

resolves

to invite ITU-R to continue to carry out studies in order to finalize Recommendations which identify the operational and technical measures necessary to facilitate sharing between the MSS and the RNSS,

urges administrations

to participate in such studies by submitting contributions to ITU-R relating to the above-mentioned studies as soon as possible.

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RESOLUTION GTPLEN1-1 (WRC-97)

GENERAL REVIEW OF THE RESOLUTIONS AND RECOMMENDATIONS OF WORLD ADMINISTRATIVE RADIO CONFERENCES AND WORLD RADIOCOMMUNICATION CONFERENCES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that it is important to keep the resolutions and recommendations of the past world administrative radio conferences and world radiocommunication conferences under constant review, in order to keep them up to date;

b) that the report of the Director of the Radiocommunication Bureau submitted to this Conference provided a useful basis for a general review of the resolutions and recommendations of past conferences which was conducted by this Conference,

invites future competent world radiocommunication conferences

to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation and to take appropriate action,

instructs the Director of the Radiocommunication Bureau

to conduct a general review of the resolutions and recommendations of previous conferences and, if necessary after consultation with the Radiocommunication Advisory Group and the Chairmen of the relevant radiocommunication study groups, to submit a report to future competent world radiocommunication conferences which indicates their current status, and what follow-up action may be advised.

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RESOLUTION COM4-9 (WRC-97)

PROTECTION OF DISTRESS AND SAFETY COMMUNICATIONS ON THE FREQUENCIES 12 290 kHz AND 16 420 kHz FROM HARMFUL INTERFERENCE CAUSED BY THESE FREQUENCIES IF ALSO USED FOR NON-SAFETY CALLING

The World Radiocommunication Conference (Geneva, 1997),

noting

a) that the frequencies 4 125 kHz, 6 215 kHz, 12 290 kHz and 16 420 kHz are used for distress and safety communications as well as for non-safety calling by ships in radiotelephony in accordance with the provisions of Article **S31** and **S52.221** respectively;

b) that considerable worldwide interference to distress and safety communications is experienced, especially on the frequencies 12 290 kHz and 16 420 kHz, due to ships being unable to monitor these frequencies before calling,

noting further

a) that the recommended agenda for the 1999 World Radiocommunication Conference (WRC-[99]) includes an agenda item 2.4 for review of the channel arrangements in the HF bands for the maritime mobile service, taking into account the use of new digital technology;

b) that consideration of this item by WRC-[99] may result in making the frequencies 12 290 kHz and 16 420 kHz exclusive for distress and safety communications,

recognizing

that it is of vital importance for the safety of life at sea that distress and safety communications can be carried out without being hampered by harmful interference,

resolves

1 to urge administrations:

a) to move, where appropriate, their coast station calling frequencies from the channels 1221 and 1621 to any other suitable HF channel;

b) to request ships under their jurisdiction to refrain from using the frequencies 12 290 kHz and 16 420 kHz for non-safety calling;

2 to recommend that WRC-[99] consider this subject,

instructs the Secretary-General

to bring this Resolution to the attention of the International Maritime Organization (IMO).

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RESOLUTION COM4-10 (WRC-97)

USE OF DIGITAL TELECOMMUNICATION TECHNOLOGIES IN THE MF AND HF BANDS BY THE MARITIME MOBILE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that amendments to Article **S52** of the Radio Regulations have been adopted by this Conference to provide for the use of digital telecommunication technology in the maritime HF telephony and A1A Morse bands;

b) that there may be a need for consequential changes in Appendix **S17** to reflect provisions made at this Conference for the use of digital telecommunications in the maritime HF telephony bands,

considering further

a) that it would be desirable to extend the use of digital telecommunication technology to the maritime HF A1A Morse telegraphy bands as well;

b) that these bands are significantly underutilized at present;

c) that the requirement for use of new digital technologies in the maritime mobile service is growing rapidly,

noting

a) that Resolution **720** of WRC-95 sets forth a preliminary agenda for WRC-[99] that includes item 2.4 "Review of channel arrangements in HF bands for the maritime mobile service, taking into account the use of new digital technology";

b) that use of the maritime HF A1A Morse radiotelegraphy bands is steadily diminishing with the result that administrations are already beginning to use these bands for digital telecommunication systems on a non-interference basis,

resolves

to recommend that WRC-[99] make changes to Appendix **S17** and Article **S52,** as needed,

instructs the Secretary-General

to bring this Resolution to the attention of the International Maritime Organization (IMO).

PINK PAGES

RESOLUTION COM4-11 (WRC-97)

STUDIES REQUIRED TO PROVIDE PRIORITY TO DISTRESS COMMUNICATIONS ORIGINATED BY SHORE-BASED SEARCH AND RESCUE AUTHORITIES

The World Radiocommunication Conference (Geneva, 1997),

noting

a) that Article **S53** provides priority for distress and safety communications which involves immediate access to the space segment;

b) that distress and safety communications from shore-based search and rescue authorities will also be given priority access to the space segment;

c) that when ships are communicating using their ship earth stations, these priority requests are not able to be completed without manual intervention using a manual procedure to clear all traffic to and from the ship,

considering

a) that persons on board ships in distress or involved with a distress case may wish to use the ship earth station to notify friends, family and business associates on shore;

b) that this could cause priority requests from rescue authorities to receive a busy signal;

c) that unacceptable delays may be encountered in clearing all traffic to and from the ships manually,

recognizing

a) that life and property may be lost if rapid access is not provided for distress related communications originated by the rescue authority;

b) that the International Maritime Organization (IMO) has considered this problem and decided that provisions are necessary for giving priority to shore-originated distress communications;

c) that Inmarsat is currently studying how to provide such priority communications,

resolves to invite

1 ITU-R to monitor the status of these studies and to develop suitable Recommendations;

2 IMO to develop requirements for priority communications for distress-related communications originated by shore-based search and rescue authorities and to submit these requirements to the next competent WRC,

further invites the Council

to place this Resolution on the agenda of a future competent world radiocommunication conference,

instructs the Secretary-General

to communicate this Resolution to IMO and the International Civil Aviation Organization (ICAO) for appropriate action and comment.

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RESOLUTION COM4-12 (WRC-97)

OPERATIONAL PROCEDURES FOR CANCELLING FALSE DISTRESS ALERTS IN THE GMDSS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the SOLAS 1974 Convention, as amended, prescribes that ships subject to this Convention shall be fitted with GMDSS equipment as appropriate;

b) that non-SOLAS vessels are also being equipped with GMDSS equipment;

c) that the transmission and relay of false distress alerts is a significant problem within the GMDSS,

noting

that the International Maritime Organization (IMO) has developed similar operational procedures to cancel false distress alerts,

resolves

1 to urge administrations to take all necessary measures to avoid false distress alerts and to minimize the unnecessary burden on rescue organizations which occurs;

2 to urge administrations to encourage the correct use of GMDSS equipment, with particular attention to appropriate training;

3 to urge administrations to implement the operational procedures contained in the Annex to this Resolution;

4 that administrations should take any consequential appropriate action in this respect,

instructs the Secretary-General

to bring this Resolution to the attention of IMO.

PINK PAGES

ANNEX TO RESOLUTION COM4-12 (WRC-97)

CANCELLING OF FALSE DISTRESS ALERTS

If a distress alert is inadvertently transmitted, the following steps shall be taken to cancel the distress alert.

1. VHF Digital Selective Calling

1) Reset the equipment immediately;
2) Set to Channel 16; and
3) Transmit a broadcast message to "All Stations" giving the ship's name, call sign and maritime mobile service identity (MMSI), and cancel the false distress alert.

2. MF Digital Selective Calling

1) Reset the equipment immediately;
2) Tune for radiotelephony transmission on 2 182 kHz; and
3) Transmit a broadcast message to "All Stations" giving the ship's name, call sign and MMSI, and cancel the false alert.

3. HF Digital Selective Calling

1) Reset the equipment immediately;
2) Tune for radiotelephony on the distress and safety frequency in each band in which a false distress alert was transmitted (see Appendix **S15**); and
3) Transmit a broadcast message to "All Stations" giving the ship's name, call sign and MMSI, and cancel the false alert on the distress and safety frequency in each band in which the false distress alert was transmitted.

4. Inmarsat Ship Earth Station

Notify the appropriate rescue coordination centre that the alert is cancelled by sending a distress priority message by way of the same coast earth station through which the false distress alert was sent. Provide ship name, call sign and Inmarsat identity with the cancelled alert message.

5. Emergency Position Indicating Radiobeacon (EPIRB)

If for any reason an EPIRB is activated inadvertently, contact the appropriate rescue coordination centre through a coast station or land earth station and cancel the distress alert.

6. General

Notwithstanding the above, ships may use additional appropriate means available to them to inform the appropriate authorities that a false distress alert has been transmitted and should be cancelled.

PINK PAGES

RESOLUTION COM5-8 (WRC-97)

FEASIBILITY OF IMPLEMENTING FEEDER LINKS OF NON-GEOSTATIONARY SATELLITE NETWORKS IN THE MOBILE-SATELLITE SERVICE IN THE BAND 15.43 - 15.63 GHz (SPACE-TO-EARTH) WHILE TAKING INTO ACCOUNT THE PROTECTION OF THE RADIO ASTRONOMY SERVICE, THE EARTH EXPLORATION-SATELLITE (PASSIVE) SERVICE AND THE SPACE RESEARCH (PASSIVE) SERVICE IN THE BAND 15.35 - 15.4 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the band 15.43 - 15.63 GHz (space-to-Earth) is allocated to the fixed-satellite service on a primary basis for use by feeder links to non-geostationary systems in the mobile-satellite service;

b) that this band is shared with aeronautical radionavigation services on a primary basis;

c) that No. **S4.10** of the Radio Regulations applies to the use of the band by aeronautical radionavigation services;

d) that, in accordance with No. **S5.511B (WRC-95)**, aircraft stations were not permitted to transmit in the band 15.45 - 15.65 GHz;

e) that WRC-97 recognized that airborne transmitters were operating in the aeronautical radionavigation service in the 15.43 - 15.63 GHz band;

f) that the feasibility of designing and operating feeder links in the space-to-Earth direction with the power flux-density limits in Table **S21-4** of Article **S21** has not been studied by ITU-R;

g) that the band 15.35 - 15.4 GHz is allocated on a co-primary basis for exclusively passive use by the radio astronomy service, the earth exploration-satellite service and the space research service and protection from harmful interference from space stations is needed;

h) that No. **S5.511A** provides that harmful interference shall not be caused to the radio astronomy service by feeder links for the mobile-satellite service operated in the band 15.43 - 15.63 GHz;

i) that out-of-band emissions from space stations in the mobile-satellite service in the band 15.43 - 15.63 GHz may cause interference to the radio astronomy service in the band 15.35 - 15.4 GHz;

j) that Recommendation ITU-R RA.769-1 specifies the levels of interference which are detrimental to the radio astronomy service which may not be easily met by non-GSO MSS feeder links operating in the space-to-Earth direction,

invites ITU-R

1 to study, as a matter of urgency, in preparation for [WRC-99], the feasibility of implementing non-GSO MSS feeder links in the band 15.43 - 15.63 GHz, taking into account the above *considerings*;

2 to study, as a matter of urgency, the interference potential of feeder links for NGSO satellites in the mobile-satellite service to the radio astronomy service in the 15 GHz band and develop recommendations to reduce the out-of-band interference,

resolves

that [WRC-99] should review the results of the above studies and take appropriate action, including possible adjustments in spectrum allocations.

PINK PAGES

RECOMMENDATION COM5-A (WRC-97)

USE OF THE FREQUENCY BANDS 2 025 - 2 110 MHz AND 2 200 - 2 290 MHz BY THE SPACE RESEARCH, SPACE OPERATION, EARTH EXPLORATION-SATELLITE, FIXED AND MOBILE SERVICES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz are allocated on a primary basis to the space research, space operation, earth exploration-satellite, fixed and mobile services;

b) that, in response to resolutions from WARC-92, studies have resulted in a number of ITU-R Recommendations, which, when adhered to by the services, will result in a stable, long-term sharing environment (Recommendations ITU-R SA.364, SA.1019, F.1098, F.1247, F.1248, SA.1154, SA.1273, SA.1274 and SA.1275);

c) that this Conference adopted RR **S5.391**, which states that high-density mobile systems shall not be introduced in these frequency bands,

considering further

that enhancements in technology may enable the services mentioned in *considering* a) to minimize the total bandwidth requirement in these frequency bands,

noting

that WARC-92 considered that it is desirable to review the present and planned use of the frequency bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz, with the intent, where practicable, of satisfying some space mission requirements in bands above 20 GHz,

recognizing

that there are increasing requirements for emerging communication systems which need to be satisfied in the frequency range below 3 GHz,

recommends

that administrations planning to introduce new systems in the space research, space operation, earth exploration-satellite, fixed or mobile services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz take into account the ITU-R Recommendations referred to in *considering* b) above when making assignments to these services, and implement enhancements in technology as early as practicable with a view to minimizing the total bandwidth required by systems of each service.

PINK PAGES

SUP	RESOLUTION 115 (WRC-95)
SUP	RESOLUTION 116 (WRC-95)
SUP	RESOLUTION 117 (WRC-95)
SUP	RESOLUTION No. 210 (Mob-87)
SUP	RESOLUTION No. 330 (Mob-87)
SUP	RESOLUTION No. 711 (WARC-92)
SUP	RESOLUTION No. 714 (WRC-95)
NOC	RESOLUTION 716
SUP	RESOLUTION 717
SUP	RECOMMENDATION 717
SUP	RECOMMENDATION 721

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

FOURTEENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5 TO THE EDITORIAL COMMITTEE

Committee 5 has continued its consideration of allocation issues relating to MSS allocations in bands below 1 GHz. As a result of these deliberations, it has adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

V. RAWAT
Chairman of Committee 5

Annex: 1

ADD

RESOLUTION [COM5-25]

STUDIES RELATING TO CONSIDERATION OF THE ALLOCATION OF NON-GEOSTATIONARY MOBILE-SATELLITE SERVICE (MSS) IN THE METEOROLOGICAL AIDS BAND OF 405 - 406 MHz AND THE IMPACT ON PRIMARY SERVICES ALLOCATED IN THE ADJACENT BANDS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that there is a significant shortfall of spectrum for the non-geostationary orbit (NGSO) MSS below 1 GHz, and there is an urgent need to make additional spectrum available on a worldwide basis for such NGSO MSS systems;

b) that the CPM-97 Report for WRC-97 states "that the Radiocommunication Bureau (BR) has identified 23 NGSO MSS networks, at frequencies below 1 GHz, at some state of coordination under (Resolution 46) **S9.11A**", and that it is likely that a number of these systems may not be implemented for reasons not connected with spectrum availability and that several administrations have indicated in their information submitted to the BR that they plan on implementing these NGSO MSS systems by the year 2002 or earlier;

c) that the CPM-97 Report for WRC-97 also states that "it appears many of the proposed networks cannot be implemented in the existing allocations because there is not enough spectrum to allow the development of all of these systems in an economically viable manner";

d) that meteorological aids systems are essential to produce the upper air measurements required by the World Meteorological Organization (WMO) as summarized in Recommendation ITU-R SA.1165, and that systems using 400.15 - 406 MHz constitute the majority of the observing mobile and fixed stations worldwide;

e) that meteorological aids systems are also essential to produce the upper air measurements required for civilian and other applications;

f) that the amount of spectrum required by meteorological users including WMO (station spacing requirement of 250 km), civilian and other related users in most geographical areas is about 5 MHz in the band 401 - 406 MHz using the currently employed technology;

g) that since this Conference upgraded the earth exploration-satellite service and the meteorological-satellite service to primary in the 401 - 403 MHz band, this is likely to impose constraints on the meteorological aids services in this band in certain geographical areas;

h) that development of more spectrum efficient meteorological aids systems is continuing in order to minimize that bandwidth required by these systems, as outlined in Recommendation SA.1165 and that recent development of these related technologies has been rapid;

i) that sharing studies to date have shown that co-channel sharing between currently proposed NGSO MSS systems and meteorological aids in the band 401 - 406 MHz is not generally feasible, any sharing would require band segmentation, and the band 405 - 406 MHz has been named by some administrations as a possible candidate band for such a new allocation;

j) that any transition of meteorological aids from 405 - 406 MHz should not increase the operational costs of meteorological aids networks above the available financial resources, and should not constrain the future development of the meteorological aids service while using more spectrum efficient systems;

k) that the COSPAS-SARSAT system operates within an exclusive allocation in the band 406 - 406.1 MHz and that the radio astronomy service has a primary allocation in the band 406.1 - 410 MHz and that these services need to be protected from the MSS transmissions including unwanted emissions,

noting

1 that the use of the band 405 - 406 MHz by the mobile-satellite service is limited to systems using narrow-band modulation techniques until further ITU-R studies conclude that other modulation techniques can protect COSPAS-SARSAT (406 - 406.1 MHz) and the radio astronomy service (406.1 - 410 MHz);

2 that Resolution **214 (Rev.WRC-97)** also addresses sharing studies relating to consideration of the allocation of bands below 1 GHz to the mobile-satellite service,

resolves to invite ITU-R

1 as a matter of urgency, with the participation of WMO, to further assess the current and future requirements of the meteorological aids service in the 401 - 406 MHz band, taking into account the requirements of the earth exploration-satellite service and the meteorological-satellite service in the 401 - 403 MHz band;

2 as a matter of urgency, with the participation of WMO, to consider the possible transition of the meteorological aids service out of the 405 - 406 MHz band, which would minimize the impact on the meteorological aids service, while taking into account the requirements for the implementation of NGSO MSS;

3 to consider, based on the outcome of 1 and 2 above, a possible transition plan, including a transition date at which time meteorological aids could migrate their operations out of the 405 - 406 MHz band and MSS operations could commence;

4 as a matter of urgency to study, with the participation of IUCAF and other relevant entities, the impact of unwanted emissions on the COSPAS-SARSAT system in the band 406 - 406.1 MHz and the radio astronomy service in the band 406.1 - 410 MHz, and identify appropriate protection measures for these services,

resolves

that [the 1999 World Radiocommunication Conference (WRC-99)/a future competent conference] be invited to consider, based on the outcome of *resolves to invite ITU-R* above, the possibility of allocating the 405 - 406 MHz band to the mobile-satellite service, including any appropriate transition plan,

urges administrations

1 to assess their current and future requirements for meteorological aids systems in the band 401 - 406 MHz taking into account the requirements of the earth exploration-satellite service and the meteorological-satellite service in the 401 - 403 MHz band;

2 to, either individually or on a subregional or regional basis, report to WMO and ITU-R whether the whole 401 - 406 MHz band will be needed for meteorological aids, and the possibility of the transition out of the 405 - 406 MHz band;

3 to submit to ITU-R the most up-to-date information on their plans for possible implementation of NGSO MSS systems and the associated spectrum requirements,

instructs the Secretary-General

to bring this Resolution to the attention of WMO.

MOD

RESOLUTION 214 (Rev.WRC-~~95~~97)

SHARING STUDIES RELATING TO CONSIDERATION OF THE ALLOCATION OF BANDS BELOW 1 GHz TO THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, ~~1995~~1997),

considering

a) that the agenda of this Conference included consideration of additional ~~the requirements of the mobile-satellite service (MSS) and, if necessary, the adoption of limited~~ allocations on a worldwide basis for the ~~MSS;~~ non-geostationary mobile-satellite service (non-GSO/MSS) below 1 GHz;

b) that the Conference Preparatory Meeting 1997, in its Report, indicated that for the non-GSO/MSS below 1 GHz there is not enough spectrum currently allocated to allow the development of all the systems currently in coordination, and ~~that the Conference Preparatory Meeting 1995, in its Report, indicated~~ that, in order to meet projected MSS requirements below 1 GHz, a range of an additional 7 to 10 MHz will be required in the near future although, as well, it recognized that a number of these systems may not be implemented for reasons not connected with spectrum availability;

~~*f*~~*c)* that there is an urgent need to make ~~additional~~usable spectrum available on a worldwide basis for non-GSO/MSS systems operating below 1 GHz;

d) that some NGSO/MSS systems are operating in some administrations in existing MSS allocations and are at an advanced stage of consideration for operation in many other administrations and that studies have been conducted within ITU-R on sharing between NGSO/MSS and certain terrestrial services which demonstrate the feasibility of sharing in the cases studied;

e) that issues concerning the technical and operational means to facilitate sharing between the terrestrial services and the non-GSO/MSS in the bands below 1 GHz remain to be studied;

~~*g*~~*f)* that the requirements for the introduction of these new technologies have to be balanced~~,~~ with the needs of other services allocated below 1 GHz;

~~*considering further*~~

g) that the bands below 1 GHz are extensively used by administrations for many services, although the extent to which they are used by each administration varies throughout the world,

noting

a) that~~, after appropriate~~ additional studies~~, there~~ may ~~be~~identify other bands below 1 GHz which could also be considered suitable for a worldwide allocation to non-GSO/MSS~~,~~;

b) that based on the sharing techniques being developed for MSS below 1 GHz and the current use by terrestrial services in 138 - 470 MHz, this range may be considered for further study;

c) that constraints on the duration of any single transmission from an individual MSS MES and constraints on the period between consecutive transmissions from an individual MSS MES operating on the same frequency may facilitate sharing with terrestrial services;

d) that interference mitigating techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039-1, may be used by non-GSO MSS systems below 1 GHz in the Earth-to-space direction to promote compatibility with terrestrial systems when operating in the same frequency band;

~~*d*~~*e)* that new technologies of some radiocommunication services, especially within the terrestrial mobile and broadcasting services, which require spectrum below 1 GHz, may have an impact on the sharing possibilities;

~~*e*~~*f)* that non-GSO/MSS systems operating below 1 GHz have undergone advance publication by the Radiocommunication Bureau and that administrations may seek to implement further such systems;

g) that there may be a need to review constraints on the current allocations to the MSS below 1 GHz,

resolves

1. that further studies are urgently required on operational and technical means to facilitate sharing between the non-GSO/MSS and other radiocommunication services having allocations and operating below 1 GHz;

2. that [the 199~~7~~9] World Radiocommunication Conference (WRC-9~~7~~9) be invited to consider, on the basis of the results of the studies conducted within ITU-R and the studies referred to in *resolves* 1 above, additional allocations on a worldwide basis for the non-GSO/MSS below 1 GHz;

3. that ~~the~~ relevant entities and ~~international~~ organizations be invited to participate in these sharing studies~~,~~;

4. that [the 1999/a future competent] world radiocommunication conference be invited to consider a review of the technical and regulatory constraints on non-GSO mobile-satellite service allocations in the bands below 1 GHz, taking into account *considering d)*,

invites ITU-R

1. to study and develop Recommendations, as a matter of urgency, on the performance requirements, the sharing criteria, and the technical and operational issues relating to sharing

between both the existing and planned services, ~~having allocations~~ and the non-GSO/MSS below 1 GHz; ~~, in the bands proposed to this Conference by several administrations and in other frequency bands, as necessary;~~

2. as a matter of urgency, to carry out studies in preparation for [a future competent Conference/(WRC-99)] including review of the operating constraints given in *noting c)* necessary to protect the existing and planned development of all of the services to which the bands below 1 GHz are allocated, taking note of *noting d)*;

3. as a matter of urgency, to carry out studies in preparation for [a future competent Conference/(WRC-99)] with respect to interference mitigating techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039-1, necessary to permit the continued development of all of the services to which bands are allocated;

4. to carry out a review [for a future competent conference] of the technical and regulatory constraints on non-GSO/MSS allocations in the bands below 1 GHz taking into account *considering d)*;

~~2~~5. to bring the results of these studies to the attention of [the next competent Conference (WRC-9~~7~~9)] and the relevant preparatory meetings,

urges administrations

1. to participate actively in these studies~~;~~ with involvement by both terrestrial and satellite interests;

2. to submit to ITU-R reports on their technical studies and on their ~~,~~ operational and frequency sharing experience with non-GSO/MSS systems operating below 1 GHz~~.~~,

encourages administrations

to consider the use of a type of dynamic channel assignment techniques, such as that described in Recommendation ITU-R M.1039-1.

ADD

DRAFT RESOLUTION [COM5-15]

STUDIES RELATING TO CONSIDERATION OF ALLOCATIONS FOR FEEDER LINKS IN BANDS AROUND 1.4 GHz TO THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICES WITH SERVICE LINKS OPERATING BELOW 1 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the agenda of this Conference included consideration of the adoption of additional allocations for the non-geostationary mobile-satellite services (non-GSO/MSS);

b) that the Report of the 1997 Conference Preparatory Meeting (CPM-97) stated that "The Radiocommunication Bureau has identified at least 23 non-GSO/MSS networks at frequencies

below 1 GHz, at some state of coordination under Resolution 46" and that "many of the proposed networks cannot be implemented in the existing allocations because there is not enough spectrum";

c) that the CPM-97 stated that due to the "extreme sensitivity of radio astronomy observations interference from unwanted (spurious and out-of-band) emissions" can be a problem. However, CPM-97 noted that interference to radio astronomy can be avoided using various techniques including, low power transmitter levels, choice of modulation, bit shaping, output filtering, band limiting filters. Use of these techniques can minimize the band separation necessary to attain the recommended interference threshold levels for out-of-band emissions;

d) that, since CPM-97, one administration has carried out additional analyses and hardware demonstrations with a view to determining the feasibility of sharing between non-GSO/MSS feeder links and services such as earth exploration-satellite (passive), radio astronomy, and space research (passive) services in bands around 1.4 GHz;

e) that factors taken into account by these post-CPM-97 activities to protect the passive services around 1.4 GHz from out-of-band emissions include: the use of narrow-band non-GSO/MSS feeder link transmissions; the use of spectrum-efficient modulation methods, such as GMSK, having inherently rapid roll-off of out-of-band emissions; the use, where necessary, of band-pass filters in satellite transmitters and MSS feeder link transmitting earth stations; and guardbands where necessary;

f) that factors taken into account by these post-CPM-97 activities considering sharing with radiolocation, include the use of conventional techniques that may be applied in MSS satellite receivers, such as intermediate frequency limiters and time diversity that have long been employed to protect radiolocation receivers, and techniques such as transmitted wave forms that employ time diversity that have been employed to protect receivers in other services, from high-power pulsed radar transmitters,

recognizing

that the bands near 1.4 GHz are extensively used by many other services operating in accordance with the Radio Regulations, included fixed and mobile systems,

noting

a) that Resolution **214 (WRC-97)** *resolves* 1 states "that further studies are urgently required on operational and technical means to facilitate sharing between the non-GSO MSS and other radiocommunication services having allocations and operating below 1 GHz";

b) that a former resolution identified "issues relating to frequency sharing between the mobile-satellite service and terrestrial services at frequencies below 3 GHz" as being among the "urgent studies required in preparation for WRC-97";

c) that one administration performed such studies which were submitted to the ITU-R, but these studies could not be considered due to time limitations;

d) that, since WRC-95, one administration has performed studies of sharing between space and terrestrial services and feeder links near 1.4 GHz for the non-GSO/MSS with service links below 1 GHz,

resolves

1 to invite ITU-R, as a matter of urgency, to carry out studies to determine the operational and technical measures required to facilitate sharing in portions of the band 1 390 - 1 400 MHz between

existing and currently planned services and feeder links (Earth-to-space) for non-GSO/MSS with service links operating below 1 GHz;

2 to invite ITU-R, as a matter of urgency, to carry out studies to determine operational and technical means to facilitate sharing in portions of the band 1 427 - 1 432 MHz between existing and currently planned services and the feeder links (space-to-Earth) for non-GSO/MSS with service links operating below 1 GHz which may be allocated to non-GSO/MSS systems;

3 to invite ITU-R, as a matter of urgency, to study operational and technical measures required to protect passive services in the band 1 400 - 1 427 MHz from unwanted emissions from feeder links near 1.4 GHz for non-GSO/MSS with service links operating below 1 GHz;

4 to invite [WRC-99] or [a future competent conference] to consider, on the basis of completion of studies referred to in *resolves* 1, 2 and 3, additional allocations for feeder links on a worldwide basis for non-GSO/MSS with service links below 1 GHz,

urges administrations

to participate actively in such studies with the involvement of interested parties.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

REPORT TO THE PLENARY MEETING BY WORKING GROUP AD HOC 1

PLEN ad hoc 1 acting in accordance with the terms of reference ("to update Annex 2 to Document 258, reflecting the discussion on the text in square brackets which had taken place and any further comments made in the Working Group on the draft Resolution [GTPLEN2-1] and to report back to the Plenary") adopted at the sixth Plenary Meeting Friday, 14 November 1997 has completed its work and transmits its report to the Plenary.

Ad hoc Group 1 of the Plenary met four times to review Annex 2 of Document 258 (draft Resolution [GTPLEN2-1]), and considered the following:

1 AP30 and 30A

The ad hoc Group agreed that the due diligence procedures should apply to certain modifications to the Plans of Appendices 30 and 30A. With regard to modifications under 4.1 a) of these Appendices the Group agreed that the Resolution should also apply to the extension of the service area to another country or countries in addition to the existing service area.

2 AP30B

The ad hoc Group agreed that the due diligence procedures should only apply to the Additional Uses as defined in Appendix 30B.

3 Exemption for governmental systems

The United States proposed an additional *resolves* to be included in the Resolution:

> "Systems specifically designated for and controlled by the government to provide exclusive government telecommunications as defined in No. 1014 of the Constitution are exempt from this Resolution. This exemption does not apply to commercial systems that provide communications to the government".

The proposal was supported by two administrations while four administrations opposed it. Two administrations were of the opinion that the issue had to be discussed further.

The ad hoc Group agreed not to include the proposal in the draft Resolution.

4 Other issues

One administration proposed to amend the Resolution, urging administrations to develop the relevant national due diligence procedures. The majority of the administrations were opposed to this proposal.

The ad hoc Group also agreed to amend the *further resolves* to indicate that the due diligence procedure in no case replaces the obligation to coordinate in accordance with other provisions of the Radio Regulations.

5 Reservations

The United States reserved its position with regard to the draft Resolution.

The final text of Annex 1 to Resolution [GTPLEN2-1] updated by PLEN ad hoc 1 as well as Annex 2 to that Resolution as contained in Document 258 are presented in the annex to the report forming the complete draft Resolution [GTPLEN2-1].

ANNEX

DRAFT RESOLUTION [GTPLEN2-1]

ADMINISTRATIVE DUE DILIGENCE APPLICABLE TO SOME SATELLITE COMMUNICATION SERVICES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that Resolution **18** of the ITU Plenipotentiary Conference held in Kyoto in 1994 instructed the Director of the Radiocommunication Bureau to initiate a review of some important issues concerning international satellite network coordination and make a preliminary report to WRC-95 and a final report to WRC-97;

b) that the Director of the Radiocommunication Bureau provided a comprehensive Report to WRC-97 including a number of recommendations for action as soon as possible and identifying areas requiring further study;

c) that one of the recommendations in the Director's Report was that administrative due diligence should be adopted as a means of addressing the problem of reservation of the orbit and spectrum capacity without actual use;

d) that experience may need to be gained in the application of the administrative due diligence procedures adopted by this Conference, and that several years may be needed to see whether administrative due diligence measures produce satisfactory results;

e) that new regulatory approaches may need to be carefully considered in order to avoid adverse effects on networks already going through the different phases of the procedures;

f) that Article **44** of the Constitution (Geneva, 1992) sets out the basic principles for the use of the radio-frequency spectrum, the geostationary-satellite orbit and the needs of developing countries,

considering further

that the Conference decided to reduce the regulatory time-frame for bringing a satellite network into use,

resolves

1 that the administrative due diligence procedure contained in Annex 1 to this Resolution shall be applied as from [22 November 1997] for a satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service for which the advance publication information [**S9.2B**] or for which the request for modifications of the Plans under Article **4**, paragraph 4.1 b) of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Plans under Article **4**, paragraph 4.1 a) of Appendices **30** and **30A** that extends the service area to another country or countries in addition to the existing service area, or for which the submission of information of Annex 2 of Appendix **30B** under supplementary provisions applicable to Additional Uses in the planned bands as defined in Article **2** of that Appendix (Section III of Article **6** of Appendix **30B**) has been received by the Bureau from [22 November 1997];

2 that for a satellite network or satellite system, within the scope of paragraphs 1, 2 or 3 of Annex 1 to this Resolution, not yet recorded in the MIFR, for which the advance publication information under [RR **1042**/**S9.2B**] or the request for a modification to the Plans of Appendices **30** and **30A** or the application of Section III of Article **6** of Appendix **30B** has been received by the Bureau before [22 November 1997] the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2003, or before the expiry of the original notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of [RR **1550**] or the dates specified in the relevant provisions of Appendix **30** [(4.3)], Appendix **30A** [(4.2.5 and 4.2.6)] or Appendix **30B** [(6.57)], whichever date comes earlier. If the date of bringing into use, including extension specified above, is before 1 July 1998, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 1 July 1998;

3 that for satellite network or satellite system within the scope of paragraphs 1, 2 or 3 of Annex 1 to this Resolution recorded in the MIFR, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2000;

4 that six months before the expiry date specified in *resolves* 2 or 3 above, if the responsible administration has not submitted the due diligence information, the Bureau shall send a reminder to the responsible administration;

5 that if the due diligence information is found to be incomplete, the Bureau shall immediately request the administration to submit the required information. In any case, the complete due diligence information shall be received by the Bureau before the expiry date specified in *resolves* 2 or 3 above, as appropriate. The complete due diligence information shall be published by the Bureau in the Weekly Circular;

6 that if the complete due diligence information is not received by the Bureau before the expiry date specified in *resolves* 2 or 3 above, the request for coordination or request for a modification to the Plans of Appendices **30** and **30A** or application of Section III of Article **6** of Appendix **30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **30** and **30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **30B** List shall be deleted by the Bureau after informing the concerned administration. The Bureau shall publish this information in the Weekly Circular,

further resolves

that the procedures in this Resolution are in addition to the provisions under Article [**S9** or **S11**] or Appendices **30, 30A** or Appendix **30B** as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **30, 30A**) in respect of extending the service area to another country or countries in addition to the existing service area,

instructs the Director of the Radiocommunication Bureau

to report to the next competent World Radiocommunication Conference (WRC-99) and future world radiocommunication conferences on the results of the implementation of the administrative due diligence procedure,

instructs the Secretary-General

to bring this Resolution to the attention of the Plenipotentiary Conference 1998.

ANNEX 1 TO RESOLUTION [GTPLEN2-1] ON
ADMINISTRATIVE DUE DILIGENCE

1 Any satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service with frequency assignments that are subject to coordination under [Articles **11**, **S9.7**, **S9.8**, **S9.9**, **S9.11**, **S9.12**, **S9.13**, Resolution **33**, Resolution **46**, Resolution **118** and Resolution **120**] shall be subject to these procedures.

2 Any modifications of the Plans under Article **4**, paragraph 4.1 b) of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions or modifications of the Plans under Article **4**, paragraph 4.1 a) of Appendices **30** and **30A** that extend the service area to another country or countries in addition to the existing service area shall be subject to these procedures.

3 Any submission of information under Annex 2 of Appendix **30B** under supplementary provisions applicable to Additional Uses in the planned bands as defined in Article **2** of that Appendix (Section III of Article **6** of Appendix **30B**) shall be subject to these procedures.

4 An administration requesting coordination for a satellite network under 1 above shall send to the Bureau as early as possible before bringing into use, but in any case not to be received before the end of the 5-year period established as a limit to bringing into use [cross-reference to regulatory provision], the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

5 An administration requesting a modification of the Plans of Appendices **30** and **30A** under 2 above shall send to the Bureau as early as possible before bringing into use, but in any case to be received before the end of the [8]-year period established as a limit to bringing into use [cross-reference to regulatory provision], the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

6 An administration applying Section III of Article 6 of Appendix **30B** related to Additional Uses under 3 above shall send to the Bureau as early as possible before the bringing into use, but in any case to be received before the bringing into use, the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer in Annex 2 to this Resolution.

7 The information to be submitted in accordance with paragraphs 4, 5 or 6 above shall be signed by an authorized official of the notifying administration (or of an administration that is acting on behalf of a group of named administrations).

8 On receipt of the due diligence information under 4, 5 or 6 above, the Bureau shall promptly examine that information for completeness. If the information is found to be complete, the Bureau shall publish the complete information in a special section of the Weekly Circular within 30 days.

9 If the information is found to be incomplete, the Bureau shall immediately request the administration to submit the required information. In all cases the complete due diligence information shall be received by the Bureau within the appropriate time period specified in 4, 5 or 6 above, as appropriate, relating to the date of bringing the satellite network into use.

10 Six months before expiry of the period specified in 4, 5 or 6 above and if the administration responsible for the satellite network has not submitted the due diligence information under 4, 5 or 6 above, the Bureau shall send a reminder to the responsible administration.

11 If the complete due diligence information is not received by the Bureau within the time limits specified in this Resolution, the networks covered by paragraphs 1, 2 or 3 above shall no longer be taken into account and shall not be recorded in the MIFR. A provisional recording in the MIFR shall be deleted by the Bureau after informing the concerned administration. The Bureau shall publish this information in the Weekly Circular.

With respect to the request for modification of the Plans of Appendices **30** and **30A** under 2 above, the modification shall lapse if the due diligence information is not submitted in accordance with this Resolution.

With respect to the request for application of Section III of Article **6** of Appendix **30B** under 3 above, the network shall also be deleted from the Appendix **30B** List, if applicable.

12 Before the Bureau extends the date of bringing into use under **[S11.44 [RR 1550]]**, the complete due diligence information under 4 above shall have been submitted by the responsible administration.

13 An administration notifying a satellite network under 1, 2 or 3 above, for recording in the MIFR shall send to the Bureau as early as possible before bringing into use, but in any case before the date of bringing into use, the due diligence information relating to the identity of the satellite network and the launch services provider specified in Annex 2 to this Resolution.

14 When an administration has completely fulfilled the due diligence but has not completed coordination, this does not preclude the application of **S11.41** by that administration.

ANNEX 2 TO RESOLUTION [GTPLEN2-1] ON
ADMINISTRATIVE DUE DILIGENCE

A **Identity of the satellite network**

a) Identity of the satellite network

b) Name of the administration

c) Country symbol

d) Reference to the API [or request for modification of the plans in **AP30**/**30A**]

e) Reference to the request for coordination [(not applicable for **AP30**/**30A**)]

f) Frequency band(s)

g) Name of the operator

h) Name of the satellite

i) Orbital characteristics

B **Spacecraft manufacturer***

a) Name of the spacecraft manufacturer

b) Date of the execution of the contract

c) Contractual "delivery window"

d) Number of satellites procured

C **Launch services provider**

a) Name of the launch vehicle provider

b) Date of the execution of the contract

c) Anticipated launch or in-orbit delivery window

d) Name of the launch vehicle

e) Name and location of the launch facility

_____

* NOTE - In cases where a contract for satellite procurement covers more than 1 satellite, the relevant information shall be submitted for each satellite.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 344-E
18 November 1997
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

REPORT TO THE PLENARY MEETING BY WORKING GROUP AD HOC 1

PLEN ad hoc 1 acting in accordance with the terms of reference ("to update Annex 2 to Document 258, reflecting the discussion on the text in square brackets which had taken place and any further comments made in the Working Group on the draft Resolution [GTPLEN2-1] and to report back to the Plenary") adopted at the sixth Plenary Meeting Friday, 14 November 1997 has completed its work and transmits its report to the Plenary.

Ad hoc Group 1 of the Plenary met four times to review Annex 2 of Document 258 (draft Resolution [GTPLEN2-1]), and considered the following:

1 AP30 and 30A

The ad hoc Group agreed that the due diligence procedures should apply to certain modifications to the Plans of Appendices 30 and 30A. With regard to modifications under 4.1 a) of these Appendices the Group agreed that the Resolution should also apply to the extension of the service area to another country or countries in addition to the existing service area.

2 AP30B

The ad hoc Group agreed that the due diligence procedures should only apply to the Additional Uses as defined in Appendix 30B.

3 Exemption for governmental systems

The United States proposed an additional *resolves* to be included in the Resolution:

> "Systems specifically designated for and controlled by the government to provide exclusive government telecommunications as defined in No. 1014 of the Constitution are exempt from this Resolution. This exemption does not apply to commercial systems that provide communications to the government".

The proposal was supported by two administrations while four administrations opposed it. Two administrations were of the opinion that the issue had to be discussed further.

The ad hoc Group agreed not to include the proposal in the draft Resolution.

4 Other issues

One administration proposed to amend the Resolution, urging administrations to develop the relevant national due diligence procedures. The majority of the administrations were opposed to this proposal.

The ad hoc Group also agreed to amend the *further resolves* to indicate that the due diligence procedure in no case replaces the obligation to coordinate in accordance with other provisions of the Radio Regulations.

5 Reservations

The United States reserved its position with regard to the draft Resolution.

The final text of Annex 1 to Resolution [GTPLEN2-1] updated by PLEN ad hoc 1 as well as Annex 2 to that Resolution as contained in Document 258 are presented in the annex to the report forming the complete draft Resolution [GTPLEN2-1].

ANNEX

DRAFT RESOLUTION [GTPLEN2-1]

ADMINISTRATIVE DUE DILIGENCE APPLICABLE TO SOME SATELLITE COMMUNICATION SERVICES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that Resolution **18** of the ITU Plenipotentiary Conference held in Kyoto in 1994 instructed the Director of the Radiocommunication Bureau to initiate a review of some important issues concerning international satellite network coordination and make a preliminary report to WRC-95 and a final report to WRC-97;

b) that the Director of the Radiocommunication Bureau provided a comprehensive Report to WRC-97 including a number of recommendations for action as soon as possible and identifying areas requiring further study;

c) that one of the recommendations in the Director's Report was that administrative due diligence should be adopted as a means of addressing the problem of reservation of the orbit and spectrum capacity without actual use;

d) that experience may need to be gained in the application of the administrative due diligence procedures adopted by this Conference, and that several years may be needed to see whether administrative due diligence measures produce satisfactory results;

e) that new regulatory approaches may need to be carefully considered in order to avoid adverse effects on networks already going through the different phases of the procedures;

f) that Article **44** of the Constitution (Geneva, 1992) sets out the basic principles for the use of the radio-frequency spectrum, the geostationary-satellite orbit and the needs of developing countries,

considering further

that the Conference decided to reduce the regulatory time-frame for bringing a satellite network into use,

resolves

1 that the administrative due diligence procedure contained in Annex 1 to this Resolution shall be applied as from [22 November 1997] for a satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service for which the advance publication information [**S9.2B**] or for which the request for modifications of the Plans under Article **4**, paragraph 4.1 b) of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Plans under Article **4**, paragraph 4.1 a) of Appendices **30** and **30A** that extends the service area to another country or countries in addition to the existing service area, or for which the submission of information of Annex 2 of Appendix **30B** under supplementary provisions applicable to Additional Uses in the planned bands as defined in Article **2** of that Appendix (Section III of Article **6** of Appendix **30B**) has been received by the Bureau from [22 November 1997];

2 that for a satellite network or satellite system, within the scope of paragraphs 1, 2 or 3 of Annex 1 to this Resolution, not yet recorded in the MIFR, for which the advance publication information under [RR **1042**/**S9.2B**] or the request for a modification to the Plans of Appendices **30** and **30A** or the application of Section III of Article **6** of Appendix **30B** has been received by the Bureau before [22 November 1997] the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2003, or before the expiry of the original notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of [RR **1550**] or the dates specified in the relevant provisions of Appendix **30** [(4.3)], Appendix **30A** [(4.2.5 and 4.2.6)] or Appendix **30B** [(6.57)], whichever date comes earlier. If the date of bringing into use, including extension specified above, is before 1 July 1998, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 1 July 1998;

3 that for satellite network or satellite system within the scope of paragraphs 1, 2 or 3 of Annex 1 to this Resolution recorded in the MIFR, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2000;

4 that six months before the expiry date specified in *resolves* 2 or 3 above, if the responsible administration has not submitted the due diligence information, the Bureau shall send a reminder to the responsible administration;

5 that if the due diligence information is found to be incomplete, the Bureau shall immediately request the administration to submit the required information. In any case, the complete due diligence information shall be received by the Bureau before the expiry date specified in *resolves* 2 or 3 above, as appropriate. The complete due diligence information shall be published by the Bureau in the Weekly Circular;

6 that if the complete due diligence information is not received by the Bureau before the expiry date specified in *resolves* 2 or 3 above, the request for coordination or request for a modification to the Plans of Appendices **30** and **30A** or application of Section III of Article **6** of Appendix **30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **30** and **30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **30B** List shall be deleted by the Bureau after informing the concerned administration. The Bureau shall publish this information in the Weekly Circular,

further resolves

that the procedures in this Resolution are in addition to the provisions under Article [**S9** or **S11**] or Appendices **30, 30A** or Appendix **30B** as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **30, 30A**) in respect of extending the service area to another country or countries in addition to the existing service area,

instructs the Director of the Radiocommunication Bureau

to report to the next competent World Radiocommunication Conference (WRC-99) and future world radiocommunication conferences on the results of the implementation of the administrative due diligence procedure,

instructs the Secretary-General

to bring this Resolution to the attention of the Plenipotentiary Conference 1998.

ANNEX 1 TO RESOLUTION [GTPLEN2-1] ON
ADMINISTRATIVE DUE DILIGENCE

1 Any satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service with frequency assignments that are subject to coordination under [Articles **11**, **S9.7**, **S9.8**, **S9.9**, **S9.11**, **S9.12**, **S9.13**, Resolution **33**, Resolution **46**, Resolution **118** and Resolution **120**] shall be subject to these procedures.

2 Any modifications of the Plans under Article **4**, paragraph 4.1 b) of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions or modifications of the Plans under Article **4**, paragraph 4.1 a) of Appendices **30** and **30A** that extend the service area to another country or countries in addition to the existing service area shall be subject to these procedures.

3 Any submission of information under Annex 2 of Appendix **30B** under supplementary provisions applicable to Additional Uses in the planned bands as defined in Article **2** of that Appendix (Section III of Article **6** of Appendix **30B**) shall be subject to these procedures.

4 An administration requesting coordination for a satellite network under 1 above shall send to the Bureau as early as possible before bringing into use, but in any case not to be received before the end of the 5-year period established as a limit to bringing into use [cross-reference to regulatory provision], the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

5 An administration requesting a modification of the Plans of Appendices **30** and **30A** under 2 above shall send to the Bureau as early as possible before bringing into use, but in any case to be received before the end of the [8]-year period established as a limit to bringing into use [cross-reference to regulatory provision], the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

6 An administration applying Section III of Article 6 of Appendix **30B** related to Additional Uses under 3 above shall send to the Bureau as early as possible before the bringing into use, but in any case to be received before the bringing into use, the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer in Annex 2 to this Resolution.

7 The information to be submitted in accordance with paragraphs 4, 5 or 6 above shall be signed by an authorized official of the notifying administration (or of an administration that is acting on behalf of a group of named administrations).

8 On receipt of the due diligence information under 4, 5 or 6 above, the Bureau shall promptly examine that information for completeness. If the information is found to be complete, the Bureau shall publish the complete information in a special section of the Weekly Circular within 30 days.

9 If the information is found to be incomplete, the Bureau shall immediately request the administration to submit the required information. In all cases the complete due diligence information shall be received by the Bureau within the appropriate time period specified in 4, 5 or 6 above, as appropriate, relating to the date of bringing the satellite network into use.

10 Six months before expiry of the period specified in 4, 5 or 6 above and if the administration responsible for the satellite network has not submitted the due diligence information under 4, 5 or 6 above, the Bureau shall send a reminder to the responsible administration.

11 If the complete due diligence information is not received by the Bureau within the time limits specified in this Resolution, the networks covered by paragraphs 1, 2 or 3 above shall no longer be taken into account and shall not be recorded in the MIFR. A provisional recording in the MIFR shall be deleted by the Bureau after informing the concerned administration. The Bureau shall publish this information in the Weekly Circular.

With respect to the request for modification of the Plans of Appendices **30** and **30A** under 2 above, the modification shall lapse if the due diligence information is not submitted in accordance with this Resolution.

With respect to the request for application of Section III of Article **6** of Appendix **30B** under 3 above, the network shall also be deleted from the Appendix **30B** List, if applicable.

12 Before the Bureau extends the date of bringing into use under **[S11.44 [RR 1550]]**, the complete due diligence information under 4 above shall have been submitted by the responsible administration.

13 An administration notifying a satellite network under 1, 2 or 3 above, for recording in the MIFR shall send to the Bureau as early as possible before bringing into use, but in any case before the date of bringing into use, the due diligence information relating to the identity of the satellite network and the launch services provider specified in Annex 2 to this Resolution.

14 When an administration has completely fulfilled the due diligence but has not completed coordination, this does not preclude the application of **S11.41** by that administration.

ANNEX 2 TO RESOLUTION [GTPLEN2-1] ON
ADMINISTRATIVE DUE DILIGENCE

A **Identity of the satellite network**

a) Identity of the satellite network

b) Name of the administration

c) Country symbol

d) Reference to the API [or request for modification of the plans in **AP30**/**30A**]

e) Reference to the request for coordination [(not applicable for **AP30**/**30A**)]

f) Frequency band(s)

g) Name of the operator

h) Name of the satellite

i) Orbital characteristics

B **Spacecraft manufacturer***

a) Name of the spacecraft manufacturer

b) Date of the execution of the contract

c) Contractual "delivery window"

d) Number of satellites procured

C **Launch services provider**

a) Name of the launch vehicle provider

b) Date of the execution of the contract

c) Anticipated launch or in-orbit delivery window

d) Name of the launch vehicle

e) Name and location of the launch facility

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* NOTE - In cases where a contract for satellite procurement covers more than 1 satellite, the relevant information shall be submitted for each satellite.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

EIGHTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4
TO THE EDITORIAL COMMITTEE

RESOLUTION [COM4-20]

UPDATING THE "REMARKS" COLUMNS OF ARTICLE 9A OF APPENDIX 30A AND ARTICLE 11 OF APPENDIX 30 AND TABLES ASSOCIATED WITH THESE NEW "REMARKS" COLUMN ENTRIES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has adopted new texts related to the symbols in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30;

b) that WRC-97 has adopted new entries in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30 with the understanding that the lists of identified administrations will be reviewed and revised, as appropriate by WRC-99;

c) that studies of compatibility between the revised Regions 1 and 3 BSS (downlink and feeder link) Plan, and other services having allocations in the planned bands in all three Regions, and between the revised Regions 1 and 3 Plan and the Region 2 Plan, were performed during WRC-97 using data which had been received and published by the Bureau at the time of WRC-97 under relevant provisions of the Radio Regulations;

d) that because it was not possible to fully analyse the effect of all assignments which were received before 27 October 1997 but which had not been processed at the time of WRC-97;

e) that in order to fully analyse the effect of assignments that had not been fully processed it is necessary to process the assignments which have been received prior to WRC-97,

recognizing

a) that the revised Regions 1 and 3 Plan must be compatible with the Region 2 Plan and with the other services which have primary allocations in the planned bands in all three Regions in accordance with principles adopted at WRC-97;

b) that the Radiocommunication Bureau requires a clear instruction from WRC-97 on how to complete the analyses and to finalize the entries to be included in the "Remarks" column (column 9) of both Article 9A of Appendix 30A and Article 11 of Appendix 30;

c) that the instruction to the Bureau shall take effect on 22 November 1997,

resolves

1 that the Radiocommunication Bureau shall complete the required analyses based on the new Notes [10 to 14] to Article 9A of Appendix 30A, and Notes [7 to 9] to Article 11.2 of Appendix 30 added during this Conference;

2 that the Radiocommunication Bureau shall publish the results of its analyses after the Conference, together with a modified "Remarks" column (column 9) of Article 9A of Appendix 30A and Article 11 of Appendix 30 in the form of a circular letter;

3 that the new coordination requirements identified in the above-mentioned circular letter shall provisionally apply from the date of the above-mentioned circular letter until the decision of WRC-99;

4 that the Radiocommunication Bureau shall report the results of its analyses and the final lists of administrations to be included in the modified "Remarks" columns to WRC-99,

instructs the Secretary-General

to bring this Resolution to the attention of the Council, at its next session, with a view to including this item in the agenda of WRC-99.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

THIRTEENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5 TO THE EDITORIAL COMMITTEE

Committee 5 has continued its consideration of allocation issues relating to non-GSO systems in bands above 10.7 GHz. As a result of these deliberations, it has adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

V. RAWAT
Chairman of Committee 5

Annex: 1

RESOLUTION [COM5-23]

POWER FLUX-DENSITY LIMITS APPLICABLE TO NON-GSO FSS SYSTEMS FOR PROTECTION OF TERRESTRIAL SERVICES IN THE BANDS 10.7 - 12.75 GHz AND 17.7 - 19.3 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the power flux-density (pfd) limits specified in Table **S21-4** for the bands 10.7 - 12.75 GHz and 17.7 - 19.7 GHz for the protection of the terrestrial services were originally developed assuming that potentially interfering space stations in the fixed-satellite service (FSS) would operate in the geostationary-satellite orbit (GSO);

b) that the results of studies to date of potential interference from non-GSO FSS networks in the 18.8 - 19.3 GHz ~~bands~~range, but which may be extrapolated to the 17.7 - 19.3 GHz range, differ as to whether the power flux-density limits in Article **S21** would provide adequate protection of the fixed service when applied to non-GSO networks with a large number of satellites (i.e., greater than 100);

c) that, in the 10.7 - 12.75 GHz band, some initial sharing studies have been undertaken and further work is required in order to assess the adequacy of the existing power flux-density limits;

d) that further studies are required of the power flux-density limits applicable to non-GSO FSS systems for protection of terrestrial services in the bands 10.7 - 12.75 GHz and 17.7 - 19.3 GHz,

noting

a) that Resolution **118 (WRC-95)** requested studies of the criteria for sharing between non-GSO FSS systems and terrestrial services in the 20/30 GHz bands;

b) that non-GSO FSS networks are being developed that take into account the power flux-density limits that were in force prior to this Conference; however, in the band 18.9 - 19.3 GHz, these values were subject to review by the ITU-R;

c) that modifications to existing FSS network design or operating parameters may be needed in order to obtain conformance with the revised limits adopted by this Conference~~;~~,

d) that the band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services and that administrations should endeavour to reduce to a minimum the risks of interference to passive sensors; the interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029,

resolves

1 that emissions from a space station in non-GSO FSS networks in the bands 10.7 - 12.75 GHz and 17.7 - 19.3 GHz shall comply with the power flux-density limits contained in Article **S21** and in Annex 1 of this Resolution for protection of terrestrial services (see *considering* d));

2 that in view of *noting* b) in relation to the 18.8 - 19.3 GHz band in the case of non-GSO FSS networks for which complete coordination or notification information has been received by the Radiocommunication Bureau ~~before 18~~by 17 November 1995, or are in operation by that date, the

power flux-density limits which were in force ~~just~~ prior to 27 October ~~1995~~1997 shall continue to apply; in the case of non-GSO FSS networks for which such information was received after 17 November 1995, the power flux-density limits in Annex 1 to this Resolution will apply,

invites ITU-R

to study, as a matter of urgency, the appropriate power flux-density values to be applied to non-GSO networks in the aforementioned bands to ensure protection of the fixed service without unduly constraining the development of either networks,

requests [WRC-99]

to review the provisional limits referred to in *resolves* 1 based on the results of the studies carried out by ITU-R,

urges administrations

to consider reductions of the power flux-density or number of satellites in non-GSO FSS networks within the spirit of No. **S9.58** so as to facilitate sharing between non-GSO FSS networks and systems in the fixed service.

ANNEX 1

Frequency band	Service	Limits in dB(W/m²) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
		0° - 5°	5° - 25°	25° - 90°	
10.7 - 11.7 GHz	Fixed-Satellite (S-E)	–150[1]	–150 + 0.5(δ-5)[1]	–140[1]	4 kHz
12.2 - 12.5 GHz (R3) 12.5 - 12.75 GHz (R1 and R3 countries listed in Nos. S5.494 and S5.496)	Fixed-Satellite (S-E)	–148[1]	–148 + 0.5(δ-5)[1]	–138[1]	4 kHz
11.7 - 12.5 GHz (R1) 12.2 - 12.7 GHz (R2) 11.7 - 12.2 GHz (R3) 11.7 - 12.2 GHz (R2)	Fixed-Satellite (S-E), non-GSO	–148[2]	–148 + 0.5(δ-5)[2]	–138[2]	4 kHz
17.7 - 19.3 GHz[3, 4]	Fixed-Satellite (S-E)	-115 or -125[5]	–115 + 0.5 (δ-5) or –125 + 0.5 (δ-5)[5]	-105 or -105[5]	1 MHz

[1] Although these limits apply to both GSO and non-GSO FSS satellites, values for non-GSO systems require further study (see Resolution [**COM5-23**]).

[2] These values require further study (see Resolution [**COM5-23**]).

[3] The equality of right to operate when a frequency band is allocated in different Regions to different services of the same category is established in No. **S4.8**. Therefore, any limits concerning inter-Regional interference which may appear in ITU-R Recommendations should, as far as practicable, be observed by administrations.

[4] The band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.

[5] These values shall provisionally apply only to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems operating with more than 100 satellites (see Resolution [**COM5-23**]).

ARTICLE S21

Modify Table S21-4 as follows:

MOD

Frequency band	Service	Limits in dB(W/m²) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
		0° - 5°	5° - 25°	25° - 90°	
10.7 - 11.7 GHz	Fixed-Satellite (S-E)	–150 *6bis*	–150 + 0.5(δ-5) *6bis*	–140 *6bis*	4 kHz
12.2 - 12.5 GHz (R3) 12.5 - 12.75 GHz (R1 and R3 countries listed in Nos. S5.494 and S5.496)	Fixed-Satellite (S-E)~~, non-GSO~~	–148 *6bis*	–148 + 0.5(δ-5) *6bis*	–138 *6bis*	4 kHz
~~[~~11.7 - 12.5 GHz (R1)~~]~~ ~~[~~12.2 - 12.7 GHz (R2)~~]~~ ~~[~~11.7 - 12.2 GHz (R3)~~]~~ 11.7 - 12.2 GHz (R2)	Fixed-Satellite (S-E), non-GSO	–148 *6bis~~ter~~*	–148 + 0.5(δ-5) *6bis~~ter~~*	–138 *6bis~~ter~~*	4 kHz
17.7 - 19.3 GHz 1) *1bis* ~~[18.6 - 18.8] GHz 1)~~ ~~18.8 - 19.3 GHz 1)~~	Fixed-Satellite (S-E)	-115 or -125 6)	–115 + 0.5 (δ–5) or –125 + (δ-5) 6)	-105 or -105 6)	1 MHz
19.3 - 19.7 GHz 1)	Fixed-Satellite (S-E)	–115	–115 + 0.5 (δ–5)	–105	1 MHz

1) The equality of right to operate when a frequency band is allocated in different Regions to different services of the same category is established in No. **S4.8**. Therefore, any limits concerning inter-Regional interference which may appear in ITU-R Recommendations should, as far as practicable, be observed by administrations.

1bis The band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.

MOD S21.16.6 6) ~~In the bands 18.9 - 19.3 and 19.3 - 19.6 GHz, t~~These values shall provisionally apply ~~for~~only to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems operating with more than 100 satellites (see Resolution [**COM5-23**]) ~~systems, subject to review by ITU-R, and shall apply until they are revised by a competent world radiocommunication conference (see Resolution **119 (WRC-95)**)~~.

ADD S21.16.6*bis* *6bis* Although these limits apply to both GSO and non-GSO FSS satellites, values for non-GSO systems require further study (see Resolution [**COM5-23**]).

ADD S21.16.6*ter* [6ter] These values require further study (see Resolution [**COM5-23**]).

RESOLUTION 46

ANNEX 2

MOD

A2.2.1 *Sharing between feeder links of the non-GSO/MSS (space-to-Earth) and terrestrial services in the same frequency bands*

The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5 150 - 5 216 MHz shall in no case exceed –164 dB(W/m^2) in any 4 kHz band for all angles of arrival.

Emissions from a non-geostationary space station shall not exceed the following limits at the Earth's surface:

Frequency bands	Service	Limit in dB(W/m^2) for angle of arrival above the horizontal plane			Reference bandwidth
		0° – 5°	5° – 25°	25° – 90°	
6 700 - 6 825 MHz	Fixed-satellite (S-E)	–137	–137 + 0.5 (δ–5)	–127	1 MHz
6 825 - 7 075 MHz	Fixed-satellite (S-E)	–154 and –134	–154 + 0.5 (δ–5) and –134 + 0.5 (δ–5)	–144 and –124	4 kHz 1 MHz

Emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of –146 dB(W/m^2/MHz) in the bands 15.4 - 15.45 GHz and 15.65 - 15.7 GHz, and –111 dB(W/m^2/MHz) in the band 15.45 - 15.65 GHz for all angles of arrival. These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

Power flux-density limits between 17.7 GHz and 27.5 GHz.

The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:

–115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

–115 + 0.5(δ-5) dB(W/m^2) in any 1 MHz band for angles of arrival δ between 5 and 25 degrees above the horizontal plane;

–105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

~~In the band 19.3 - 19.7 GHz for non-geostationary satellite systems, these values shall apply subject to review by the ITU-R and the results of this review should be considered by WRC-97 (see Resolution **119 (WRC-95)**).~~

MOD

A2.2.3 Power flux-density limits produced by non-GSO/FSS in the 20 - 30 GHz band

The power flux-density at the Earth's surface produced by emissions from a space station shall not exceed the following values:

–115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

–115 + 0.5(δ - 5) dB(W/m^2) in any 1 MHz band for angles of arrival δ between 5 and 25 degrees above the horizontal plane;

–105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

However, the following values shall provisionally apply to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems with more than 100 satellites (see Resolution [**COM5-23**]):

–125 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

–125 + (δ - 5) dB(W/m^2) in any 1 MHz band for angles of arrival δ between 5 and 25 degrees above the horizontal plane;

–105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which could be obtained under assumed free-space propagation conditions.

~~In the band 18.9 - 19.3 GHz for non-GSO satellite systems, these values shall apply subject to review by the ITU-R and the results of this review should be considered by WRC-97 (see Resolution **118 (WRC-95)**).~~

RESOLUTION 121 (~~WRC-95~~Rev.WRC-97)

Continued Development of Interference Criteria and Methodologies for Fixed-Satellite Service Coordination Between Feeder Links of Non-Geostationary Satellite Networks in the Mobile-Satellite Service and Geostationary-Satellite Networks in the Fixed-Satellite Service in the Bands 19.3 - 19.~~6~~7 GHz and 29.1 - 29.~~4~~5 GHz

The World Radiocommunication Conference (Geneva, ~~1995~~1997),

considering

a) that ~~this Conference~~WRC-95 made provision for use of the bands 19.3 -19.6 GHz and 29.1 - 29.4 GHz by feeder links of non-geostationary-satellite networks in the mobile-satellite service (non-GSO/MSS) and this Conference made provision for an additional 2 x 100 MHz in the bands 19.6 - 19.7 and 29.4 - 29.5 GHz;

b) that coordination between feeder links of non-GSO/MSS networks, and geostationary-satellite networks in the fixed-satellite service (GSO/FSS) and terrestrial networks in these bands will be in accordance with Annex 2 of Resolution **46 (Rev.WRC-95)**/Annex 1 of Appendix **S5**;

~~c) that the Report of the Conference Preparatory Meeting (CPM) to this Conference recognized that coordination between feeder links of non-GSO/ MSS networks and GSO/FSS networks would become more difficult as the number of satellite systems that are implemented increased;~~

~~d~~c) that simultaneous operation of GSO/FSS networks and feeder links of non-GSO/MSS networks will in most cases result in short-term, high-level interference between such networks, unless interference mitigation techniques are applied by both types of network;

d) that the CPM Report to this Conference concluded that of the interference mitigation techniques that were studied, the use of adaptive power control, use of high-gain antennas, and geographic isolation, "appear to offer the most benefit in improving the sharing between NGSO MSS feeder links and GSO/FSS networks";

e) ~~that the CPM Report to this Conference concluded that "by the use of interference reduction mechanisms, frequency sharing may be possible at 20 and 30 GHz in some cases"~~that the ITU-R has developed a Recommendation containing several alternative methodologies for deriving long-term and short-term interference criteria applicable for sharing between non-GSO MSS feeder links and GSO/FSS networks;

f) ~~that no ITU-R Recommendations have been developed on coordination methodologies and permissible interference for non-GSO/MSS feeder links, while permissible interference criteria for GSO networks proposed in the CPM Report to this Conference may require further refinements~~that further development of the Recommendation in *considering* e) would facilitate the determination of appropriate interference mitigation techniques;

~~g) that permissible interference criteria would facilitate determination of the most appropriate interference mitigation techniques;~~

~~h~~g) that No. **S5.541A** of the Radio Regulations requires the use of interference mitigation techniques in order to facilitate coordination of feeder links of non-GSO/MSS networks with GSO/FSS networks;

~~i) that, in addition to permissible interference criteria, an agreed method for calculating mutual interference between feeder links of non-GSO/MSS networks and GSO/FSS networks is required;~~

~~j~~h) that the continued development and implementation of interference mitigation techniques would facilitate the coordination of feeder links of non-GSO/MSS networks with GSO/FSS networks when the interference between such networks exceeds the applicable permissible interference criteria,

~~*recognizing*~~

~~that, while ITU-R is developing Recommendations on coordination methodologies, coordination between feeder links of non-GSO/MSS networks and GSO/FSS networks will be carried out by administrations using mutually acceptable sharing criteria,~~

resolves to invite ITU-R

1. to undertake, as a matter of urgency, the continued development of appropriate permissible interference criteria for both non-GSO/MSS feeder links and GSO/FSS networks operating in the bands 19.3 - 19.~~6~~7 GHz and 29.1 - 29.~~4~~5 GHz;

2. to undertake, as a matter of urgency, studies of interference mitigation techniques (including, *inter alia*, ~~uplink adaptive power control and fade compensation~~those techniques listed in *considering* d)) which ~~would~~could facilitate coordination between non-GSO/MSS feeder links and GSO/FSS networks;

3. to undertake, as a matter of urgency, studies to develop coordination methodologies for GSO/FSS networks and non-GSO/MSS feeder links operating in the bands 19.3 - 19.~~6~~7 GHz and 29.1 - 29.~~4~~5 GHz on an equal basis,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Director of the Radiocommunication Bureau

to report on the progress of these studies to WRC-~~97~~99.

SUP

RESOLUTION 119 (WRC-95)

SHARING BETWEEN THE FIXED-SATELLITE SERVICE AND THE FIXED SERVICE IN THE 19.3 - 19.6 GHz BAND WHEN USED BY THE FIXED-SATELLITE SERVICE TO PROVIDE FEEDER LINKS FOR NON-GEOSTATIONARY SATELLITE SYSTEMS IN THE MOBILE-SATELLITE SERVICE

NOC

RESOLUTION 70 (WARC-92)

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CMR-97 CONFÉRENCE MONDIALE DES RADIOCOMMUNICATIONS

GENÈVE, 27 OCTOBRE – 21 NOVEMBRE 1997

Corrigendum 1 au
Document 347-F/E/S
20 novembre 1997
Original: anglais

SÉANCE PLÉNIÈRE

Inde (République de l'), Mali (République du), Mexique, République arabe syrienne, Royaume-Uni de Grande-Bretagne et d'Irlande du Nord

PROPOSITIONS POUR LES TRAVAUX DE LA CONFÉRENCE

Ajouter "**Nigéria (République fédérale du)**" dans la liste des pays signataires de ce document.

* * * * * * * * * *

PLENARY MEETING

India (Republic of), Mali (Republic of), Mexico, Syrian Arab Republic, United Kingdom of Great Britain and Norther Ireland

PROPOSALS FOR THE WORK OF THE CONFERENCE

Add "**Nigeria (Federal Republic of)**" in the list of countries cosponsoring this document.

* * * * * * * * * *

SESIÓN PLENARIA

India (República de la), Malí (República de), México, República Árabe Siria, Reino Unido de Gran Bretaña e Irlanda del Norte

PROPUESTAS PARA LOS TRABAJOS DE LA CONFERENCIA

Añádase "**Nigeria (República Federal de)**" a la lista de países firmantes de este documento.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 347-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

India (Republic of), Mali (Republic of), Mexico, Syrian Arab Republic, the United Kingdom of Great Britain and Northern Ireland

PROPOSALS FOR THE WORK OF THE CONFERENCE

IND/MLI/MEX/SYR/G/347/1 ADD

DRAFT RESOLUTION [IND/MLI/MEX/SYR/G-1]

REGIONAL PREPARATIONS FOR WORLD RADIOCOMMUNICATION CONFERENCES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that many regional telecommunication organizations have coordinated their preparations for this Conference;

b) that a number of common proposals have been submitted to this Conference from administrations participating in the preparations of regional telecommunication organizations;

c) that this consolidation of views at regional level, together with the opportunity for interregional discussions prior to the Conference, has eased the task of reaching a consensus during the Conference;

d) that the burden of preparation for future conferences is likely to increase;

e) that there is consequently great benefit to the Members of the Union of coordination of preparations at regional level;

f) that the success of future conferences will depend on greater efficiency of regional coordination and interaction at interregional level prior to future conferences;

g) that some regional organizations lack the necessary resources to adequately organize and to participate in such preparations;

h) that there is a need for overall coordination of the interregional consultations,

noting

a) that at the World Telecommunication Development Conference (Buenos Aires, 1994) many regional telecommunication organizations expressed the need for the Union to cooperate more closely with regional telecommunication organizations;

b) that consequently the Plenipotentiary Conference (Kyoto, 1994) resolved that the Union should develop stronger relations with regional telecommunication organizations,

further noting

that in some regions the relationship with the ITU-R regional offices has proved to be of great benefit,

instructs the Director of the Radiocommunication Bureau, and requests the Director of the Telecommunication Development Bureau

a) to consult the regional telecommunication organizations on the means by which assistance can be given to their preparations for future world radiocommunication conferences in the following areas:

1) organization of regional preparatory meetings;

2) information sessions;

3) development of coordination methods;

4) identification of major issues;

5) facilitation of regional and interregional meetings;

6) convergence of interregional views on major issues;

b) to submit a report on the results of the consultation to the Plenipotentiary Conference for consideration,

requests the Plenipotentiary Conference

to consider the report submitted by the Directors of BR and BDT and take appropriate measures to provide the necessary resources for BR and BDT to provide the necessary assistance to regional telecommunication organizations in the preparations for world radiocommunication conferences.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 348-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

NOTE FROM THE CHAIRMAN OF COMMITTEE 5 TO THE CHAIRMAN OF COMMITTEE 6

At its final meetings Committee 5 reviewed and decided further proposals concerning country footnotes. It forwards the following results of this review to Committee 6 for further action.

With respect to the texts already forwarded to Committee 6 on country footnotes add the following:

MOD S5.221 delete Honduras

MOD S5.322 add Nigeria, Tanzania and Zimbabwe

Committee 6 is also asked to ensure that the change of country name from "Zaire" to "Democratic Republic of the Congo" is reflected, as appropriate, in the revised texts of the Radio Regulations.

Committee 6 is also asked to ensure that all references to Resolution 46 in the revised texts are shown as Resolution 46 (Rev. WRC-97). This is as a result to the modifications made to this resolution by Committee5 as part of its work.

V. RAWAT
Chairman, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 349-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

NOTE FROM THE CHAIRMAN OF COMMITTEE 5 TO THE CHAIRMAN OF THE PLENARY

Discussion on Items 2 and 3 of Document 262 could not be concluded in Committee 5. This text is therefore forwarded to the Plenary for consideration.

V. RAWAT
Chairman of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 350-E
19 November 1997
Original: Spanish

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

Spain

PROPOSALS FOR THE WORK OF THE CONFERENCE

Draft Resolution [COM4-20] requests the Bureau to complete the analyses of compatibility between the new Plans to be included in Appendices 30/30A and other services and to publish them in the form of a circular-letter.

The Spanish Administration believes that any administration has the right to decide whether its services are affected or not.

It also considers that the administrations concerned may wish to cooperate in order to resolve some of the possible problems identified earlier.

E/350/1

Spain accordingly proposes that in draft Resolution [COM4-20] (Document 325) a new *resolves* 3 should be inserted, reading as follows:

"3 that once the circular-letter referred to in *resolves* 2 has been received, administrations will have a period of [60] days to decide whether they do or do not wish to go on appearing as "affected administrations" in the relevant table. If no reply is received from administrations within that period, it will be taken that there is no need to make any change."

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 351-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

Source: Document 296

NINTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

ANNEX 2

(to Appendix 30 (S30))

Basic Characteristics to Be Furnished in Notices[2] Relating to Space Stations in the Broadcasting-Satellite Service[3]

(MOD) 1. Country ~~and ITU number* in the case of Regions 1 and 3; country~~ and beam identification ~~in the case of Region 2~~.

(NOC) 2. Nominal orbital position (in degrees from the Greenwich meridian) in the case of Regions 1 and 3; orbital position (xxx.xx degrees from the Greenwich meridian) in the case of Region 2.

(MOD) 3. Assigned frequency ~~or channel number~~.

(ADD) 4. Assigned frequency band.

(NOC) ~~4~~5. Date of bringing into use.

(NOC) ~~5~~6. Identity of the space station.

(MOD) ~~6~~7. Service area ~~(if necessary, the service area may be defined by~~identified by:

(MOD) a) a set of a ~~number~~ maximum of twenty ~~"~~test points, and~~")~~

(ADD) b) a service area contour on the surface of the Earth or a service area defined by a minimum elevation angle in degrees, and

(ADD) c) the name of other administration(s) (country/territory symbols) included in the service area.

(NOC) ~~7~~8. Geographical coordinates of the intersection of the antenna beam axis with the Earth.

(SUP) ~~8. Rain climatic zone(s)[4].~~

(NOC) 9. Class of station.

(NOC) 10. Class of emission and necessary bandwidth.

(NOC) [2] The Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Annex.

(NOC) [3] In Region 2, only those notices relating to frequency assignments for space stations used for telemetry and tracking purposes associated with the Region 2 Plan shall be furnished in accordance with Appendix **S4** to the Radio Regulations.

(SUP) ~~* NOTE BY THE SECRETARIAT - Former IFRB Serial Number.~~

(SUP) ~~[4] As defined in Annex 5 to this Appendix.~~

(MOD) 11. Power supplied to the antenna (dBW) ~~in the case of Regions 1 and 3; and, in the case of Region 2, power supplied to the antenna (dBW)~~ and the maximum power density per Hz supplied to the antenna (dB(W/Hz)), averaged over the worst 5 MHz, 4 kHz and 27 MHz, as well as averaged over the worst 40 kHz ~~and 4 kHz, supplied to the antenna~~ in the case of Region 2.

(MOD) 12. ~~A~~Space station transmitting antenna characteristics:

(MOD) *a)* co-polar gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi), as well as the cross-polar gain of the antenna in the case of a beam of other than elliptical shape;

(SUP) ~~*b) shape of the beam (elliptical, circular, or other);*~~

(NOC) ~~*c*~~*b)* pointing accuracy;

(NOC) ~~*d*~~*c)* type of polarization;

(NOC) ~~*e*~~*d)* sense of polarization;

(SUP) ~~*f) for circular beams indicate the following:*~~

(SUP) ~~half-power beamwidth in degrees;~~

(SUP) ~~co-polar and cross-polar radiation patterns;~~

(MOD) ~~*g*~~*e)* for elliptical beams[5] indicate the following:

(NOC) – co-polar and cross-polar radiation patterns;

(NOC) – rotation accuracy;

(NOC) – orientation;

(NOC) – major axis (degrees) at the half-power beamwidth;

(NOC) – minor axis (degrees) at the half-power beamwidth;

(MOD) ~~*h*~~*f)* for beams of other than ~~circular or~~ elliptical shape, indicate the following:

(NOC) – co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite on to a plane perpendicular to the line from the centre of the Earth to the satellite. The isotropic or absolute gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;

(NOC) – wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted.

(SUP) ~~*In the case of Regions 1 and 3:*~~

(SUP) ~~*i)* ΔG (difference between the maximum gain and the gain in the direction of the point in the service area at which the power flux-density is at a minimum).~~

(NOC) 13. Station keeping accuracy.

(ADD) [5] A circular beam is considered as a particular elliptical beam where major and minor axes are equal and where major axis orientation and rotational accuracy are equal to 0°.

(NOC) 14. Modulation characteristics:

(NOC) *a)* type of modulation;

(NOC) *b)* pre-emphasis characteristics;

(NOC) *c)* TV standard;

(NOC) *d)* sound broadcasting characteristics;

(NOC) *e)* frequency deviation;

(NOC) *f)* composition of the baseband;

(NOC) *g)* type of multiplexing of the video and sound signals;

(NOC) *h)* energy dispersal characteristics.

(NOC) 15. Minimum angle of elevation in the service area in the case of Regions 1 and 3.

(MOD) 16. Receiving antenna characteristics of the earth station:

(ADD) *a)* the isotropic gain (dBi) of the antenna in the direction of maximum radiation (dBi);

(ADD) *b)* the beamwidth in degrees between the half power points (describe in detail if not symmetrical);

(ADD) *c)* either the measured co-polar and cross-polar radiation patterns of the antenna (taking as a reference the direction of maximum radiation) or the reference co-polar and cross-polar radiation patterns;

(ADD) *d)* equivalent diameter of the antenna (metres);

(NOC) e) Type of reception (individual or community) in the case of Regions 1 and 3.

(NOC) 17. Regular hours of operation (UTC).

(NOC) 18. Coordination.

(NOC) 19. Agreements.

(NOC) 20. Other information.

(MOD) 21. Operating administration or ~~company~~agency.

ANNEX 2

(to Appendix 30A (S30A))

Basic Characteristics to be Furnished in Notices[1] Relating to Feeder-Link Stations in the Fixed-Satellite Service Operating in the Frequency Bands 14.5 - 14.8 GHz and 17.3 - 18.1 GHz[2]

(NOC) 1. The following information shall be provided in notices relating to both transmitting earth stations and receiving space stations.

(NOC) 1.1 Country and beam identification.

(NOC) 1.2 Assigned frequency.

(NOC) 1.3 Assigned frequency band.

(NOC) 1.4 Date of bringing into use.

(NOC) 1.5 Designation of emission (in accordance with Article **S2** of the Radio Regulations).

(NOC) 1.6 Modulation characteristics:

(NOC) *a)* type of modulation;

(NOC) *b)* pre-emphasis characteristics;

(NOC) *c)* TV system;

(NOC) *d)* sound-broadcasting characteristics;

(NOC) *e)* frequency deviation;

(NOC) *f)* composition of the baseband;

(NOC) *g)* type of multiplexing of the video and sound signals;

(NOC) *h)* energy dispersal characteristics.

(NOC) 2. The following additional information shall be provided in notices relating to transmitting earth stations.

(NOC) 2.1 Identity of the transmitting feeder-link station.

(MOD) 2.2 ~~In the case of Region 2, geographical coordinates of the feeder-link earth station in the frequency band 17.7 - 17.8 GHz~~For a specific feeder-link earth station, the identity of the earth station and the geographical coordinates of the antenna site.

(NOC) [1] The Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Annex. The Bureau is further invited to consider the feasibility of a single notice for feeder-link earth stations operating within more than one feeder-link service area.

(NOC) [2] Only those notices relating to frequency assignments for space stations and earth stations used for telecommand and tracking purposes associated with the Plan shall be furnished in accordance with Appendix **S4**.

(MOD) 2.3 ~~In all other cases, f~~Feeder-link service area ~~for a feeder-link earth station~~ identified by~~:~~.

(MOD) a) a set of a maximum of ~~ten~~ twenty feeder-link test points, and

(ADD) b) a service area contour on the surface of the Earth or a service area defined by a minimum elevation angle in degrees.

(NOC) 2.4 Identity of the associated space station with which communication is to be established.

(SUP) ~~2.5 Rain climatic zone for each test point (for guidance see Figures 1, 2 and 3 of Annex 3 to this Appendix).~~

(NOC) 2.~~6~~5 Power characteristics of the transmission:

(NOC) *a)* The following information is required for each assigned frequency:

(NOC) – total transmitting power (dBW) in the assigned frequency band supplied to the input of the antenna;

(NOC) – for the band 17.3 - 18.1 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the worst 1 MHz band;

(NOC) – for the band 14.5 - 14.8 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the worst 4 kHz band;

(NOC) – for the band 17.3 - 17.8 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the total RF bandwidth (24 MHz for Region 2 or 27 MHz for Regions 1 and 3).

(MOD) *b)* Additional information required if power control is used (see Sections [3.11] and [4.10] of Annex 3 to this Appendix):

(NOC) – range, expressed in dB, above the transmitting power used in *a)* above.

(NOC) 2.~~7~~6 Transmitting antenna characteristics of the earth station:

(NOC) *a)* antenna diameter (metres);

(NOC) *b)* gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi);

(NOC) *c)* half-power beamwidth in degrees (describe in detail if not symmetrical);

(NOC) *d)* measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation), or reference radiation diagram to be used for coordination;

(NOC) *e)* type of polarization;

(NOC) *f)* sense of polarization;

(NOC) *g)* horizon elevation angle in degrees and the antenna gain in the direction of the horizon for each azimuth[1] around the earth station;

(NOC) *h)* altitude of the antenna above mean sea level, in metres;

(NOC) *i)* minimum elevation angle, in degrees.

(NOC) 2.~~8~~7 Regular hours of operation (UTC).

(NOC) [1] At suitable increments, e.g. every five degrees, in tabular or graphic form.

(NOC) 2.~~9~~8 Coordination.

(NOC) 2.~~10~~9 Agreements.

(NOC) 2.11~~0~~ Other information.

(MOD) 2.12~~1~~ Operating administration or ~~company~~agency.

(NOC) 3. The following information shall be provided in notices relating to receiving space stations.

(NOC) 3.1 Orbital position (from the Greenwich Meridian).

(NOC) 3.2 Identity of the space station.

(NOC) 3.3 Class of station.

(NOC) 3.4 Space station receiving antenna characteristics:

(MOD) *a)* co-polar gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi), as well as the cross-polar gain of the antenna in the case of a beam of other than elliptical shape;

(SUP) ~~*b) shape of the beam (circular, elliptical or other);*~~

(NOC) ~~*c*~~*b)* pointing accuracy (degrees);

(NOC) ~~*d*~~*c)* type of polarization;

(NOC) ~~*e*~~*d)* sense of polarization;

(SUP) ~~*f) for circular beams, indicate the following:*~~

(SUP) ~~– half-power beamwidth in degrees;~~

(SUP) ~~– co-polar and cross-polar radiation patterns;~~

(SUP) ~~– nominal intersection of the antenna beam axis with the Earth (boresight longitude and latitude);~~

(MOD) ~~*g*~~*e)* for elliptical beams[2], indicate the following:

(NOC) – co-polar and cross-polar radiation patterns;

(NOC) – rotation accuracy (degrees);

(NOC) – orientation (degrees);

(NOC) – major axis (degrees) at the half-power beamwidth;

(NOC) – minor axis (degrees) at the half-power beamwidth;

(NOC) – nominal intersection of the antenna beam axis with the Earth (boresight longitude and latitude);

(MOD) ~~*h*~~*f)* for beams of other than ~~circular or~~ elliptical shape, indicate the following:

(ADD) [2] A circular beam is considered as a particular elliptical beam where major and minor axes are equal and where major axis orientation and rotational accuracy are equal to 0°.

(NOC) – co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;

(NOC) – wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted;

(ADD) – nominal intersection of the antenna beam axis with the Earth (boresight or aim point longitude and latitude);

(NOC) ~~*i*~~*g)* for an assignment in the bands 14.5 - 14.8 GHz or 17.7 - 18.1 GHz, the isotropic gain in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth. Use a diagram showing estimated isotropic gain relative to orbit longitude.

(NOC) 3.5 Receiver system noise temperature referred to the output of the antenna (kelvins).

(NOC) 3.6 Station-keeping accuracy (degrees).

(NOC) 3.7 Regular hours of operation (UTC).

(NOC) 3.8 Coordination.

(NOC) 3.9 Agreements.

(NOC) 3.10 Other information.

(NOC) 3.11 Operating administration or company.

(NOC) 3.12 Range of automatic gain control[1].

(MOD) [1] See Sections [3.10] and [4.9] of Annex [3] to this Appendix.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 352-E
27 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 5

SUMMARY RECORD
OF THE
TENTH MEETING OF COMMITTEE 5
(ALLOCATIONS AND ASSOCIATED ISSUES)

Monday, 17 November 1997, at 0930 hours

Chairman: Mrs. V. RAWAT (Canada)

Subjects discussed		**Documents**
1	Announcement by the Chairman of Working Group PLEN-1	-
2	Seventh report of Working Group 5B (continued)	263(Rev.1)
3	Outstanding space science services issues (Working Group 5A)	194(Corr.1), 214+Add.1
4	Fifth report of Working Group 5B (continued)	40(Add.5), 261; DT/121, DT/123(Rev.1)
5	Sixth report of Working Group 5B (continued)	262

1 Announcement by the Chairman of Working Group PLEN-1

1.1 The **Chairman of Working Group PLEN-1** appealed to Committee 5 to deal with as many issues as possible at the present Conference rather than defer them to WRC-99. The agenda for WRC-99 was already threatening to overstretch the time and budget resources allocated to it.

2 Seventh report of Working Group 5B (continued) (Document 263(Rev.1))

Draft Resolution[COM5-23] (continued)

2.1 The **Chairman** invited the meeting to resume its discussion of draft Resolution [COM5-23], on the basis of the revised text contained in Document 263(Rev.1). She recalled that, at the Committee's ninth meeting, BR had raised certain concerns regarding implementation of the new text relating to power flux-density limits, which had now been added to *resolves* 2.

2.2 The **representative of BR** said that it was important to recognize the retroactive element which the new text introduced in the Resolution. The matter had nevertheless been clarified during informal consultations held after the Committee's ninth meeting.

2.3 The **delegate of Syria** said that he would like to reserve his position with regard to the draft Resolution until he had examined the potential effects of retroactive implementation with regard to the bands 10.7 - 12.75 GHz.

2.4 The **Chairman** said that *resolves* 2 dealt only with the band 18.8 - 19.3 GHz, but that the reservation expressed by the delegate of Syria at the end of the Committee's ninth meeting had been duly recorded.

2.5 Draft Resolution [COM5-23], as contained in Document 263(Rev.1), was **approved**.

Draft revised Resolution 121 (WRC-95)

2.6 The **Chairman** said that, if she heard no objection, she would take it that the Committee could accept the text of draft revised Resolution 121 (WRC-95) as contained in Document 263(Rev.1), subject to removal of the square brackets around the figures in the title and in *resolves to invite ITU-R* and *considering* 1 and 3.

2.7 Draft revised Resolution 121(WRC-97), as amended, was **approved**.

SUP Resolution 119 (WRC-95), NOC Resolution 70 (WARC-92)

2.8 **Approved**.

3 Outstanding space sciences services issues (Working Group 5A) (Documents 194(Corr.1), 214+Add.1)

3.1 The **Chairman** invited comments on the proposals contained in Corrigendum 1 to Document 194.

MOD Table 31.8 - 37 GHz, SUP S5.551, ADD S5.551A

3.2 **Approved.**

3.3 The **Chairman** recalled that the Committee had already approved the proposals contained in Document 214, with the exception of those in the table at the end (in § 6) relating to Resolution 711 (WARC-92), Resolution 712 (Rev.WRC-95), and Recommendation 706 (WARC-79). It was Working Group 5A's recommendation that Resolutions 711 and 712 should be deleted and that Recommendation 706 be maintained unchanged.

3.4 The **delegate of the United States** said that he was willing to accept the deletion of Resolution 712 on condition that consideration of the band 18.6 - 18.8 GHz was included on the agenda of WRC-99. He therefore expressed a reservation in that respect, pending the results of the work of Working Group PLEN-1.

3.5 The **Chairman** said that the Committee had sent a note to Working Group PLEN-1 to that effect. If she heard no objection, and subject to that reservation, she would take it that the Committee could accept the Working Group's recommendations with regard to Resolutions 711 and 712, and Recommendation 706.

3.6 It was so **agreed**.

3.7 The **Chairman** then drew attention to the proposals in Addendum 1 to Document 214.

MOD Table 410 - 420 MHz, MOD S5.268

3.8 Approved.

3.9 The **Chairman** said that the Committee had thus completed its work on proposals submitted by Working Group 5A.

4 Fifth report of Working Group 5B (continued) (Documents 40(Add.5), 261; DT/121, DT/123(Rev.1))

4.1 The **Chairman** invited comments on draft revised Resolution 214 (WRC-95) in Document DT/123(Rev.1).

4.2 The **delegate of Cuba**, while expressing support for the general thrust of the revised Resolution, said that the text would be more balanced if the following wording, based closely on the last sentence of the first paragraph of § 4.1.1.14 of the CPM Report, was added: ", although it also recognized that a number of these systems may not be implemented for reasons not connected with spectrum availability".

4.3 It was so **agreed.**

4.4 In reply to a request for clarification by the **delegate of the Netherlands**, the **Chairman** said that *resolves* 2 sought to bring together the results of studies effected by administrations and those conducted within ITU-R, further to *resolves* 1. In reply to a query by the **delegate of the Republic of Korea** concerning *resolves* 3, she said that it was her understanding that "relevant entities" were entities as defined in the relevant provisions of the Constitution and Convention.

4.5 The **Chairman** said that, if she heard no objection, she would take it that the meeting could agree to remove the square brackets in *resolves* 2 and leave the reference to WRC-99 to be dealt with at editorial level.

4.6 It was so **agreed.**

4.7 With regard to *resolves* 4, the **delegate of Germany** said that the reference to "[the 1999/a future competent] world radiocommunication conference", should be left as it stood pending the results of Working Group PLEN-1. It looked as though the agendas of WRC-99 and WRC-01 were already too heavy to accommodate the studies in question.

4.8 It was so **agreed.**

4.9 The **delegate of Canada**, said that "taking into account *considering* d)" should be inserted at the end of *invites ITU-R* 4, thus bringing it into line with *resolves* 4.

4.10 It was so **agreed.**

4.11 A brief discussion then ensued on whether the paragraphs under *invites ITU-R* should refer to studies to be completed in time for WRC-99 or for a future WRC. The **delegates of Germany** and **Sweden** preferred to leave the question open pending the output of Working Group PLEN-1. The **Chairman of ad hoc Group 4**, supported by the **delegate of Norway**, said that Committee 5 should restrict its discussion to technical issues, leaving the agenda of future WRCs to Working Group PLEN-1. The **delegates of Canada** and **the United States**, while agreeing that the decision ultimately lay with Working Group PLEN-1, said that an agreement had been reached in informal consultations, at which CEPT had been represented, to the effect that the subjects in question should be included in the agenda of WRC-99. The **delegate of the United Kingdom** recalled that urgent studies had been requested on the subject in preparation for WARC-92, WRC-95 and the present Conference; it was important to decide when the matter would be addressed properly. The **Chairman** observed that it would be inconsistent for *resolves* 2 to request some studies specifically in time for WRC-99, but for *invites ITU-R* to request them for "a future conference".

4.12 The **delegate of Germany** proposed, as a compromise, that references to "a future competent conference/WRC-99" should be retained, in square brackets, and that a note should be added to those references indicating that it was Committee's 5 preference for the subject to be addressed by WRC-99, but that the decision ultimately lay with Working Group PLEN-1.

4.13 It was so **agreed.**

4.14 On that understanding, MOD Resolution 214 (WRC-95), as amended, was **approved.**

4.15 The **Chairman** then invited the Committee to consider Document DT/121.

4.16 The **delegate of Canada**, speaking as the coordinator of the informal group responsible for drafting the document, recalled that Working Group 5B had been unable to reach agreement on the proposals from various administrations for additional mobile-satellite allocations below 1 GHz. The informal group, consisting of representatives of some 15 administrations from the three Regions and a representative of WMO, had considered the matter further and reached consensus on draft Resolution [COM5-25], contained in Document DT/121, which called for further studies on the feasibility of the introduction of a 1 MHz MSS band within the band 401 - 406 MHz. He drew attention to two editorial amendments to the Resolution: in *considering* f) "available" should be replaced by "employed"; and in *urges administrations* 2, the first mention of the range "405 - 406 MHz" should read "401 - 406 MHz". In respect of proposals for additional mobile-satellite allocations in an uplink direction within the band 450 - 470 MHz, there had been some support for additional allocations being reflected in a country or possibly a Region 2 footnote, although concerns had been expressed regarding the impact of such a footnote. There had been no support for global allocation, although it had been recognized that any interference would be localized to the immediate area around the mobile earth station. The informal group had taken note

of two new proposals, a common inter-American proposal, contained in Addendum 5 to Document 40, for an additional allocation of 1 MHz in the band 454 - 455 MHz in Region 2 to be shared with the fixed and mobile services, and a proposal by five Regions 1 and 3 countries to seek limited uplink allocations in the band 450 - 470 MHz by country footnote.

4.17 The **delegate of the Netherlands** proposed that, in order to protect the radio astronomy service, draft Resolution [COM5-25] should be amended by adding: "and the possible impact on primary services in the adjacent band" at the end of the title; a new *considering* to read "k) that the radio astronomy service has a primary allocation in the band 406.1 - 410 MHz"; and a new *resolves to invite ITU-R* to read "4 as a matter, of urgency with the participation of IUCAF, to study the impact of out-of-band emissions on the radio astronomy service in the 406.1 - 410 MHz band". The **delegate of India** and the **representative of IUCAF** supported those proposals, but the latter suggested that, in the proposed new *resolves to invite ITU-R*, "out-of-band" be changed to "unwanted".

4.18 The amendment to the title was **approved**.

4.19 The **observer for WMO** proposed that, in line with a similar change in the revised text of Resolution 214 just approved by the Committee, *considering* b) should be amended to include the information given in § 4.1.1.14 of the CPM Report, that a number of the MSS systems concerned might not be implemented for reasons not connected with spectrum availability.

4.20 It was so **agreed**.

4.21 The **delegate of France** proposed that the two latter changes suggested by the delegate of the Netherlands should be amended by adding "and that the COSPAS-SARSAT system functions in the band 406 - 406.1 MHz" at the end of the new *considering* k), and "and on the COSPAS-SARSAT system in the band 406 - 406.1 MHz" at the end of the new *resolves to invite ITU-R* 4.

4.22 The **delegate of India** proposed that a further *considering* should be added to read "the need to protect the radio astronomy service in the band 406.1 - 410 MHz against interference from MSS transmissions, including unwanted emissions".

4.23 The **Chairman** suggested that further consideration of the amendments proposed by the delegates of the Netherlands, France and India should be continued informally.

4.24 It was so **agreed**.

4.25 The **observer for WMO** proposed that a new *noting* be added to read "that Resolution 214 (Rev.WRC-97) also addresses sharing studies relating to consideration of the allocation of bands below 1 GHz to non-GSO MSS".

4.26 The text of *noting*, as amended, was **approved**.

4.27 The **delegate of India** proposed that in *resolves*, "possible" be changed to "possibility of".

4.28 The **delegate of Germany** proposed that, in line with the decisions taken in respect of Resolution 214, just approved by the Committee, the text in square brackets in *resolves* should be amended to read "the 1999 World Radiocommunication Conference (WRC-99)/a future competent conference". If necessary, again as for Resolution 214, a note might be added indicating to Working Group PLEN-1 that Committee 5 considered that the matter should be discussed by WRC-99.

4.29 The **delegate of Sweden** supported the proposed amendment to *resolves* but did not feel that an explanatory note was necessary for the draft Resolution under discussion.

4.30 The **Chairman** suggested that further consideration of *resolves* should also be continued informally.

4.31 It was so **agreed**.

4.32 The **Chairman of the Conference** expressed concern at the time being taken on detailed drafting matters at such a late stage in the Conference and urged all delegations to cooperate in expediting the work of the Committee and to concentrate on issues of vital importance. The **Chairman** endorsed that view.

4.33 Following informal discussions, the **delegate of the Netherlands** read out the following revised additional text for *considering*: "k) that the COSPAS-SARSAT system operates within an exclusive allocation in the band 406 - 406.1 MHz and that the radio astronomy service has the primary allocation in the band 406.1 - 410 MHz, and that these services need to be protected from MSS transmissions, including unwanted emissions". The **Chairman** then read out the following revised proposed addition to *resolves to invite the ITU-R*: "4 as a matter of urgency to study, with the participation of IUCAF and other relevant entities, the impact of unwanted emissions on the COSPAS-SARSAT system in the band 406 - 406.1 MHz and the radio astronomy service in the band 406.1 - 410 MHz and identify appropriate protection measures for these services".

4.34 The texts of *considering* and *resolves to invite ITU-R* 4, as amended, were **approved**.

4.35 The **delegate of Canada**, reporting on the outcome of further informal discussions, proposed that *resolves* should be amended as proposed earlier by the delegate of Germany and that a note should be added to read "Committee 5 favours the consideration of draft Resolution [COM5-25] at WRC-99".

4.36 The **delegate of Sweden**, again questioning the necessity for the note, said that if it was approved he would reserve the right to raise the question of the priority of inclusion of the Resolution on a future conference agenda when the matter was considered in Working Group PLEN-1.

4.37 The **delegate of Russia** said that *resolves* should refer to the service to which the allocation was being made, namely the mobile-satellite service. Further, in *urges administrations* 1, "taking into account the requirements of the earth exploration-satellite service and the meteorological-satellite service in the 401- 403 MHz band" should be added after "401 - 406 MHz band", as in *resolves to invite ITU-R* 1.

4.38 The texts of *resolves*, with the proposed note, and *urges administrations*, as amended, were **approved**.

4.39 The **delegate of France** expressed the hope that the Resolution could be approved on the understanding that requests for allocations in the band 405 - 406 MHz approved at WRC-97 would be taken into account.

4.40 It was so **agreed**.

4.41 The **representative of IUCAF** said that, on the basis of further informal discussions, he wished to suggest that the revised title of the draft Resolution should be amended by deleting "possible".

4.42 It was so **agreed**.

4.43 Draft Resolution [COM5-25], as amended, was **approved**.

4.44 The **Chairman** invited the Committee to consider the views of the informal group on the proposals in the frequency range 450 - 470 MHz set out in section 2 of Document DT/121.

4.45 The **delegate of Indonesia** indicated that the proposal for a country footnote in respect of limited uplink allocations in the 450 - 470 MHz range, referred to earlier by the delegate of Canada, would be submitted in Document 292; the countries concerned were Indonesia, Papua New Guinea, Nigeria, Ghana and Malawi.

4.46 The **delegate of Syria**, supported by the **delegate of Algeria**, said that the protection of fixed and mobile services in the band 450 - 470 MHz was most important and that sharing technologies were not yet adequate to permit the proposed additional allocations. The further studies foreseen in accordance with revised Resolution 214 (WRC-95), just approved by the Committee, might enable such additional allocations to be considered in the future.

4.47 The views of the informal group on the frequency range 450 - 470 MHz were **noted**.

4.48 The **Chairman** invited the Committee to consider the proposals set out in Addendum 5 to Document 40.

4.49 The **delegate of Canada**, introducing Addendum 5 to Document 40, said that it set out a common inter-American proposal for the allocation of an additional 1 MHz in the band 454 - 455 MHz for MSS uplinks within Region 2. The accompanying footnotes MOD S5.209, MOD S5.286A, MOD S5.286B and MOD S5.286C limited the allocation to non-GSO MSS and provided for coordination under Resolution 46 (Rev.WRC-95)/No. S9.11A. In addition, footnote ADD S5.286D covered constraints. Studies had shown that, with those constraints, the problem of interference would be reduced to a level well within acceptable limits but that further studies were required, as indicated in Resolution 214, to confirm the appropriate values for those constraints, taking into account other interference-mitigation techniques that might be employed to promote compatibility with terrestrial services. Following the approval earlier by the Committee of the revised text of Resolution 214, it would no longer be necessary to consider draft Resolution [IAP-9], also contained in Addendum 5 to Document 40. Moreover, "Resolution [IAP-9]" in ADD S5.286D should be replaced by "Resolution 214 (Rev.WRC-97)".

4.50 Speaking as the coordinator of the informal group which had discussed the proposals for additional mobile-satellite allocations below 1 GHz, he said that some support had been expressed for reflection of the inter-American proposals by means of a country or a Region 2 footnote but that the informal group had not endorsed the proposals.

4.51 The **delegate of Cuba** pointed out that Region 2 had already been assigned a 2 MHz allocation for uplinks that were not related to a corresponding downlink allocation. A further such allocation would create an imbalance that could have a serious impact on future allocations in both directions. He would therefore have difficulty in accepting the proposals as formulated, in particular since they referred to a need to continue studies to confirm appropriate sharing criteria and protection of existing services. Any such allocations should only be made by means of appropriate footnotes which should refer to the countries concerned and to guarantees for the protection of terrestrial services in neighbouring countries. The **delegate of Chile** endorsed that view.

4.52 The **delegate of Russia** also objected to the proposed allocation. The allocation of the band 455 - 456 MHz was already controversial for countries in Regions 1 and 3; no such allocation had been allowed previously except through country footnotes.

4.53 The **delegate of Germany**, supported by the **delegate of Finland**, said that studies had shown that sharing of such an allocation with the cellular telephone networks already operating in the band 450 - 456 MHz would not be possible.

4.54 The **delegate of Ecuador** proposed that the concerns expressed might be met by adding "and shall protect existing services" at the end of ADD S5.286C. The **Chairman** thought that that point was already covered by footnote MOD S5.286B.

4.55 The **delegate of Colombia** said that studies on potential uplink allocations should be postponed until the results of the studies relating to non-GSO MSS allocations in the meteorological aids band of 405 - 406 MHz were known. The allocations should then be considered on a global rather than a regional level, since the requirements for frequency bands for MSS were global in nature.

4.56 The **Chairman**, noting the concerns expressed regarding the allocation of the band 454 - 455 MHz to MSS in Region 2, suggested that the additional allocation should be reflected in a country footnote rather than in the Table of Allocations, and that the other proposals in Addendum 5 to Document 40 should be amended accordingly.

4.57 The **delegates of Canada** and **the United States** supported that proposal.

4.58 The **delegate of Cuba** said that he could go along with the Chairman's suggestion provided that the footnote stated clearly that the national allocations would not cause harmful interference and would not constrain the development of the fixed and mobile services in neighbouring countries.

4.59 The **delegate of India** said that the bands 450 - 470 MHz were used extensively for fixed and mobile services in his country. Although the allocation proposed was of a regional nature, it was likely to become global once the studies had been completed. With regard to ADD S5.286D, he noted with concern that the transmission separation period specified differed from that given in the original Canadian proposal (CAN/35/136). At all events, if such details were specified at such an early stage, they would be difficult to alter when systems were in operation.

4.60 The **delegate of Ecuador** said that, if a country footnote was to be drafted, it should only include those countries wishing to develop the service on their territory.

4.61 The **delegate of Syria** said that the footnote should in no way prejudge the results of the studies to be carried out. Furthermore, no global allocation should be made until the results of those studies were known.

4.62 The **Chairman** suggested that a drafting group should be established to draft a country footnote for the additional allocation to MSS in Region 2, and to amend Addendum 5 to Document 40 accordingly, while taking account of the concerns expressed during the meeting. She also suggested that the countries listed in Document 292 should participate in the drafting group with a view to finalizing footnote ADD S5.286E.

4.63 It was so **agreed**.

5 Sixth report of Working Group 5B (continued) (Document 262)

5.1 The **Chairman** recalled that consideration of a number of items in Document 262 had been deferred during the seventh meeting of the Committee, and invited comments on the outstanding matters.

[SUP 361]

5.2 The **delegate of Sweden** proposed that the square brackets around SUP S5.361 should be deleted.

5.3 It was so **agreed**.

ADD S5.362A*bis*

5.4 The **delegate of the United States** said that he had held informal consultations with the delegates of Mexico and Canada on the wording of the footnote and proposed that it should be amended to read: "In the United States, in the bands 1 555 - 1 559 MHz and 1 656.5 - 1 660.5 MHz, the aeronautical mobile-satellite (R) service (AMS(R)S) shall have priority access …".

5.5 ADD S5.362A*bis,* as amended, was **approved**.

Frequency range 1 559 - 1 567 MHz

5.6 The **Chairman** recalled that, despite extensive discussions in Sub-Working Group 5B and Working Group 5B regarding an allocation to the MSS in the band 1 559 - 1 567 MHz, it had not yet been possible to reach consensus. Referring to § 2 of Document 262, she invited comments on Option A (for no change to the current Table of Allocations) and Option B (to introduce an allocation for MSS in the band 1 559 - 1 567 MHz).

5.7 The **delegate of the United States** said that he was unable to support an allocation for the MSS downlink in the band 1 559 - 1 610 MHz, particularly in the 1 559 - 1 567 MHz frequency range. The band was used by two operational radionavigation satellite systems, namely GPS and GLONASS which were components of the Global Navigation Satellite System (GNSS) used by ICAO and IMO. It was important to ensure that there was sufficient spectrum available to satisfy present and future requirements and to accommodate the new systems being filed with ITU-R. However, no ITU-R study to date had confirmed the feasibility of sharing between the aeronautical radionavigation and radionavigation-satellite services and MSS in the band, and the expansion of the present systems was likely to be jeopardized if an allocation was made to MSS (space-to-Earth).

5.8 The **delegate of Uganda** said that there appeared to be no studies that unequivocally confirmed the feasibility of sharing between aeronautical navigation and radionavigation services and MSS in the band 1 559 - 1 567 MHz. He could not go along with any proposal that might hinder the development of GPS and GLONASS and therefore supported no change to the current Table of Allocations.

5.9 The **delegate of Colombia** said that under no circumstances could his country support an allocation to MSS in the band 1 559 - 1 610 MHz unless prior studies on the feasibility of sharing carried out by ITU-R confirmed that the aeronautical radionavigation and radionavigation-satellite services would not be subject to any interference. The **delegate of China** endorsed those comments.

5.10 The **delegate of the United Kingdom** pointed out that those administrations that supported the introduction of an allocation to MSS in the band 1 559 - 1 567 MHz had drawn up draft Resolution [COM5-22] which fully addressed the concerns expressed. For his part, he would support an allocation to MSS provided that: it was not used before the date of entry into force specified in the draft Resolution; the provisional power flux-density limits established were subject to a full review by ITU-R prior to WRC-99; and the allocation was subject to the procedures set out in Resolution 46 (Rev.WRC-95). He proposed that the discussion should be closed and the matter referred to Plenary where a final decision could be taken.

5.11 The **delegate of Senegal** said that there should be no change to the current Table of Allocations.

5.12 The **Chairman** said that, in view of the late hour, discussion on the matter should continue informally.

5.13 It was so **agreed**.

The meeting rose at 1235 hours.

The Secretary:
J. LEWIS

The Chairman:
V. RAWAT

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 353-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

CHAIRMAN, COMMITTEE 4

FINAL REPORT FROM COMMITTEE 4 TO THE PLENARY MEETING

1 Committee 4 held its final meeting on 18 November 1997. At this final meeting, Committee 4 approved the Revised Plan for the BSS (downlink and associated feeder links) in Regions 1 and 3 (Appendices S30 and S30A). The approved version will be communicated to the Plenary in a separate document, based on Document 273 (including Corrigenda 1 and 2), and including the other decisions of Committee 4 in this regard (Documents 326 and 336 refer). Committee 4 noted also the results of compatibility between the BSS assignments in the revised Plans for Regions 1 and 3 (downlink and associated feeder links) and other services (Document 318) and approved the required course of action in this respect (see Resolution [COM4-20], Document 345).

2 Committee 4 also approved (partially) the draft new Resolution [COM4-22] (see Attachment 1 to this document), which stipulates the course of action in regard to future re-planning of the bands governed by Appendices 30 and 30A. This Resolution is submitted to the Plenary for consideration.

3 Due to lack of time, Committee 4 was not able to complete the examination of the following issues:

- Possible revision of Annex 5 of Appendix S30 and Annex 3 of Appendix S30A. An ad hoc group was created in this respect (4 ad hoc 3) to report directly to the Plenary (Working Documents: DT/5(Rev.1)+Add.1; DL/56, DL/57; DT/157);
- Beam grouping (Documents DT/142; DL/48);
- Possible revision of Article 4 of Appendices 30 and 30A and Annex 4 of Appendix 30 (Documents DT/92(Rev.1), DT/154);
- Resolution 506 and other Resolutions and Recommendations from WARC/WRC relevant to agenda item 1.10 (Document 327);
- Subregional systems (Document DT/153);
- Issues related to RR 2674 (Documents 27(Corr.1) and DT/116(Rev.1));
- Updating of provisions Nos. S5.492 and S5.493 (Document 328);
- Consequential updating of Appendices 30 and 30A (Document DT/156);

- Draft new Recommendation on use of non-standard technical parameters (Document DT/144);
- Draft new Resolution on the operation of broadcasting satellites serving other countries (Document 306);
- Further review of Annex 2 to Appendices 30 and 30A (Document 296(Add.1));
- Document 332 (from TRD).

E. GEORGE
Chairman of Committee 4

ATTACHMENT 1

DRAFT RESOLUTION [COM4-22]

REVIEW AND POSSIBLE REVISION OF THE 1997 BSS PLANS FOR REGIONS 1 AND 3

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the World Radiocommunication Conference, 1997 adopted a revision of the BSS Plans for Regions 1 and 3 providing capacity for all new countries in accordance with Resolutions **524 (WARC-92)** and **531 (WRC-95)**;

b) that ~~WRC-97 also considered that studies should be undertaken to establish the feasibility of providing additional minimum~~certain countries requested that a re-planning be undertaken in order to increase the Plan capacity ~~for all Member States~~ so as to provide a channel capacity large enough to permit the economical development of a broadcasting-satellite system;

c) the increasing number of applications under Article **4** for modifications involving additions to the Plans;

d) the rights of all Member States to equitable access to the spectrum allocated to satellite broadcasting, and that Article **44** of the Constitution provides, *inter alia*, that "Members shall bear in mind that radio frequencies and the geostationary-satellite orbit are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to both",

resolves

1 that an inter-conference representative group (IRG) be established in accordance with Annex 2;

2 that the Director of the Radiocommunication Bureau present the results of the IRG studies to WRC-99 regarding the feasibility of increasing the minimum assigned capacity for countries in Regions 1 and 3 to around ten analogue-equivalent channels ~~(see Annex 2)~~, based on the planning principles in Annex 1;

3 that WRC-99 consider the results of the above studies and, if the conclusion is that such replanning is feasible, to initiate an appropriate revision for completion [at a future conference no later than [2000/2001]] [at WRC-01],

invites ITU-R

to study, as a matter of urgency, the technical possibilities for increasing the minimum capacity assigned to all Regions 1 and 3 countries in the Plans for Regions 1 and 3 contained in Appendices **30** and **30A**, in cooperation with the IRG and in accordance with the principles in Annex 1,

[invites the Council to recommend to the 1998 Plenipotentiary Conference

to consider the convening of a radiocommunication conference [before [2000/2001]] to revise those parts of the Plans in Appendices **S30** and **S30A** applying to Regions 1 and 3 subject to the consideration of WRC-99 of the results of the studies carried out by the IRG,]

instructs the Secretary-General

to bring this Resolution to the attention of the Council with a view to competent conferences undertaking the review of studies and, if necessary, the revision of the relevant parts of Appendices **S30** and **S30A** and associated provisions of the Radio Regulations.

ANNEX 1

Principles for the review and possible revision of the 1997 BSS Plans for Regions 1 and 3

The World Radiocommunication Conference, 1997 reviewed the planning principles proposed by several administrations and those adopted by WRC-95 in Resolution 531 and agreed to establish an inter-conference representative group (IRG) to carry out studies in accordance with the principles given below.

These principles are to be used in assessing the possibilities for meeting the objectives in this Resolution.

1) Provide for all countries a minimum capacity equivalent to around ten analogue channels while maintaining the same proportionality adopted by WARC-77.

2) Be based mainly on national coverage.

3) Protect the ~~"existing" systems in the Regions 1 and 3 Plans which are in conformity in those Plans (see Annex 2)~~notified assignments, which are in conformity with Appendices 30 and 30A, which are brought into use and for which the date of bringing into use has been confirmed to the Bureau.

4) In order to avoid the obsolescence of the Plans, caused by technical assumptions becoming out of date, ensure that the Plan is established with a view to achieving long-term flexibility.

5) Leaving capacity for future additional requirements~~[, such as subregional systems]~~.

6) Consider, for planning, the appropriateness of a complete digital approach in the future and, if so, providing for the simultaneous operation of analogue and digital systems, if necessary during a defined time-scale.

7) Ensure that the integrity of the Region 2 Plans and their associated provisions is preserved, by providing the same protection to the assignments contained in those Plans, as now received under relevant provisions of the Radio Regulations and by not requiring more protection from assignments in the Region 2 Plans than currently provided under the Radio Regulations.

8) Compatibility shall be ensured between the broadcasting-satellite service in Regions 1 and 3 and those services having allocations in the planned bands in all three Regions.

ANNEX 2

Inter-conference representative group

WRC-97 has resolved that an inter-conference representative group, (IRG) be established to study the feasibility of increasing the minimum capacity for countries in Regions 1 and 3 to around the equivalent of ten analogue channels in accordance with the principles in Annex 1.

The IRG should be structured to consist of:

- a supervisory policy group (the IRG) open to participation by all Members but membership encouraged to ensure adequate representation from all ITU regions;
- the Bureau, assisted by a group of technical experts (GTE) and working ~~to directions established by~~under the guidance of the IRG. Members of the GTE should be drawn from all Sector Members on the basis of technical expertise.

JWP 10-11S ~~studies are~~is encouraged to contribute to the studies and particularly in respect to items listed in the Appendix.

[APPENDIX

Initial suggestions to the IRG

1 National coverage

If countries wish to improve the economic viability of systems, for example by combining the assignments of several neighbouring countries, this may be permitted provided the countries concerned agree and agree to forgo their entitlement in the Plan to dedicated national capacity.

2 Elliptical beams

The studies should be based on elliptical beams calculated on test points within national territories provided by administrations using the ellipse calculation program available to the Bureau.

3 Use of standard reference planning parameters

The studies should be based on a set of reference planning parameters to maximize the efficiency in the use of the orbit/spectrum resource.

4 Relaxation of constraints for studies

In order to maintain as much flexibility as possible the following constraints can be relaxed:

Nominal 6° orbital spacing

Annex 7 orbital position limits

Retention of existing Plan orbit and assignments other than those which have been implemented (see Annex 1, Principle 3)

Co-location of neighbouring countries except where requested under 1 above

Eclipse protection

Application of Appendix 28 in respect of coordination of BSS feeder-link earth stations and terrestrial stations

5 Orbit and beam requirements

The number of orbital positions per country should, in general be one. However the orbit and beam allocations from WARC-77 may be used as a guide to address particular circumstances of large countries and multiple time zones.

6 Treatment of existing systems

Currently operating systems, i.e. implemented systems or notified systems for which the date of bringing into use has been confirmed to the Bureau, should be protected with current parameters. The studies may include consideration of changes to such systems for future generations.

7 Article 4 applications

Studies need to take account of, and provide for, those Article 4 applications in accordance with the provisions of the Plans received before xx/xxx/xx which have completed coordination and for which due diligence information has been received by the BR.

NOTE - WRC-99 may need to consider establishing a date after which Article 4 applications should not be considered prior to any revision of the Plans by a subsequent conference.

8 Application of provision 4.1.1 of Appendix 30

The IRG should consider the implications of strengthening this provision in the context of these studies and the principles in Annex 1.]

Alternatively

[APPENDIX

Replanning principles

1 National coverage

The planning shall be based, in general, on national coverage (and all test points shall be within the territory of the countries being covered).

However, if countries wish to improve the economic viability of systems by combining the assignments of several neighbouring countries this shall be permitted provided the countries concerned agree, and agree to forego their entitlement to dedicated national capacity.

2 Channels per service area

The planning shall be based on an attempt to provide a minimum of 10 (ten) 27 MHz bandwidth channels per national service area, but it shall not be permitted to have overlapping service areas (unless the number of channels is commensurately reduced).

3 Digital

In general the planning shall be based on an assumption of digital transmission but specific requests for continuation of analogue shall be allowed.

ITU-R should be urgently requested to provide a recommendation for realistic digital-digital protection ratios, masks and calculation methods for use in the replanning. (Similar requests should also be made in connection with analogue-digital digital-analogue.)

4 Elliptical beams

Due to the time and resource requirements needed to capture, verify and process shaped beams, the planning process should be based on elliptical beams. (At the stage of implementation administrations could use shaped beams provided that they do not cause additional interference or require additional protection than that which would have applied in the case of the reference ellipse used in the planning.)

The ellipses would be calculated based on test points within national territory provided by administrations and the ellipse calculation program is available to the Bureau.

5 Standard reference parameters

To achieve maximum efficiency in the use of the orbit/spectrum resource the planning shall be based on a set of reference planning parameters. (It is noted that under Article 5 systems which deviate from these reference parameters - either due to technological improvements or other reasons - are allowed provided that the deviations do not cause more interference to the Plan.)

6 Downlink e.i.r.p.

ITU-R should be urgently requested to provide advice concerning the C/N and necessary link budget margins for use in the planning, in order that a value (or a range of values) of downlink e.i.r.p. can be determined. ITU-R should also be asked to consider whether a reduction in downlink e.i.r.p. would be a desirable way of alleviating BSS-terrestrial compatibility constraints.

7 Feeder link e.i.r.p./uplink noise temperature

ITU-R should also be requested to advise on appropriate values for feeder link e.i.r.p. and receiver noise temperature to be used in the planning.

8 Polarization

Planning shall be based on circular polarization.

9 Removal of constraints during the planning process

In order to maintain as much flexibility for planning as possible (and thereby ensure that the maximum number of channels can be provided) the following constraints on planning should be removed (at least during the planning process) (but retaining Resolution 531, §§ 2.3 and 2.4):

- nominal 6° orbital spacing;
- Annex 7 orbital position limits;
- preservation of not brought into use current channels/orbital positions for entries in the current Plan;
- co-location of neighbouring countries at the same orbital position (except for cases where the neighbouring countries agree to merge their assignments into a regional beam as described in item 1 above).

10 Eclipse protection

The eclipse protection requirement used in the WARC-77 planning does not need to be maintained.

11 Elevation angle limits

It was considered that some limits on minimum earth station elevation angles should be applied. Subject to discussion the limits used by WARC-77 should be applied. [JWP 10-11S should be invited to advise.]

12 Number of orbital positions for each country

The number of orbital positions per country should, in general, be one. However, special consideration may be required to meet the requirements of large countries. [Retain current number of orbital positions.]

13 Treatment of existing systems

Currently operating systems (Type A) should be protected with current parameters. Whether or not this protection should extend beyond current generation is a matter for conference consideration.

Furthermore, to achieve maximum efficiency in the use of the orbit/spectrum resource the planning should be based on an homogeneous set of planning assumptions (especially for parameters such as downlink e.i.r.p. and receiving earth station antenna patterns). This requirement may be tempered somewhat by any requirement to allow the continued operation of existing systems and Article 4 systems.

14 Treatment of Article 4 systems in the Plan but not operating

(Type D) Article 4 assignments [received before ..... 1997] which have completed coordination and for which due diligence has been verified should be included in any replanning and be protected.

15 Use of existing assignments vis-à-vis Article 4

To avoid inefficient use of the orbital resource, the application of provision 4.1.1 of Appendices 30/30A should be tightened such that where Article 4 systems are introduced without using national assignments then those assignments will be considered to replace the national assignment and the national assignments will be removed from the Plan.

16 Cut-off date

To facilitate finalization of any Plan it will be important to establish a final cut-off date for inclusion of completed Article 4 systems of [6 months] before the conference that considers the replanning. For the purposes of the study only, Article 4 applications received after … need not be considered.

17 Compatibility studies

Since coordination between BSS feeder link earth stations and terrestrial services is in practice much easier than implied by the currently applied criteria of AP28, those constraints should not constrain the planning, but should be noted and the final resolution of the incompatibilities (if any) would be treated at the notification stage.]

[Requests for additional studies by the IRG

1) Annex 7 of Appendix 30

The IRG is requested to examine Annex 7 in the light of its studies for possible revision of the BSS Plans and in respect of the decisions taken by WRC-97, such as the reduction of downlink e.i.r.p. Its advice on the relevance of this annex in providing protection to all services sharing the Plan bands and particularly the Region 2 BSS Plans should be reported to WRC-99.

2) Avoidance of monopolization of the BSS resource

The IRG is requested to consider concerns identified by WRC-97 that modifications of the Plans for additional requirements or subregional systems should not monopolize the use of the bands by a country or a group of countries. Advice on how to address these concerns should be reported to WRC-99.

Requests for studies by ITU-R

ITU-R is requested to study and provide advice to the IRG on the following subjects.

1) Appropriate technical criteria for the studies addressing the following:

- digital-to-digital protection ratios;
- digital-to-analogue protection ratios;

- analogue-to-digital protection ratios;
- digital emission masks.

Plus associated calculation methods for the above.

2) A possible reduction in e.i.r.p. and related C/N and link budget margins as a means of alleviating the BSS terrestrial compatibility constraints.

3) Appropriate feeder link e.i.r.p. and receiver noise temperature.

4) Comparison of alternative polarization options.

5) The suitability of the minimum earth receive elevation angles used by WARC-77.

ANNEX B

Draft agenda items for future conferences

1 Agenda item for WRC-99

To consider the report of the Director of the Radiocommunication Bureau in accordance with Resolution [COM4-XB] and determine whether to initiate replanning for completion by a subsequent competent conference.

2 Agenda item for a future conference in the event WRC-99 confirms the feasibility of revising Appendices 30 and 30A in respect of Regions 1 and 3 in accordance with Resolution [COM4-XB]

To review and revise, as necessary, Appendices 30 and 30A in respect of the BSS Plans for Regions 1 and 3 in accordance with the decisions of WRC-99.]

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 354-E
19 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.8 **PLENARY MEETING**

EIGHTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 4	335	**ARTICLE S11** **ARTICLE S13** – Numbers S13.1 to S13.4 **ARTICLE S59** **ANNEX 2A TO APPENDIX S4** **ANNEX 2B TO APPENDIX S4** **APPENDIX S5** **RESOLUTION 27 (Rev.WRC-97)** **RESOLUTION 33 (Rev.WRC-97)** **RESOLUTION 48 (WRC-95)** **RESOLUTION COM4-17 (WRC-97)** **RESOLUTION COM4-18 (WRC-97)** **RESOLUTION COM4-19 (WRC-97)**
COM 4	339	Proposed action with regard to WARC/WRC Resolutions and Recommendations

A.-M. NEBES
Chairman of Committee 6

Annex: 46 pages

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MOD

ARTICLE S11

Notification and Recording of Frequency Assignments[1, 2]

MOD A.S11.1

[1] See Appendices **S30** and **S30A**, respectively, for the notification and recording of:

a) frequency assignments to stations in the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2);

b) frequency assignments to stations in other services to which the frequency bands referred to in a) above are allocated, so far as their relationship to the broadcasting-satellite service, which is subject to Appendix **S30**, is concerned;

c) frequency assignments to feeder-link stations in the fixed-satellite service (Earth-to-space) in the frequency bands 14.5 - 14.8 GHz in Region 1 (see No. **S5.510**) and in Region 3, 17.3 - 18.1 GHz in Regions 1 and 3 and 17.3 - 17.8 GHz in Region 2, and to stations in other services in these bands;

d) frequency assignments to stations in the same service or other services to which the frequency bands referred to in c) above are allocated, so far as their relationship to the fixed-satellite service (Earth-to-space) in these bands is concerned.

For the broadcasting-satellite service in Region 2 and for feeder links in the fixed-satellite service for the broadcasting-satellite service in Region 2, Resolution **42 (Rev.Orb-88)** is also applicable.

See also Appendix **S30B** for the notification and recording of assignments in the following frequency bands:

All Regions, fixed-satellite service only

4 500 - 4 800 MHz	(space-to-Earth)
6 725 - 7 025 MHz	(Earth-to-space)
10.7 - 10.95 GHz	(space-to-Earth)
11.2 - 11.45 GHz	(space-to-Earth)
12.75 - 13.25 GHz	(Earth-to-space)

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ADD A.S11.2 [2] Resolution [**GTPLEN2-1**] shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

MOD S11.14 Frequency assignments to ship stations and to mobile stations of other services, to stations in the amateur service, to earth stations in the amateur-satellite service, and those to broadcasting stations in the high-frequency bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz which are subject to Article **S12** shall not be notified under this Article.

MOD S11.18 *a)* stations covered by the allotment plan of Appendices **S25**, **S26** and **S27**;

MOD S11.21 *d)* any terrestrial stations in bands shared with space services which exceed the limits specified in Table II of Appendix **S7** and in No. **S21.3**;[2]

ADD S11.21A e) any terrestrial stations in bands listed in Table S21-2;[2]

MOD S11.22 *f)* earth stations whose coordination area includes the territory of another administration, or where the earth station is located within the coordination area of an earth station operating in opposite direction of transmission;[2, 3]

ADD S11.22.1 [3] In such cases, individual notices of frequency assignments are required for frequency bands allocated with equal rights to space services, in the opposite direction of transmission, where coordination is required under Appendix **S5**, Table S5-1.

(MOD) S11.23 *g)* earth stations whose interference potential is greater than that of a coordinated typical earth station.[2]

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(MOD) **S11.20.1 to S11.23.1** [2] In such cases, individual notices of frequency assignments are required for frequency bands allocated with equal rights to terrestrial and space services where coordination is required under Appendix **S5**, Table S5-1.

MOD **S11.24** Notices relating to assignments to stations of terrestrial services, except for those referred to in Nos. **S11.25** or **ADD S11.26**, shall reach the Bureau not earlier than three months before the assignments are brought into use.

MOD **S11.25** Notices relating to assignments to stations in space services, and to terrestrial stations involved in coordination with a satellite network, shall reach the Bureau not earlier than three years before the assignments are brought into use.

ADD **S11.26** Notices relating to assignments for high altitude platform stations in the fixed service in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz shall reach the Bureau not earlier than five years before the assignments are brought into use.

Section II. Examination of Notices and Recording of Frequency Assignments in the Master Register

MOD **S11.27** Notices not containing those characteristics specified in Appendix **S4** as mandatory or required shall be returned with comments to help the notifying administration to complete and resubmit them, unless the information not provided is immediately forthcoming in response to an inquiry by the Bureau.

MOD **S11.31.3** [3] Notices relating to radio astronomy stations are examined with respect to No. **S11.31** only.

NOC S11.32A

NOC S11.32A.1

NOC S11.33

MOD S11.36 When the examination with respect to No. **S11.31** leads to a favourable finding, the assignment shall be recorded in the Master Register or examined further with respect to Nos. **S11.32** to **S11.34**, as appropriate. When the finding with respect to No. **S11.31** is unfavourable, the assignment shall be recorded in the Master Register for information purposes and subject to application of No. **S8.5**, only if the administration undertakes that it will be operated in accordance with No. **S4.4**; otherwise the notice shall be returned with an indication of the appropriate action.

(MOD) S11.37 When the examination with respect to No. **S11.32** leads to a favourable finding, the assignment shall be recorded in the Master Register indicating the administrations with which the coordination procedure has been completed.[1, 2] When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action, if Nos. **S11.32A** or **S11.33** do not apply.

ADD S11.37.1 [1] When the agreement of the administrations affected has been obtained only for a specified period, the Bureau shall be notified accordingly and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned.

ADD S11.37.2 [2] When a frequency assignment to a space station in the broadcasting-satellite service in a non-planned band is recorded in the Master Register, a note shall be entered in the remarks column indicating that such recording does not prejudge in any way the decisions to be included in the agreements and associated plans referred to in Resolution **507**.

NOC S11.38

MOD **S11.39** When the examination with respect to No. **S11.34** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action. However, notices under Appendices **S25**, **S26** and **S27** shall be treated as follows:

NOC **S11.39A**

(MOD) **S11.39B** When the examination under No. **S11.39A** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to No. **S11.39A**.

NOC **S11.39C**

(MOD) **S11.39D** When the examination under No. **S11.39C** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to No. **S11.39C**.

ADD **S11.39E** In the case of a notice not in conformity with the Allotment Plan of Appendix **S25**, the assignment may be recorded provisionally in the Master Register on the condition that the administration has initiated the procedure of Appendix **S25** in accordance with § 1.23 of Section I of Appendix **S25**.

S11.40 Not used.

NOC **S11.41**

NOC **S11.42**

MOD **S11.43** In every case when a new assignment is recorded in the Master Register it shall, in accordance with the provisions of Article **S8** of this Chapter, include an indication of the finding reflecting the status of the assignment. This information shall also be published in the Weekly Circular.

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MOD **S11.43A** A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix **S4**, shall be examined by the Bureau under Nos. **S11.31** to **S11.34**, as appropriate. Any change to the characteristics of an assignment that has been notified and confirmed as having been brought into use shall be brought into use within 5 years from the date of the notification of the modification. Any change to the characteristics of an assignment that has been notified but not yet brought into use shall be brought into use within the period provided for in No. **S11.44**.

MOD **S11.44** The notified date of bringing into use of any assignment to a space station of a satellite network shall be no later than five years following the date of receipt by the Bureau of the relevant information under No. **S9.1**. The notified date of bringing into use may be extended at the request of the notifying administration by not more than two years, only under the conditions specified under Nos. **S11.44B** to **S11.44I**. Any frequency assignment not brought into use within the required period shall be cancelled by the Bureau after having informed the administration at least 3 months before the expiry of this period.

ADD **S11.44A** A notice not conforming to No. **S11.44** shall be returned to the notifying administration with a recommendation to restart the advance publication procedure.

ADD **S11.44B** The notified date of bringing into use will be extended by the Bureau in accordance with No. **S11.44** if due diligence information required by Resolution **[GTPLEN2-1]** is provided for the satellite network; if the procedure for effecting coordination in accordance with Section II of Article **S9** as applicable has commenced; and if the notifying administration certifies that the reason for the extension is one or more of the following specific circumstances:

ADD **S11.44C** a) launch failure;

ADD **S11.44D** b) launch delays due to circumstances outside the control of the administration or operator;

ADD **S11.44E** c) delays caused by modifications of satellite design necessary to reach coordination agreements;

ADD **S11.44F** d) problems in meeting the satellite design specifications;

ADD **S11.44G** e) delays in effecting coordination after the assistance of the Bureau was requested under No. **S9.59**.

ADD **S11.44H** f) financial circumstances outside the control of the administration or the operator; or

ADD **S11.44I** g) *force majeure*.

NOC S11.45

NOC S11.46

MOD S11.47 All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice, or by the date of expiry of the extension granted under No. **S11.44** or No. **S11.45**. Within thirty days of such an assignment being brought into use, the notifying administration shall so inform the Bureau. If the Bureau does not receive that confirmation within the above period, after sending a reminder, it shall cancel the entry. The Bureau shall however inform the administration concerned before taking such action.

MOD S11.48 If, after the expiry of the period of five years, plus the extension specified in No. **S11.44**, as appropriate, from the date of receipt of the complete information referred to in No. **S9.1**, the administration responsible for the satellite network has not brought the frequency assignments to stations of the network into use, the corresponding information published under Nos. **S9.2B** and **S9.38**, as appropriate, shall be cancelled, but only after the administration concerned has been informed at least three months before the expiry date referred to in No. **S11.44**.

SUP S11.49

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ARTICLE S13

Instructions to the Bureau

Section I. Assistance to Administrations by the Bureau

MOD S13.1 When an administration has difficulty in applying the procedures of Articles **S9** and **S11** and Appendices **S30**, **S30A** and **S30B**, the Bureau shall, upon request, endeavour to assist in such cases.

SUP S13.2

SUP S13.3

SUP S13.4

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ARTICLE S59

Provisional Application of the Radio Regulations

MOD **S59.1** These Regulations, which complement the provisions of the Constitution and Convention of the International Telecommunication Union (Geneva, 1992), and as revised and contained in the Final Acts of the World Radiocommunication Conferences (Geneva, 1995 and Geneva, 1997) shall have provisional application, pursuant to Article 54 of the Constitution, on the following basis.

MOD **S59.2** The provisions of these Regulations, as revised by the World Radiocommunication Conference (Geneva, 1995), shall apply provisionally as of 1 June 1998, except those revised provisions concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of **S21**, **S22** and Appendix **S4**, which shall apply provisionally as of 1 January 1997.

ADD **S59.3** The provisions of these Regulations, as revised by the World Radiocommunication Conference (Geneva, 1997), shall apply provisionally as of [1 January 1999], with the following exceptions:

ADD **S59.4** a) the revised provisions concerning coordination, notification and recording of frequency assignments (Articles **S4, S7, S8, S9, S11, S12, S13** and **S14,** and Appendices **S4** and **S5**), which shall apply provisionally as of [1 June 1998];

ADD **S59.5** b) the revised provisions for which other effective dates of application are stipulated in Resolutions […].

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APPENDIX S4

ANNEX 2A

(to Appendix **S4**)

Characteristics of Satellite Networks or Earth or Radio Astronomy Stations[1]

ADD **A.13 As appropriate, reference to the Special Section of the Bureau's Weekly Circular**

ADD a) providing the advance publication information required in accordance with No. **S9.1**;

ADD b) providing the coordination information required in accordance with No. **S9.7**;

ADD c) providing the information required in accordance with No. **S9.21**;

ADD d) providing the coordination information required in accordance with No. **S9.8**;

ADD e) providing the coordination information required in accordance with No. **S9.9**;

ADD f) providing the coordination information required in accordance with No. **S9.11**;

ADD g) providing the coordination information required in accordance with No. **S9.11A**;

ADD h) providing the information required in accordance with Article 6 of Appendix **S30B**.

...

B.4 Non-geostationary space station antenna characteristics

a) Isotropic gain of the antenna in the direction of maximum radiation (dBi) and the antenna radiation pattern.

b) In the case of a space station submitted in accordance with Resolution **46 (Rev.WRC-95)/** No. **S9.11A**:

- orientation of the satellite transmitting and receiving antenna beams and their radiation pattern;
- satellite antenna gain $G(\theta_e)$ as a function of elevation angle at a fixed point on the Earth;
- spreading loss (for a non-GSO satellite) as a function of elevation angle (to be determined by equations or provided in graphical format);
- maximum and average beam peak e.i.r.p./4 kHz and e.i.r.p./1 MHz for each beam;
- for the fixed-satellite service (space-to-Earth) in the band 6 700 - 7 075 MHz, calculated peak value of power flux-density produced within ±5 degrees inclination of the geostationary-satellite orbit.

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APPENDIX S4

Consolidated List and Tables of Characteristics for Use in the Application of the Procedures of Chapter SIII

ANNEX 2B (TO APPENDIX **S4**)

Table of characteristics to be submitted for space and radio astronomy services

A. General characteristics of the satellite network or the earth station

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.1.a	X	X	X	X	X		X	X	X	A.1.a	
A.1.b							X			A.1.b	
A.1.c								X		A.1.c	
A.1.d									X	A.1.d	
A.1.e.1						X				A.1.e.1	
A.1.e.2						X				A.1.e.2	X
A.1.e.3						X				A.1.e.3	
A.1.e.4										A.1.e.4	X
A.1.f	X	X	X	X	X	X	X	X	X	A.1.f	X
A.2.a	X	X	X	X	X	X	X	X	X	A.2.a	
A.2.b	X			X						A.2.b	
A.2.c										A.2.c	X
A.3			X	X	X	X	X	X		A.3	X
A.4.a.1	X			X			X	X	X	A.4.a.1	
A.4.a.2				X			X	X		A.4.a.2	
A.4.a.3				X						A.4.a.3	
A.4.a.4				X						A.4.a.4	
A.4.a.5				X						A.4.a.5	
A.4.b.1		X	X		X					A.4.b.1	
A.4.b.2		X	X		X					A.4.b.2	
A.4.b.3		X	X		X					A.4.b.3	
A.4.b.4		X	X		X					A.4.b.4	
A.4.b.5					X					A.4.b.5	
A.4.c						X				A.4.c	
A.5				X	X	X	X	X	X	A.5	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

* The application of this column is suspended pending the decision of WRC-99.

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Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.6				X	X	X	X	X	X	A.6	
A.7.a						X		X		A.7.a	
A.7.b						X		X		A.7.b	
A.7.c						X				A.7.c	
A.7.d						X		X		A.7.d	
A.8							X			A.8	
A.9							X			A.9	
A.10						X				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				**X**	**X**					A.13	

B. Characteristics to be provided for each satellite antenna beam and for each earth station antenna

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
B.1			X	X	X	X	X	X	X	B.1	
B.2			X	X	X	X			X	B.2	
B.3.a				X						B.3.a	
B.3.b.1				X						B.3.b.1	
B.3.b.2				X						B.3.b.2	
B.3.c				C						B.3.c	
B.3.d				X			X	X	X	B.3.d	
B.3.e				X						B.3.e	
B.3.f				X				X		B.3.f	
B.3.g.1							X	X	X	B.3.g.1	
B.3.g.2							X	X	X	B.3.g.2	
B.3.g.3							X	X	X[9)]	B.3.g.3	
B.3.g.4							X	X	X[9)]	B.3.g.4	
B.3.g.5							X	X	X[9)]	B.3.g.5	
B.3.g.6								X		B.3.g.6	
B.3.g.7							X			B.3.g.7	
B.4.a			X		X					B.4.a	
B.4.b			X		X					B.4.b	
B.5.a						X				B.5.a	
B.5.b						X				B.5.b	
B.5.c						X				B.5.c	
B.6										B.6	X

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

[9)] Only information on co-polar antenna characteristics is required.

* The application of this column is suspended pending the decision of WRC-99.

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C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.1	X	X	X						X	C.1	
C.2.a				X	X	X	X	X		C.2.a	
C.2.b										C.2.b	X
C.3.a				X	X	X		X		C.3.a	
C.3.b										C.3.b	X
C.4	X	X	X	X	X	X	X	X		C.4	X
C.5.a			X	X	X			X	X	C.5.a	
C.5.b						X				C.5.b	
C.5.c										C.5.c	X
C.6			X	X	X	X	X	X		C.6	
C.7.a			O	X	X	X	X	X		C.7.a	
C.7.b			O	C	C	`C				C.7.b	
C.7.c			O	C	C	C				C.7.c	
C.7.d			O	C	C	C				C.7.d	
C.8.a			X[1), 7)]	X[7)]	X[7)]	C[8)]				C.8.a	
C.8.b			X[1), 7)]	X[7)]	X[7)]	X				C.8.b	
C.8.c			O	X[6)]	X[6)]	X[6)]				C.8.c	
C.8.d				X[2)]	X[2)]					C.8.d	
C.8.e			O	X[6)]	X[6)]	X[6)]				C.8.e	
C.8.f			X[3)]							C.8.f	
C.8.g				C[4)]	C[4)]	C[4), 5)]				C.8.g	
C.8.h							X			C.8.h	
C.8.i								X		C.8.i	
C.8.j									X	C.8.j	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

1) Only the value of maximum power density is mandatory.

2) For transmission from the space station only.

3) For space-to-space relay only.

4) For transmission from the earth station only.

5) Not required for coordination under No. **S9.15**, **S9.17** or **S9.17A**.

6) Required, if applicable, for the type of transmission. If not applicable, a reason why it is not applicable is required.

7) One or the other of C.8.a or C.8.b is mandatory, but not both.

8) Only the value of total peak envelope power is required for coordination under No. **S9.15, S9.17** or **S9.17A**.

* The application of this column is suspended pending the decision of WRC-99.

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C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna *(end)*

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.9.a			O	C	C					C.9.a	
C.9.b							X	X		C.9.b	
C.9.c			X		X					C.9.c	
C.10.a			X	X	X					C.10.a	
C.10.b			X	X	X			X		C.10.b	
C.10.c.1			X	X	X			X	X	C.10.c.1	
C.10.c.2			X	X	X			X	X	C.10.c.2	
C.10.c.3			O	X	X			X	X	C.10.c.3	
C.10.c.4			X	X	X			X	X	C.10.c.4	
C.10.c.5			X	X	X				X	C.10.c.5	
C.10.c.6								X		C.10.c.6	
C.11.a	X[10)]	X[10)]	X	X	X					C.11.a	
C.11.b								X		C.11.b	
C.11.c							X		X	C.11.c	
C.11.d					X					C.11.d	
C.12									X	C.12	
C.13										C.13	X
C.14							X			C.14	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

[10)] Only the list of country or geographic designators or a narrative description of the service area shall be supplied.

D. Overall Link Characteristics

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
D.1				X						D.1	
D.2.a				X						D.2.a	
D.2.b				X						D.2.b.	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

* The application of this column is suspended pending the decision of WRC-99.

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APPENDIX S5

Identification of Administrations with Which Coordination Is to Be Effected or Agreement Sought Under the Provisions of Article S9

NOC

1. For the purpose of effecting coordination under Article **S9**, except in the case under No. **S9.21**, and for identifying the administrations with which coordination is to be effected, the frequency assignments to be taken into account are those in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category[1] of allocation, which might affect or be affected, as appropriate, and which are:

a) in conformity with No. **S11.31**[3]; and

b) either recorded in the Master Register with a favourable finding with respect to No. **S11.32**; or

c) recorded in the Master Register with an unfavourable finding with respect to No. **S11.32** and a favourable finding with respect to No. **S11.32A** or No. **S11.33**, as appropriate; or

d) coordinated under the provisions of Article **S9**; or

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e) included in the coordination procedure with effect from the date of receipt[3] by the Bureau, in accordance with No. **S9.34**, of those characteristics specified in Appendix **S4** as mandatory or required, or from the date of dispatch, in accordance with No. **S9.29**, of the appropriate information listed in Appendix **S4**; or

ADD

ebis) where appropriate, in conformity with a world or regional allotment or assignment plan and the associated provisions;

MOD

f) for terrestrial radiocommunication stations or earth stations operating in the opposite direction of transmission[4] and, in addition, operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years from the date of dispatch of coordination data under No. **S9.29**, whichever is the longer, or from the date of the publication referred to in No. **S9.38**, as appropriate.

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2. For the application of No. **S9.21**, the agreement of an administration may be required with respect to the frequency assignments in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category of allocation, which may affect or be affected, as appropriate, and:

a) in cases involving a station in a space radiocommunication service with respect to any other station or involving a terrestrial radiocommunication station with respect to an earth station:

i) which are in conformity with No. **S11.31**, and comply with the relevant conditions listed in Section 1, paragraphs *b)* to *f)*; or

ii) for which the procedure under No. **S9.21** has been initiated, with effect from the date of receipt by the Bureau, in accordance with No. **S9.34**, of the basic characteristics specified in Appendix **S4**;

or

b) for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the other terrestrial station assignment into service, or within the next three months, whichever is the longer;

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3. For each of the frequency assignments to a station of a terrestrial or space radiocommunication service referred to in paragraphs 1 and 2 above, the level of interference shall be determined using the method referred to in Table S5-1 which is appropriate to the particular case.

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4. The assignment is considered to affect or be affected, as appropriate, and coordination must be sought under the procedure of Article **S9**, if:

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a) the threshold levels given in Table S5-1 are exceeded; and

b) the condition specified in Table S5-1 is applicable.

5. Threshold values to determine whether coordination under No. **S9.11A** is required are given in Table S5-2.

6. No coordination is required:

MOD *a)* when the use of a new frequency assignment will not cause or suffer, as appropriate, in respect of any service of another administration, an increase in the level of interference above the threshold calculated in accordance with the method referred to in Tables S5-1 and S5-2; or

NOC *b)* to *g)*

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TABLE S5-1

Technical conditions for coordination
(see Article **S9**)

	Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a Region where this service is not subject to a plan, in respect of any other satellite network using that orbit, in any space radiocommunication service in a frequency band and in a Region where this service is not subject to a plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	Any frequency band allocated to a space service, where this service is not subject to a plan	Value of $\Delta T/T$ exceeds 6%	Appendix **S8**	

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No. **S9.8** GSO/GSO	A transmitting space station of the fixed-satellite service (FSS) using the geostationary-satellite orbit in a frequency band shared with the BSS on an equal primary basis, in respect of space stations of the latter service which are subject to the Plans in Appendix **S30**	11.7 - 12.2 GHz (R2) 12.2 - 12.7 GHz (R3) 12.5 - 12.7 GHz (R1)	i) There is an overlap in the necessary bandwidths of the space stations of FSS and BSS; and ii) the power flux-density (pfd) of the space station of the FSS exceeds the value given in Annex 4 of Appendix **S30** on the territory of another administration located in another Region	Check by using the assigned frequencies and bandwidths;	See also Article 7 of Appendix **S30**. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

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No. **S9.9** GSO/GSO	A station of the FSS in a frequency band shared on an equal primary basis with the feeder links of the BSS, which are subject to the Plans in Appendix **S30A**	17.7 - 18.1 GHz (R1) 17.7 - 18.1 GHz (R3) 17.7 - 17.8 GHz (R2)	i) Value of $\Delta T_S/T_S$ exceeds 4% (see Section I of Annex 4 of Appendix **S30A**); and ii) geocentric inter-satellite angular separation is less than 3° or greater than 150°	i) Case II of Appendix **S8** ii) Annex 1 of Appendix **S8**	The threshold/conditions do not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -137 dB (W/m^2/MHz) on the surface of the Earth at the equatorial limb. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD	No. **S9.11** GSO/terrestrial	A space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services	620 - 790 MHz 1 452 - 1 492 MHz 2 310 - 2 360 MHz 2 520 - 2 655 MHz 2 655 - 2 670 MHz 12.5 - 12.75 GHz (R3) 17.7 - 17.8 GHz (R2) 21.4 - 22 GHz (R1, R3) 40.5 - 42.5 GHz 84 - 86 GHz	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.12** 1) Non-GSO/ Non-GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.12** 2) Non-GSO/GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using the geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	

(MOD)	No. **S9.13** GSO/Non-GSO	A station in a satellite network using the geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.14** Non-GSO/terrestrial, GSO/terrestrial	For a space station in a satellite network in the frequency bands for which a footnote refers to No. **S9.11A** in respect of stations of terrestrial services where threshold(s) is (are) exceeded	See Table S5-2	See **Section 1 of Annex 1**	See **Section 1 of Annex 1**	
(MOD)	No. **S9.15** Non-GSO/terrestrial	A specific earth station or a typical earth station in respect of terrestrial stations in frequency bands for which a footnote refers to No. **S9.11A** allocated with equal rights to space and terrestrial services, where the coordination area of the earth station includes the territory of another country	See Table S5-2	The coordination area of the earth station covers the territory of another administration	See Section 2 of Annex 1	

MOD	No. **S9.16** terrestrial/ non-GSO	A transmitting station of a terrestrial service within the coordination area of an earth station in a non-geostationary-satellite network in frequency bands for which a footnote refers to No. **S9.11A**	See Table S5-2	Transmitting terrestrial station is situated within the coordination area of a receiving earth station	See Section 2 of Annex 1	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.15**
MOD	No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services in respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country with the exception of the coordination under No. **S9.15**	Any frequency band allocated to a space service, except those mentioned in the Plans of Appendix **S30A**	The coordination area of the earth station covers the territory of another administration	Appendix **S7** (For earth stations in the radiodetermination-satellite service (RDSS) in the bands 1 610 - 1 626.5, 2 483.5 - 2 500 and 2 500 - 2 516.5 MHz, see Remarks column) 1) The coordination area of aircraft earth stations is determined by increasing the service area by 1 000 km with respect to the aeronautical mobile service (terrestrial) or 500 km with respect to terrestrial services other than the aeronautical mobile service.	NOTE - For RDSS earth stations, a uniform coordination distance of 400 km corresponding to an airborne earth station shall be used. In cases where the earth stations are all ground-based, a coordination distance of 100 km shall be used.

No. **S9.17** GSO, non-GSO/ terrestrial (cont.)				2) For receiving earth stations in the meteorological-satellite service in frequency bands shared with the meteorological aids service, the coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above mean sea level, assuming 4/3 Earth radius.	Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD	No. **S9.17A** GSO, non-GSO/ GSO, non-GSO	A specific earth station in respect of other earth stations operating in the opposite direction of transmission in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station, with the exception of the frequency bands subject to the Plans in Appendix **S30A**	Any frequency band allocated to a space service	The coordination area of the earth station covers the territory of another administration or the earth station is located within the coordination area of an earth station	i) For bands in Table S5-2, see Section 2 of Annex 1 ii) See Recommendations ITU-R IS.847, IS.848 and IS.849	
MOD	No. **S9.18** terrestrial/GSO, non-GSO	Any transmitting station of a terrestrial service in the bands mentioned in No. **S9.17** within the coordination area of an earth station, in respect of this earth station with the exception of the coordination under Nos. **S9.16** and **S9.19**	Any frequency band allocated to a space service**.**	Transmitting terrestrial station is situated within the coordination area of a receiving earth station	See remarks	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.17**

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No. **S9.19** terrestrial/GSO	A transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the BSS, except where the service is subject to the Plans in Appendix **S30**	Bands listed in No. **S9.11**	i) Necessary bandwidths overlap; and ii) the pfd of the terrestrial station at the edge of the broadcasting-satellite service service area exceeds the permissible level	i) Check by using the assigned frequencies and bandwidths	

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RESOLUTION 27 (Rev.WRC-97)

REFERENCES TO ITU-R AND ITU-T RECOMMENDATIONS IN THE RADIO REGULATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the principles of incorporation by reference were adopted by the 1995 World Radiocommunication Conference and have been revised by this Conference (see Annex 1 to this Resolution);

b) that there are provisions of the Radio Regulations which employ mandatory incorporation by reference but fail to make explicit reference to the ITU-R or ITU-T Recommendations incorporated;

c) that the 1997 Conference Preparatory Meeting for this Conference urged administrations to give further consideration to the status of material incorporated by reference:

– using the initial assessment provided by the Bureau in the CPM Report and the set of principles given in Annex 1 to this Resolution;

– noting that mandatory references shall be explicit and use the appropriate regulatory language;

– taking into account the factors set out in Annex 2 to this Resolution;

d) that the Director of the Bureau has drawn up a list (see Annex 1 to the Report of the Conference Preparatory Meeting to this Conference) of the provisions of the Radio Regulations using incorporation by reference, which provides an initial assessment of the status of each reference and forms the basis for the work on appropriate referencing, examples of which are contained in Annex 3 to this Resolution;

e) that the Radiocommunication Bureau has drawn up a list, contained in Annex 4 to this Resolution, of the ITU-R Recommendations to which explicit reference is made in the Radio Regulations,

resolves

that ITU-R and ITU-T Recommendations incorporated or proposed for incorporation by reference in the provisions of the Radio Regulations be identified and examined at WRC-99, with a view to establishing the correct method of reference in accordance with the principles set out in Annex 1 to this Resolution and taking into account the factors listed in Annex 2 to this Resolution, in order to complete the simplification of the Radio Regulations in respect of incorporation by reference,

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instructs the Director of the Radiocommunication Bureau

to arrange for a review of the provisions of the Radio Regulations containing references to ITU-R or ITU-T Recommendations and propose suitable recommendations to the Conference Preparatory Meeting for inclusion in its report to WRC-99, using the list of provisions contained in Annex 3 to this Resolution together with the guidance contained in Annexes 1 and 2 to this Resolution, and taking into account the list of ITU-R Recommendations contained in Annex 4 to this Resolution,

urges administrations

to use the Report of the Conference Preparatory Meeting to WRC-99 in order to prepare their proposals on incorporation by reference to that Conference.

MOD

ANNEX 1 TO RESOLUTION 27 (Rev.WRC-97)

PRINCIPLES OF INCORPORATION BY REFERENCE

1. Where references are non-mandatory, it is not necessary to establish specific conditions in applying the texts quoted. In such cases, reference could, for example, be made to "the latest version" of a Recommendation.

2. Mandatory references to Resolutions or Recommendations of a world radiocommunication conference (WRC) are acceptable without restriction, since such texts will have been agreed by a WRC.

3. Where mandatory references are suggested, and the relevant texts are brief, the referenced material should be incorporated in the body of the Radio Regulations.

4. If, on a case-by-case basis, it is decided to incorporate material by reference on a mandatory basis, then the following provisions shall apply:

4.1 the referenced text shall have the same treaty status as the Regulations themselves;

4.2 the reference must be explicit, specifying the specific part of the text (if appropriate) and the version or issue number;

4.3 the referenced text must be adopted by the Plenary of a competent WRC, but should not be part of the Final Acts;

4.4 all texts incorporated by reference must be readily available, by being published in a separate volume;

4.5 if, between WRCs, a referenced text (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the original version until such time as a competent WRC agrees to incorporate the new version of the reference. The mechanism for considering such a step is given in Resolution **28 (WRC-95)**.

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ANNEX 2 TO RESOLUTION 27 (Rev.WRC-97)

FACTORS TO BE CONSIDERED FOR THE FURTHER APPLICATION OF INCORPORATION BY REFERENCE

In reviewing the provisions of the Radio Regulations employing references to other texts, administrations and study groups should address the following factors:

1) whether each reference is mandatory, i.e. incorporated by reference, or non-mandatory;

2) whether in existing non-mandatory references, or mandatory references which are determined to be of non-mandatory character, appropriate linking language is used, e.g. the words "should" or "may";

3) whether in existing mandatory references, or other types of reference which are determined to be of mandatory character, clear mandatory linking language is used, e.g. the word "shall";

4) whether the incorporated ITU-R or ITU-T Recommendation(s) are explicitly identified;

5) where referenced ITU-R or ITU-T Recommendations are not explicitly identified, determine which ones should be identified;

6) whether text incorporated from ITU-R or ITU-T Recommendations should be placed directly in the Radio Regulations instead of using incorporation by reference;

7) if the ITU-R or ITU-T Recommendation to be incorporated is, as a whole, unsuitable as treaty status text, whether to limit the reference to those portions of the ITU-R or ITU-T Recommendation which are of a suitable nature or to place the mandatory portion directly in the Radio Regulations.

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ANNEX 3 TO RESOLUTION 27 (Rev.WRC-97)

PROVISIONS OF THE RADIO REGULATIONS REFERRING TO ITU-R AND ITU-T RECOMMENDATIONS

A) Provisions of Articles of the Simplified Radio Regulations referring to ITU-R and ITU-T Recommendations

RR item	Remark
S5.199 S5.287 S5.288 S19.38 S19.48 S19.92 S47.26 S47.27 S47.28 S47.29 S50.9 S51.35 S51.41 S51.77 S52.25 S52.27 S52.31 S52.69 S52.159 S52.181 S52.195 S52.222.1 S52.224 S52.229 S52.231 S52.240 S55.1 S57.1	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
S1.14 S5.511A S52.23 S52.235[+]	The reference to an ITU-R Recommendation in this provision seems to be of a **mandatory** character and the referenced text is **explicitly** identified, but a **non-standard wording** is used in this respect. There is a need to **review** these provisions with a view to using a standard wording. [+] The application of this provision is not mandatory but, if used, the referenced procedures are.

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S3.2 S5.138 S5.458C S13.19 S21.1 S29.13 S32.5 S32.9.3 S32.21 S32.43 S32.64 S33.17 S33.37 S33.41 S34.1 S34.2 S51.25 S52.112 S58.1*	The incorporation by reference of an ITU-R Recommendation or an ITU-T Recommendation* in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and ensure that a standard method of reference is used.
S5.208A S5.503A S16.6 S21.2.2 S21.4.1 S29.12 S32.7 S51.71 S52.32 S52.63 S52.148 S52.152 S52.153 S52.234 S54.2[+] S56.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for **review**, unless administrations wish to consider changing the character of this provision. [+] Consider whether the application and use of the procedures referenced are mandatory.

S1.156 S3.4 S3.7 S3.14 S5.474 S9.50.1 S15.10 S15.12.1 S15.13.1 S16.1 S19.3 S19.23 S19.24 S19.112* S19.115* S19.126* S21.6.1 S21.12.1 S21.16.1 A.S22.1 S22.22.2 S22.26 S30.1 S56.7*	The reference to an ITU-R Recommendation or an ITU-T Recommendation* in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
S16.2 S19.83 S52.149 S52.188 S52.192 S52.213	The reference to an ITU-R Recommendation in this provision is of an **undefined** character, but the referenced text is **explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e. mandatory or non-mandatory).
S1.153 S1.167 S26.6	The reference to an ITU-R Recommendation in this provision is of an **undefined** character and the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e. mandatory or non-mandatory) and, if it becomes mandatory, to identify the referenced text explicitly.

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B) Parts of Appendices S1 to S18 to the Simplified Radio Regulations referring to ITU-R Recommendations and ITU-T Resolutions and Recommendations

RR/Ap. Item	Remark
• AP S4, Annex 2A, C.11, item d) • AP S5, Table S5-1, calculation method re No. S19.17A • AP S5, Annex 1, Tables 1-4	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
• AP S1, item 3 (3.2) • AP S5, Table S5-1, threshold/condition re No. S19.21 • AP S5, Table S5-1, calculation method re No. S19.21 • AP S13, RR 3259A • AP S16*, Sect. III, item 5	The reference to an ITU-R Recommendation or an ITU-T Resolution or Recommendation* in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and to ensure that a standard method of reference is used.
• AP S4, Annex 2A, C.8 • AP S5, Annex 1, paragraphs 1.2.1 and 1.2.3.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
AP S1, item 2 AP S2 AP S3, Table AP S3, item 12 AP S3, item 13 AP S11, Part B, (3.) AP S12, item 6) AP S13, RR 2937A AP S13, RR 3340	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.

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ADD

ANNEX 4 TO RESOLUTION 27 (Rev.WRC-97)

LIST OF ITU-R RECOMMENDATIONS REFERRED TO IN THE RADIO REGULATIONS[2]

Recommendation	Title	Status[1]	Document	RR provision No[3]
ITU-R M.257-3	Sequential Single Frequency selective-calling system for use in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 145	**S19.38**, S19.83, **S19.92**, **S52.222.1, S52.235**, S54.2, AP S13 (A5, para. 11)
ITU-R SF.356-4	Maximum allowable values of interference from line-of-sight radio-relay systems in a telephone channel of a system in the fixed-satellite service employing frequency modulation, when the same frequency bands are shared by both systems	NOC	1994 SF-series	AP S7, 2.3.1 Note 2
ITU-R SF.357-4	Maximum allowable values of interference in a telephone channel of an analogue angle-modulated radio-relay system sharing the same frequency bands as systems in the fixed-satellite service	**MOD**	Blue 4-9/BL/1	AP S7, 2.3.1 Note 2
ITU-R F.405-1	Pre-emphasis characteristics for FM radio-relay systems for television	NOC	1990 Series, Volume IX	AP S30 (An. 5, 3.1.1)

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1 Status as of date of the end of the 1997 Radiocommunication Assembly.

2 This list does not include ITU-R Recommendations referred to in WARC/WRC Resolutions and Recommendations.

3 The provisions indicated in bold make reference to the listed ITU-R Recommendation in a mandatory manner, i.e. incorporated by reference.

ITU-R TF.460-6	Standard-frequency and time-signal emissions	**MOD**	Document 7/1020	**S1.14**
ITU-R S.465-5	Reference earth-station radiation pattern for use in coordination and interference assessment in the frequency range from 2 to about 30 GHz	**MOD**	1994 S-series	AP S30 (An. 6, 2.1)
ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 60	S19.83, **S51.41**
ITU-R S.483-3	Maximum permissible level of interference in a television channel of a geostationary-satellite network in the fixed-satellite service employing frequency modulation, caused by other networks of this service	**MOD**	Blue - 4/BL/10	AP S30 (An. 6, 1.5, Note 5)
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	NOC	1995 M-series Fascicle, Part 3, p. 150	**S51.77**, S52.182, **S52.231, AP S13 (A2, para. 10 (1))**
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 72	**S52.27**, S56.2
ITU-R M.493-9	Digital selective calling system for use in the maritime mobile services	**MOD**	Document M/1009	S54.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**MOD**	1997 M-series Fascicle, p. 339 + Document 8/1010	**S51.35**, S52.148, S52.149, S52.152, S52.153, **S52.159**, S54.2
ITU-R M.625-3	Direct-printing telegraph equipment employing automatic identification in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 1	S19.83, **S51.41**

ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	NOC	1995 M-series Fascicle, Part 3, p. 143	S19.83, **S51.41**
ITU-R SF.675-3	Calculation of the maximum power density (averaged over 4 kHz) of an angle-modulated carrier	MOD	1994 SF-series	AP S4 (C8a, footnote)[4]
ITU-R M.690-1	Technical characteristics of emergency position-indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121.5 MHz and 243 MHz	NOC	1995 M-series Fascicle, Part 4, p. 1	**AP S13 (A5, paras 1b and 4.2),** AP S15 (Table S15.2, 121.5 MHz),
ITU-R SF.765	Intersection of radio-relay antenna beams with orbits used by space stations in the fixed-satellite service	NOC	1994 SF-series Fascicle	S21.22, S21.41, S29.12
ITU-R RA.769-1	Protection criteria used for radioastronomical measurements	**MOD**	1995 RA-series Fascicle, p. 5	S5.208A **S5.511A**, S29.12[5]
ITU-R M.821-1	Optional expansion of the digital selective calling system for the maritime mobile service	MOD	1997 series M, Part 3	S54.2
ITU-R M.825-2	Characteristics of a transponder system using DSC techniques for use with vessel traffic services and ship-to-ship identification	MOD	Document 8/1005	S54.2

[4] The reference in this provision is SF.675.

[5] The reference in these provisions is RA.769.

ITU-R IS.847-1	Determination of the coordination area of an earth station operating with a geostationary space station and using the same frequency band as a system in a terrestrial service	NOC	1994 IS-series Volume, p. 1	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**
ITU-R IS.848-1	Determination of the coordination area of a transmitting earth station using the same frequency band as receiving earth stations in bidirectionally allocated frequency bands	NOC	1994 IS-series Volume, p. 31	**AP S5 (Table S5.1)**
ITU-R IS.849-1	Determination of the coordination area for earth stations operating with non-geostationary spacecraft in bands shared with terrestrial services	NOC	1994 IS-series Volume, p. 40	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**
ITU-R SA.1071	Use of the 13.75 to 14.0 GHz band by the space science services and the fixed-satellite service	NOC	1994 SA-series	S5.503A
ITU-R SM.1135	SINPO and SINPFEMO codes	NOC	1995 SM-series Fascicle, p. 47	[ ]
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	NOC	1995 SM-series Fascicle, p. 50	AP S1 (paras 1 (2) and **2 (3.1)**)
ITU-R SM.1139	International monitoring system	NOC	1995 SM-series Fascicle, p. 58	S16.2, S16.6
ITU-R IS.1143	System specific methodology for coordination of NGSO space stations (space-to-Earth) operating in the MSS with the fixed service	NOC	1995 IS-series	AP S5 (An 1, paras. 1.2.1 and 1.2.3.2)
ITU-R M.1169	Hours of service of ship stations	NOC	1995 M-series Fascicle, Part 3, p. 157	**S47.26, S47.27, S47.28, S47.29, S50.9**

ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 162	S51.71, **S52.23, S52.25**, **S52.31**, S52.32, S52.63, **S52.69**, **S55.1**
ITU-R M.1171	Radiotelephony procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 169	S51.71, S52.192, **S52.195,** S52.213, **S52.224**, S52.234, **S52.240**, **S57.1, AP S13(A2, para. 14A, 1)**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 178	**S19.48**, S32.7, AP S13 (Part A1, para. 5)
ITU-R M.1173	Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz	NOC	1995 M-series Fascicle, Part 3, p. 211	**S52.181**, **S52.229**, **AP S17 (B, Sect. I (2) and I (6a,b))**
ITU-R M.1174	Characteristics of equipment used for on-board communications in the bands between 450 MHz	NOC	1995 M-series Fascicle, Part 3, p. 213	**S5.287, S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	NOC	1995 M-series Fascicle, Part 3, p. 215	**AP S13 (A5, para. 9)**
ITU-R M.1185-1	Method for determining coordination distance between ground based mobile earth stations and terrestrial stations operating in the 148.0 - 149.9 MHz band	**MOD**	Document 8/1019	**AP S5 (An. 1, 3.2, Table 1),** RS 46 (An. 2, Table 1)
ITU-R M.1187	A method for the calculation of the potentially affected region for a mobile-satellite service (MSS) network in the 1 - 3 GHz range using circular orbits	NOC	1995 M-series Fascicle, Part 5, p. 38	**AP S4 (C.11d)**

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RESOLUTION 33 (Rev.WRC-97)

BRINGING INTO USE OF SPACE STATIONS IN THE BROADCASTING-SATELLITE SERVICE, PRIOR TO THE ENTRY INTO FORCE OF AGREEMENTS AND ASSOCIATED PLANS FOR THE BROADCASTING-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that while Resolution **507** envisages plans for the broadcasting-satellite service, some administrations might nevertheless feel the need to bring stations in that service into use prior to such plans being established;

b) that administrations should, as far as possible, avoid a proliferation of space stations in the broadcasting-satellite service before such plans have been established;

c) that a space station in the broadcasting-satellite service may cause harmful interference to terrestrial stations operating in the same frequency band, even if the latter are outside the service area of the space station;

d) that the procedures specified in Articles **S9** to **S14** and Appendix **S5** of the Radio Regulations contain provisions for coordination between stations in the broadcasting-satellite service and terrestrial stations and between space systems in that service and space systems of other administrations;

resolves

1. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, the procedures of Sections A, B and C shall be applied for the coordination and notification of stations in the broadcasting-satellite service and coordination and notification of other services in respect of that service, until [DD.MM.YYYY - date of provisional application of the Simplified Radio Regulations as decided by WRC-97].

2. that, as from [DD.MM.YYYY - date of provision application of the Simplified Radio Regulations as decided by WRC-97], the procedures of Articles **S9** to **S14** shall be applied for the coordination and notification of stations in the broadcasting-satellite service and coordination and notification of other services in respect of that service, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force.

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NOC **Section A. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Terrestrial Stations**

NOC **Section B. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Space Systems of Other Administrations**

NOC **Section C. Notification, Examination and Recording in the Master Register of Assignments to Space Stations in the Broadcasting-Satellite Service Dealt With Under this Resolution**

SUP RESOLUTION 48 (WRC-95)

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RESOLUTION COM4-17 (WRC-97)

PUBLICATION OF THE WEEKLY CIRCULAR INCLUDING SPECIAL SECTIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the Weekly Circular and the Special Sections, as referred to in Articles **S9**, **S11** and **S12A** of the Radio Regulations, are currently published on paper, microfiche and diskette;

b) that the form, content and periodicity of this publication need to be reviewed in order to improve its usability;

c) that the IFL (International Frequency List) and the SRS (database of Space Radiocommunication Stations) are published every six months and the terrestrial plans are published on a yearly basis exclusively on CD-ROM;

d) that significant improvements have been made in recent times in terms of cost reduction and availability of CD-ROM and CD-ROM readers;

e) that large amounts of data may be more readily consulted if presented in an electronic format by using software;

f) that the introduction of new technologies requires adaptation and appropriate training from a user's point of view, especially for developing countries;

g) that information in electronic format could be used to fulfil administrations' database requirements,

further considering

h) that the ITU budget makes provision for the distribution of one free copy of the Weekly Circular and the Special Sections to each administration;

i) that the use of a CD-ROM format would significantly reduce the cost of publishing and distributing the Weekly Circular;

j) that the use of electronic format is important for many administrations,

resolves

1 that the publication of the Weekly Circular and the Special Sections on paper and microfiche, as well on diskette, be migrated to a CD-ROM format, having regard to "*resolves* 4" of this Resolution;

2 that this publication be fortnightly;

3 that tests should be conducted in cooperation with all administrations before introducing the CD-ROM publication replacing the Weekly Circular, including the Special Sections, published on paper, microfiche and diskette;

4 that, following the successful completion of these tests and for an introductory period of a minimum of three months ending 1 January 1999, both the paper, microfiche and diskette format and the CD-ROM format should be provided in parallel;

5 that the search software to be made available on the CD-ROM should be capable of easily identifying and extracting to file Parts I, II and III of the Weekly Circular, the associated Special Sections for terrestrial and space assignments, as well as plan assignments;

6 that administrations are encouraged to discontinue usage of paper, microfiche and diskette as soon as possible and to inform the Radiocommunication Bureau accordingly,

instructs the Director of the Radiocommunication Bureau

1 to initiate the introduction of a CD-ROM format for the publication of the Weekly Circular including the Special Sections;

2 to consult with all the administrations during the testing phase of the new system;

3 to provide an index of Parts I, II, III and the Special Sections printed on paper, for those administrations requesting it;

4 to include in radiocommunication seminars appropriate training in the use of the CD-ROM format;

5 to make the data also available on TIES by remote electronic access on a subscription basis;

6 to set a reasonable price for the provision of additional copies of the CD-ROM,

further instructs the Director of the Radiocommunication Bureau

7 to consider an alternative name, if appropriate, for the Weekly Circular;

8 to report to the next world radiocommunication conference on the experience gained in the introduction of the CD-ROM format, with a view to making any necessary consequential amendments to the Radio Regulations,

requests the Secretary-General

to consider the provision of suitable software and/or hardware for the least developed countries requesting it.

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ADD

RESOLUTION COM4-18 (WRC-97)

PROVISIONAL APPLICATION OF CERTAIN PROVISIONS OF THE RADIO REGULATIONS AS MODIFIED BY WRC-97 AND TRANSITIONAL ARRANGEMENTS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that as a result of the review under Resolution **18** (Kyoto, 1994), a number of provisions relating to the advance publication, coordination and notification of assignments for satellite networks have been modified and these should be applied provisionally as soon as possible;

b) that it was decided to reduce the regulatory time-frame for bringing a satellite network into use, and to delete the advance publication information (API) if not followed by the coordination data within 24 months of the date of receipt of the API;

c) that there are a number of satellite networks for which the relevant information has been communicated to ITU prior to the end of this Conference, and it is necessary to provide for some transitional measures for the treatment of this information by the Bureau;

d) that this Conference has modified some of the technical criteria relating to coordination under Resolution **46 (Rev.WRC-97)** and it is necessary to provide for some transitional measures,

resolves

1 that the provisions of Sections I, IA and IB of Article **S9** and provisions of Article **S11** (Nos. [**S11.43A**, **S11.44**, **S11.44B** to **S11.44I, S11.47** and **S11.48**]), as revised by WRC-97, shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis as of [22 November 1997];

2 that, for satellite networks which are subject to coordination for which the API has been received by the Bureau prior to [22 November 1997] but the coordination data has not been received by the Bureau prior to this date, the responsible administration shall have until [22 November 1999] or the end of the period pursuant to the application of No. **1056A** of the Radio Regulations, whichever date comes earlier, to submit the coordination data in accordance with the applicable provisions of the Radio Regulations; otherwise the Bureau shall cancel the relevant API in accordance with No. **1056A** or No. [**S9.5D**] as applicable;

3 that, for satellite networks for which the API has been received by the Bureau prior to [22 November 1997], the maximum allowed time period from the date of receipt of the API to bring the relevant frequency assignments into use shall be six years plus the extension pursuant to No. **1550** [and Resolution [**GTPLEN2-1**], if applicable, whichever date comes earlier];

4 that the revised Appendix **S4** with respect to the API for satellite networks which are subject to coordination under Section II of Article **S9** shall be applied as of [22 November 1997];

5 that, for those networks which are subject to coordination for which the API has been received but not yet published prior to [22 November 1997], the Bureau shall publish only the information of the revised Appendix **S4** as modified by WRC-97;

[6 that, since this Conference has modified Appendix **S5**, as it relates to Resolution **46**, the relevant provisions of Appendix **S5** shall be used as of [22 November 1997] in lieu of the same provisions in Annex 2 to Resolution **46 (Rev.WRC-97)**.]

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RESOLUTION COM4-19 (WRC-97)

PROVISIONAL APPLICATION OF Nos. S11.24 AND S11.26 OF THE RADIO REGULATIONS ADOPTED BY WRC-97 WITH REGARD TO HIGH ALTITUDE PLATFORM STATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has made provision for the operation of high altitude platform stations within the fixed service in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz;

b) that the Radio Regulations Board issued a provisional rule of procedure concerning notification periods in No. **S11.24** (RR **1228**) in February 1997, pending a final decision by WRC-97;

c) that WRC-97 modified No. **S11.24** and added No. **S11.26** of the Radio Regulations to the effect that notices relating to assignments for high altitude platform stations in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz "shall reach the Bureau not earlier than five years before the assignments are bought into use";

d) that Resolution **[COM5-7] (WRC-97)** gives the Bureau instructions concerning the treatment of notices for high altitude platform stations as from 22 November 1997,

resolves

that the provisions of Article **S11** (Nos. **S11.24** and **S11.26**) shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis from 22 November 1997.

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Proposed action with regard to WARC/WRC Resolutions and Recommendations

Res. *	Subject	Action
8	Transfer procedures/changes in HF-FX	NOC
500	New carrier for LFBC in R1	NOC
508	WRC for HFBC	SUP
511	Planning system for HFBC	SUP
512	HF transmitters in bands governed by RR 531	SUP
513	Harmful interference in HFBC bands	SUP
514	Technical standards for HFBC	SUP
515	HFBC Planning System/consultation procedure	SUP
516	Antennas in HFBC	SUP
523	Planning for HFBC	SUP
529	HFBC	SUP
530	Application of AR17	SUP
641	Use of the band 7 000 - 7 100 kHz	NOC

Rec. *	Subject	Action
509	Experts in HFBC	SUP
510	Planning parameters for HFBC	SUP
512	Propagation prediction method for HFBC	SUP
513	National coverage in HFBC	SUP
514	Propagation prediction method for HFBC	SUP
516	Synchronized transmitters in HFBC	SUP
517	SSB PR in HFBC	NOC
518	HFBC receivers	NOC
519	Introduction of SSB	NOC
520	Elimination of out-of-band HFBC emissions	NOC

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 355-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

TENTH SERIES OF TEXTS FROM COMMITTEE 4 TO THE EDITORIAL COMMITTEE

At its thirteenth meeting (18 November 1997), Committee 4 approved Article 9A of Appendix 30A and Article 11 of Appendix 30.

These texts are submitted to Committee 6 for consideration and for subsequent transmittal to the Plenary Meeting.

E. GEORGE

Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 356-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

FIFTEENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5 TO THE EDITORIAL COMMITTEE

Committee 5 has continued its consideration of allocation issues relating to NGSO FSS systems in bands above 10.7 GHz. As a result of these deliberations, it has adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

V. RAWAT
Chairman of Committee 5

Annex: 1

ARTICLE S5

MOD **S5.441** The use of the bands 4 500 - 4 800 MHz (space-to-Earth), 6 725 - 7 025 MHz (Earth-to-space)~~,~~ by the fixed-satellite service shall be in accordance with the provisions of Appendix **S30B**. The use of the bands 10.7 - 10.95 GHz (space-to-Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by GSO satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix **S30B**. The use of the bands 10.7 - 10.95 GHz (space-to-Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by NGSO satellite systems in the fixed-satellite service shall be in accordance with the provisions of Resolution [**COM5-18**].

ADD **S5.441A*** The use of the bands 10.95 - 11.2 GHz (space-to-Earth), 11.45 - 11.7 GHz (space-to-Earth), 11.7 - 12.2 GHz (space-to-Earth) in Region 2, 12.2 - 12.75 GHz (space-to-Earth) in Region 3, 12.5 - 12.75 GHz (space-to-Earth) in Region 1, 13.75 - 14.5 GHz (Earth-to-space), 17.8 - 18.6 GHz (space-to-Earth), 19.7 - 20.2 GHz (space-to-Earth), 27.5 - 28.6 GHz (Earth-to-space), 29.5 - 30 GHz (Earth-to-space) by NGSO and GSO satellite systems in the fixed-satellite service is subject to the provisions of Resolution [**COM5-18**]. The use of the band 17.8 - 18.1 GHz (space-to-Earth) by NGSO FSS systems is also subject to the provisions of Resolution [**COM5-19**].

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* NOTE - Footnote S5.441A shall be placed in all boxes in the table in Article S5 referring to frequency bands in that note.

MOD

GHz
10.7 – 12.7

<table>
<tr><td colspan="3">Allocation to Services</td></tr>
<tr><td>Region 1</td><td>Region 2</td><td>Region 3</td></tr>
<tr><td rowspan="3">11.7 – 12.5
FIXED
BROADCASTING
BROADCASTING-SATELLITE
Mobile except aeronautical mobile</td><td>11.7 – 12.1
FIXED S5.486
FIXED-SATELLITE (space-to-Earth)
Mobile except aeronautical mobile
S5.485 S5.488</td><td rowspan="2">11.7 – 12.2
FIXED
MOBILE except aeronautical mobile
BROADCASTING
BROADCASTING-SATELLITE</td></tr>
<tr><td>12.1 – 12.2
FIXED-SATELLITE (space-to-Earth)
S5.485 S5.488 S5.489</td></tr>
<tr><td>12.2 – 12.7
FIXED
MOBILE except aeronautical mobile
BROADCASTING
BROADCASTING-SATELLITE
S5.487 S5.487A</td><td>12.2 – 12.5
FIXED
MOBILE except aeronautical mobile
BROADCASTING
S5.487 S5.491</td></tr>
<tr><td></td><td>S5.488 S5.490 S5.492 S5.487A</td><td></td></tr>
</table>

MOD S5.516 The use of the band 17.3 - 18.1 GHz by GSO satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. For the use of the band 17.3 - 17.8 GHz in Region 2 by the feeder links for the broadcasting-satellite service in the band 12.2 - 12.7 GHz, see Article **S11**. The use of the bands 17.3 - 18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8 - 18.1 GHz (Earth-to-space) in Region 2 by NGSO satellite systems in the fixed-satellite service is subject to the provisions of Resolution [**COM5-19**].

ADD **S5.487A** *Additional allocation:* in Region 1, the band 11.7 - 12.5 GHz, in Region 2, the band 12.2 - 12.7 GHz and in Region 3 the band 11.7 - 12.2 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-geostationary-satellite systems and subject to the provisions of Resolution [**COM5-19**].

MOD

GHz
18.6 – 20.2

Allocation to Services		
Region 1	Region 2	Region 3
18.8 – 19.3	FIXED FIXED-SATELLITE (space-to-Earth) MOD S5.523A MOBILE	

MOD

GHz
27 – 29.9

Allocation to Services		
Region 1	Region 2	Region 3
28.5 – 29.1	FIXED FIXED-SATELLITE (Earth-to-space) MOD S5.523A S5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) S5.541 S5.540	

MOD **S5.523A** ~~The use of the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz by the FSS shall be in accordance with Resolution **118 (WRC-95).**~~The use of the bands 18.8 - 19.3 GHz (space-to-Earth) and 28.6 - 29.1 GHz (Earth-to-space) by geostationary and non-geostationary fixed-satellite service networks is subject to the application of the provisions of No. **S9.11A**/Resolution **46 (Rev.WRC-95)** and No. **S22.2** [**2613**] does not apply. Administrations having geostationary networks under coordination prior to 18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. **S9.11A**/Resolution **46** (**Rev.WRC-95**) with non-geostationary networks that have been received by the Bureau prior to that date for notification with a view to reaching results acceptable to all the parties concerned.
Non-geostationary networks shall not cause unacceptable interference to geostationary fixed-satellite service networks for which complete Appendix **3** notification information is considered as having been received by the Bureau prior to 18 November 1995.

ARTICLE S22

Section II. Control of Interference to Geostationary-Satellite Systems

MOD **S22.2** § 2. (1) Non-geostationary ~~space stations~~ satellite systems shall ~~cease or reduce to a negligible level their emissions, and their associated earth stations shall not transmit to them, whenever there is~~ not cause unacceptable interference to geostationary-satellite ~~space~~ systems in the fixed-satellite service and the broadcasting-satellite service operating in accordance with these Regulations.

ADD **S22.5A1** In the frequency band 17.8 - 18.1 GHz, the maximum aggregate power flux-density produced at the geostationary-satellite orbit by all the space stations in a non-geostationary-satellite system in the fixed-satellite service shall not exceed the values given in Table **S22-2**.

ADD **S22.5B** § 6. (1) The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary orbit, produced by emissions from all the space stations of a non-geostationary system operating in the following frequency bands in the fixed-satellite service, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-1** for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth as specified in Table **S22-1**, for all pointing directions towards the geostationary orbit.

ADD **S22.5B.1** [1] The equivalent power flux-density is defined as the sum of the power flux-densities produced at a point of the Earth's surface by all space stations within a non-geostationary system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing towards the geostationary orbit. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{\max}}\right]$$

where:

– N_s is the number of non-geostationary space stations visible from the point considered at the Earth's surface, within an elevation angle greater or equal to 0°;

– i is the index of the considered non-geostationary space station;

– pfd_i is the power flux-density produced at the point considered at the Earth's surface in dB(W/m^2) in the reference bandwidth;

– φ_i is the angle between the direction considered towards the geostationary orbit and the direction of the interfering space station in the non-geostationary system;

– $G_r(q_i)$ is the gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary network;

– G_{max} is the maximum gain (as a ratio) of the above receive reference antenna;

– *epfd* is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

NOTE - Tables S22-1 through S22-4 and provisions Nos. S22.26 through S22.29 contain provisional limits corresponding to an interference level caused by one NGSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

ADD TABLE **S22-1**

Frequency band allocated to the BSS	**Antenna diameter (cm)**	**Equivalent pfd level (dB(W/m^2/4kHz)) which may not be exceeded during the percentage of time shown**		**Reference antenna radiation pattern**
		99.7%	**100%**	
11.7 - 12.5 GHz in Region 1, 11.7 - 12.2 GHz and 12.5 - 12.75 GHz in Region 3	30 60 90	-172.3 -183.3 -186.8	-169.3 -170.3 -170.3	Recommendation ITU-R BO.1213
12.2 - 12.7 GHz in Region 2	45 100 120 180	-174.3 -186.3 -187.9 -191.4	-165.3 -170.3 -170.3 -170.3	Section 3.7.2 of Annex 5 of Appendix **30**
17.3 - 17.8 GHz in Region 2	For further study[1)]			

[1)] The interference from NGSO FSS systems into GSO BSS systems operating in the frequency bands 17.3 - 17.8 GHz relates to the two following sharing situations:

- NGSO FSS transmit earth station into GSO receive earth station;
- GSO BSS transmit space station into NGSO FSS receive space stations.

Both situations need to be studied, in particular since coexistence of receive BSS earth stations and large numbers of transmit NGSO FSS terminals would not be feasible within the same country.

ADD S22.5C (2) The aggregate power flux-density[1] produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary system in the fixed-satellite service, for all conditions and

for all methods of modulation, shall not exceed the limits given in Table **S22-2** for the specified percentages of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in this table.

ADD S22.5C.1 [1] The aggregate power flux-density is defined as the summation of the power flux-densities produced at a point in the geostationary-satellite orbit by all the earth stations of a non-geostationary system. The aggregate power flux-density is computed by means of the following formula:

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_e} 10^{P_i(t)/10} \cdot \frac{G_t(\theta_i)}{4 \cdot \pi \cdot {d_i}^2}\right]$$

where:

– N_e is the number of earth stations in the non-geostationary system with an elevation angle greater or equal to 0°, from which the point considered in the geostationary orbit is visible;

– i is the index of the earth station considered in the non-geostationary system;

– P_i is the RF power at the input of the transmitting antenna of the earth station considered in the non-geostationary system in dBW in the reference bandwidth;

– $\theta_i(t)$ is the off-axis angle between the boresight of the earth station considered in the non-geostationary system and the direction of the point considered in the geostationary-satellite orbit;

– $G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the earth station considered in the non-geostationary system in the direction of the point considered in the geostationary-satellite orbit;

– d_i is the distance in metres between the earth station considered in the non-geostationary system and the point considered in the geostationary-satellite orbit;

– $apfd$ is the aggregate power flux-density in dB(W/m^2) in the reference bandwidth.

NOTE - Tables S22-1 through S22-4 and RR S22.26 through S22.29 contain provisional limits corresponding to an interference level caused by one NGSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

ADD

TABLE **S22-2**

Frequency band	**Aggregate pfd dB(W/m²/4 kHz)**	**Percentage of time during which pfd level may not be exceeded**
17.3 - 18.1 GHz in Regions 1 and 3 and 17.8 - 18.1 GHz in Region 2	-163	100%

ADD S22.5D (3) The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary-satellite orbit, produced by emissions from all the space stations of a non-geostationary system operating in the following frequency bands in the fixed-satellite service, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-3** for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions into all the reference antennas and in the reference bandwidths specified in this table, and for all pointing directions towards the geostationary orbit.

NOTE - Tables S22-1 through S22-4 and RR S22.26 through S22.29 contain provisional limits corresponding to an interference level caused by one NGSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

ADD

PART (A) OF TABLE **S22-3**

Frequency band	**Equivalent pfd dB(W/m²)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern**
10.7 - 11.7 GHz	-179	99.7	4	60 cm, ITU-R Rec. 465-5
11.7 - 12.2 GHz in Region 2	-192	99.9	4	3 m, ITU-R Rec. 465-5
	-186	99.97	4	3 m, ITU-R Rec. 465-5
12.2 - 12.5 GHz in Region 3	-195	99.97	4	10 m, ITU-R Rec. 465-5
	-170	99.999	4	60 cm, ITU-R Rec. 465-5
12.5 - 12.75 GHz in Regions 1 and 3	-173	99.999	4	3 m, ITU-R Rec. 465-5
	-178	99.999	4	10 m, ITU-R Rec. 465-5
	-170	100	4	≥60 cm, ITU-R Rec. 465-5

PART (B) OF TABLE **S22-3**

Frequency band (GHz)	**Equivalent pfd dB(W/m²)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern**
17.8 - 18.6	-165 -151	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-165 -151	99.0	40 1000	70 cm, ITU-R Rec. 465-5
	-165 -151	99.5	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	1.5 m, ITU-R Rec. 465-5
	-180 -166	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-184 -170	99.9	40 1000	7.5 m, ITU-R Rec. 465-5
	-188 -174	99.9	40 1000	12 m, ITU-R Rec. 465-5
	-165 -151	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5
19.7 - 20.2	-154 -140	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-164 -150	99.9	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	2 m, ITU-R Rec. 465-5
	-174 -160	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-154 -140	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5

ADD **S22.5E** (2) The aggregate power flux-density[1] produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary FSS system for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-4** for any percentage of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in this table.

NOTE - Tables S22-1 through S22-4 and RR S22.26 through S22.29 contain provisional limits corresponding to an interference level caused by one NGSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

ADD

PART (A) OF TABLE **S22-4**

Frequency band (GHz)	**Aggregate pfd dB(W/m²)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
12.5 - 12.75	-170	100	4
12.75 - 13.25	-186	100	4
13.75 - 14.5	-170	100	4

PART (B) OF TABLE **S22-4**

Frequency band (GHz)	**Aggregate pfd dB(W/m²)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
27.5 - 28.6 GHz	-159	100	40
29.5 - 30 GHz	-145		1000

ADD **S22.5F** The limits given in Tables **S22-1** and **S22-3** may be exceeded on the territory of any country whose administration has so agreed.

Section VI. Earth Station Off-Axis Power Limitations in the Fixed-Satellite Service[1]

MOD **S22.26** § 9. The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station ~~at angles in the direction of the geostationary-~~

[1] The provisions of this section are suspended pending the review of the values in S22.26, S22.27 and S22.28 by WRC-99.

~~satellite orbit off the main-beam axis has a significant impact on interference caused to other geostationary-satellite networks. Enhanced utilization of the geostationary-satellite orbit and easier coordination would be attained by minimizing such off-axis radiation and administrations are encouraged to achieve the lowest values practicable bearing in mind the latest ITU-R Recommendations. Minimizing such levels is particularly important in intensively used up-link bands~~shall not exceed the following values for any off-axis angle φ, which is 2.5° or more off the main lobe axis of an earth station antenna:

Angle off-axis	*Maximum e.i.r.p. per 40 kHz*
2.5° ≤ φ ≤ 7°	(39 - 25 log φ) dB(W/40 kHz)
7° < φ ≤ 9.2°	18 dB(W/40 kHz)
9.2° < φ ≤ 48°	(42 - 25 log φ) dB(W/40 kHz)
48° < φ ≤ 180°	0 dB(W/40 kHz)

ADD S22.27 For FM-TV emissions with energy dispersal, the limits in **S22.26** above may be exceeded by up to 3 dB provided the off-axis total e.i.r.p. of the transmitted FM-TV carrier does not exceed the following values:

Angle off-axis	*Maximum e.i.r.p.*
2.5° ≤ φ ≤ 7°	(53 - 25 log φ) dBW
7° < φ ≤ 9.2°	32 dBW
9.2° < φ ≤ 48°	(56 - 25 log φ) dBW
48° < φ ≤ 180°	14 dBW

ADD S22.28 For FM-TV carriers which operate without energy dispersal, such carriers should be modulated at all times with programme material or appropriate test patterns. In this case, the off-axis total e.i.r.p. of the emitted FM-TV carrier shall not exceed the following values:

Angle off-axis	*Maximum e.i.r.p.*
2.5° ≤ φ ≤ 7°	(53 - 25 log φ) dBW
7° < φ ≤ 9.2°	32 dBW
9.2° < φ ≤ 48°	(56 - 25 log φ) dBW
48° < φ ≤ 180°	14 dBW

ADD S22.29 The e.i.r.p. limits given in **S22.26**, **S22.27** and **S22.28** are applicable in the following frequency bands allocated to the fixed-satellite service (Earth-to-space):

12.75 - 13.25 GHz

13.75 - 14 GHz

14 - 14.5 GHz

DRAFT RESOLUTION [COM5-18]

USE OF NON-GEOSTATIONARY SYSTEMS IN THE FIXED-SATELLITE SERVICE IN CERTAIN FREQUENCY BANDS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the International Telecommunication Union has, among its purposes, "to promote the extension of the benefit of the new telecommunication technologies to all the world's inhabitants" (No. **6** of the Constitution of the International Telecommunication Union (Geneva, 1992));

b) that it is desirable, in this respect, to promote systems capable of providing a universal service;

c) that new telecommunication services need advanced and reliable networks permitting high-capacity communications;

d) the need to encourage the development and implementation of new technologies;

e) that systems based on the use of new technologies associated with both geostationary (GSO) and non-geostationary (NGSO) satellite constellations are capable of providing the most isolated regions of the world with high-capacity and low-cost means of communication;

f) that there should be equitable access to the radio-frequency spectrum and orbital resources in a mutually acceptable manner that allows for new entrants in the provision of services;

g) that all Members of the Union would benefit from the implementation of proponent systems in the allocated spectrum, and the avoidance of monopolization or exclusive use of an allocation by a single system;

h) that the operation of such systems requires a suitable amount of spectrum in appropriate frequency bands;

i) that decisions on this matter should permit as many systems as possible to be operated;

j) that in spite of the urgency attached to the development of such systems, technical, operational and regulatory issues should be studied in order to achieve the most efficient use of the spectrum that may be available for these systems;

k) that there is a need for the provision of services on a competitive basis between GSO/FSS and NGSO/FSS as well as between NGSO/FSS and NGSO/FSS;

l) that the Radio Regulations must be sufficiently flexible to accommodate the introduction and implementation of innovative technologies as they evolve, and allow the further development and implementation of any proposed system in conformity with their provisions,

considering further

a) that further technical, operational and regulatory studies are required in order to further determine the conditions under which sharing of the frequency bands 10 - 30 GHz which are allocated to the FSS and where Resolution **46** does not apply is feasible between GSO and NGSO systems, between NGSO systems and between NGSO and terrestrial systems;

b) that it is likely that NGSO/FSS systems communicated to the Radiocommunication Bureau will not be brought into use before the 1999 World Radiocommunication Conference (WRC-99);

c) that the diverging interpretations arising from No. **S22.2** result in an ambiguous regulatory status for both existing and future GSO and NGSO systems in the fixed-satellite service (FSS) in the bands where this provision applies, with consequential risks for both types of systems;

d) that the harmonious development of NGSO and GSO systems in the FSS requires that these ambiguities be resolved with no further delay;

e) that in resolving these ambiguities in the bands referred to in *resolves* 1 below, the GSO arc must be protected to ensure continued use of existing FSS systems and the development of new GSO technologies and systems in both unplanned bands and bands where plans exist;

f) that these ambiguities may be resolved in certain frequency bands by adopting power flux-density (pfd) limits which would apply to NGSO FSS systems to protect GSO FSS systems, and by including in Article **S22** limits to the power radiated by NGSO FSS systems in order to adequately protect GSO FSS systems in the frequency bands and sharing situations where Resolution **46** does not apply;

g) that in certain frequency bands which are currently used or planned to be used extensively by GSO FSS systems, provisional power flux-density limits applicable to NGSO FSS systems have been developed;

h) that NGSO FSS systems have been proposed in some of these bands which could meet these limits and would not require specific protection from existing and future GSO FSS, provided minimum constraints are applied to GSO FSS systems, such as off-axis earth station e.i.r.p. limits;

i) that in the bands where the limits referred to in *considering further* f), g) and h) would apply, there would be no need for a coordination procedure between NGSO/FSS and GSO systems with the exception of coordination between earth stations operating in opposite directions of transmissions;

j) that there would be a need for a coordination procedure between NGSO systems within the FSS and between NGSO FSS systems and NGSO systems in other services and for specific sharing criteria associated with this procedure, taking into consideration various types of NGSO systems, including those in highly elliptical orbits;

k) the need to protect other co-primary services allocated in the frequency bands referred to in *considering further* a) above and the need to further assess the sharing conditions between NGSO FSS systems and these services;

l) further studies on sharing conditions in frequency bands other than the 10 - 30 GHz frequency bands, where Resolution **46** does not apply, may be also be necessary on the basis of the requirements that may develop,

noting

1 that information relating to GSO and NGSO systems in the FSS in the 10 - 30 GHz bands has been communicated to the Radiocommunication Bureau;

2 that some of these systems are in operation and others will be operated in the near future and, consequently, difficulties may be experienced in modifying their characteristics;

3 the need to protect existing and future terrestrial and space services and systems;

4 that **S22.2** is an operational provision which is to be applied between administrations, and does not require any specific action or finding by the Bureau,

recognizing

that the geostationary-satellite orbit and its associated spectrum are a uniquely valuable resource and that equitable access to this resource needs to be protected for all countries in the world,

resolves

1 that, as of 22 November 1997, in the frequency bands specified in Tables **S22-3** and **S22-4**, and in Tables 1 and 2 in Annex 1 to this Resolution, NGSO/FSS systems shall apply the procedures of Sections I and III of Article 11/Section I of Article **S9**, **S9.17** and **S9.17A**, and the procedures of Article **13/S11** and the NGSO/FSS systems for which complete notification information has been received by the Radiocommunication Bureau after 21 November 1997 shall be subject to the provisional power limits appearing in Article **S22** and in Annex 1 to this Resolution;

2 that these limits shall be applied provisionally until the end of the WRC-99 Conference, and that non-geostationary systems in the fixed-satellite service for which complete notification information has been received by the Radiocommunication Bureau after 21 November 1997 shall be subject to the power limits appearing in Article **S22**, as revised if appropriate by WRC-99;

3 that, as of 22 November 1997, in applying No. **S22.2,** administrations may consider these provisional power limits as corresponding to permissible levels of interference from a NGSO system into a GSO system, irrespective of the dates of receipt by the Bureau of the complete notification information relating to the NGSO system and of the complete coordination information of the GSO network;

4 that, as of the end of WRC-99, an administration operating a NGSO FSS system which is in compliance with the limits appearing in Article **S22**, as revised if appropriate, by WRC-99, shall be considered as having fulfilled its obligations under **S22.2** with respect to any GSO network, irrespective of the dates of receipt by the Bureau of the complete notification information relating to the NGSO system and of the complete coordination information of the GSO network;

5 that, as of [the end of WRC-99], in the frequency bands specified in **S22.29** and Section 2.4 of Annex 1 to this Resolution, GSO FSS systems for which complete coordination information has been received by the Bureau after [the end of WRC-99] shall be subject to the limits appearing in Article **S22** and Sections 2.1, 2.2 and 2.3 of Annex 1 to this Resolution as revised, as appropriate, by [WRC-99];

6 that, as of 22 November 1997, in the frequency bands specified in **S22.29** and Tables 1 and 2 of Annex 1 to this Resolution, NGSO systems shall not claim protection from GSO networks operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete notification information relating to these NGSO systems and of the complete coordination information of the GSO networks;

6*bis* that between 22 November 1997 and the [end of WRC-99], if an administration operating or bringing into use a GSO FSS system before the [end of WRC-99] considers that the NGSO FSS system proposed by another administration might cause unacceptable interference into its GSO system, then:

6bis.1 the administration having the GSO system shall send to the administration having the NGSO FSS system, the technical details upon which its disagreement is based,

6bis.2 in the bands from 10.7 - 14.5 GHz, the administration having the NGSO FSS system shall resolve the difficulties,

6*bis*.3 in the frequency bands 17.8 - 18.6 GHz (space-to-Earth), 19.7 - 20.2 GHz (space-to-Earth), 27.5 - 28.6 GHz (Earth-to-space) and 29.5 - 30.0 GHz (Earth-to-space), the administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

7 that, if an administration bringing into use a GSO FSS system after the [end of WRC-99] considers that the NGSO FSS system proposed by another administration and which complies with the limits appearing in Article **S22**, as revised if appropriate by WRC-99, might cause unacceptable interference into its GSO system, the administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

8 that, as of 22 November 1997, NGSO systems in the FSS in the frequency bands referred to in *resolves* 1 above, shall, for coordination with other NGSO/FSS systems, be subject to the application of the provisions of paragraph 2.1 of Section II of Resolution **46 (WRC-95)**/No. **S9.12**,

requests ITU-R

1[1] taking into account *considering further* a), to conduct, as a matter of urgency and complete, in time for consideration by [WRC-99]:

a) the appropriate technical, operational and regulatory studies to review the regulatory conditions relating to the coexistence among NGSO and GSO systems in the FSS in order to ensure that they do not pose undue constraints on the development of NGSO and GSO FSS systems;

b) the development of a methodology for calculating the power levels produced by NGSO FSS systems and the compliance of these levels with the limits referred to in *resolves* 1 and 2 above;

c) the studies relating to the sharing criteria to be applied for determining the need for coordination between NGSO FSS systems on the one hand and NGSO systems in the FSS and in other space services and terrestrial services on the other hand, with a view to promote efficient use of spectrum/orbit resources and equitable access to these resources by all countries;

2[1] taking into account *considering further* l), to undertake the development of power limits or other frequency sharing mechanisms among GSO, NGSO and terrestrial systems in the frequency bands other than those referred to in *resolves* 1 above and where NGSO FSS systems are likely to be implemented and GSO systems are used or expected to be used extensively,

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[1] See Annex 2 for further details concerning specific aspects of these studies in relation to frequency sharing between NGSO FSS and GSO FSS.

instructs the Radiocommunication Bureau

as of the end of WRC-99, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22**, of a NGSO FSS system for which notification information has been received between 22 November 1997 and the end of WRC-99. This review shall be based on the values appearing in Article **S22**, as revised if appropriate by WRC-99.

ANNEX 1 TO DRAFT RESOLUTION [COM5-18]

PROVISIONAL LIMITS

Section I. Control of Interference to Geostationary-Satellite Systems

1.1 The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary, produced by emissions from all the space stations of a non-geostationary system operating in the following frequency bands in the fixed-satellite service, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table 1 for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions into all the reference antennas and in the reference bandwidths specified in this table, and for all pointing directions towards the geostationary orbit.

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[1] The equivalent power flux-density is defined as the sum of the power flux-densities produced at a point of the Earth's surface by all space stations within a non-geostationary system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing towards the geostationary orbit. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{\max}}\right]$$

where:

- N_s is the number of non-geostationary space stations visible from the point considered at the Earth's surface, within an elevation angle greater or equal to 0°;
- i is the index of the considered non-geostationary space station;
- pfd_i is the power flux-density produced at the point considered at the Earth's surface in dB(W/m^2) in the reference bandwidth;
- θ_i is the angle between the direction considered towards the geostationary orbit and the direction of the interfering space station in the non-geostationary system;
- $G_r(\theta_i)$ is the gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary network;
- G_{max} is the maximum gain (as a ratio) of the above receive reference antenna;
- *epfd* is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

NOTE - Tables 1 and 2 contain provisional limits corresponding to an interference level caused by one NGSO FSS system in the frequency bands to be applied in accordance with Resolution [COM5-18]. These provisional limits are subject to review by ITU-R and shall be confirmed by WRC-99.

TABLE 1 (PART A)

Frequency band (GHz)	**Equivalent pfd dB(W/m^2)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**
10.7 - 11.7	-179	99.7	4	60 cm, ITU-R Rec. 465-5
11.7 - 12.2 in Region 2	-192	99.9	4	3 m, ITU-R Rec. 465-5
	-186	99.97	4	3 m, ITU-R Rec. 465-5
12.2 - 12.5 in Region 3	-195	99.97	4	10 m, ITU-R Rec. 465-5
	-170	99.999	4	60 cm, ITU-R Rec. 465-5
12.5 - 12.75 in Regions 1 and 3	-173	99.999	4	3m, ITU-R Rec. 465-5
	-178	99.999	4	10 m, ITU-R Rec. 465-5
	-170	100	4	≥60 cm, ITU-R Rec. 465-5

TABLE 1 (PART B)

Frequency band (GHz)	**Equivalent pfd dB(W/m^2)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern**
17.8 - 18.6	-165 -151	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-165 -151	99.0	40 1000	70 cm, ITU-R Rec. 465-5
	-165 -151	99.5	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	1.5 m, ITU-R Rec. 465-5
	-180 -166	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-184 -170	99.9	40 1000	7.5 m, ITU-R Rec. 465-5
	-188 -174	99.9	40 1000	12 m, ITU-R Rec. 465-5
	-165 -151	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5

19.7 - 20.2	-154 -140	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-164 -150	99.9	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	2 m, ITU-R Rec. 465-5
	-174 -160	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-154 -140	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5

1.2 The aggregate power flux-density[1] produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary system for all conditions and for all methods of modulation, shall not exceed the limits given in Table 1 for any percentage of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in this table.

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[1] The aggregate power flux-density is defined as the summation of the power flux-densities produced at a point in the geostationary-satellite orbit by all the earth stations of a non-geostationary system. The aggregate power flux-density is computed by means of the following formula:

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_E} 10^{P_i(t)/10} \cdot \frac{G_t(\theta_i)}{4 \cdot \pi \cdot d_i^2}\right]$$

where:

– N_E is the number of earth stations in the non-geostationary system with an elevation angle greater or equal to 0°, from which the point considered in the geostationary orbit is visible;

– i is the index of the earth station considered in the non-geostationary system;

– P_i is the RF power at the input of the transmitting antenna of the earth station considered in the non-geostationary system in dBW in the reference bandwidth;

– $\theta_i(t)$ is the off-axis angle between the boresight of the earth station considered in the non-geostationary system and the direction of the point considered in the geostationary-satellite orbit;

– $G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the earth station considered in the non-geostationary system in the direction of the point considered in the geostationary-satellite orbit;

– d_i is the distance in metres between the earth station considered in the non-geostationary system and the point considered in the geostationary-satellite orbit;

– $apfd$ is the aggregate power flux-density in dB(W/m^2) in the reference bandwidth.

NOTE - Tables 1 and 2 contain provisional limits corresponding to an interference level caused by one NGSO FSS system in the frequency bands to be applied in accordance with Resolution [COM5-18]. These provisional limits are subject to review by ITU-R and shall be confirmed by WRC-99.

TABLE 2 (PART A)

Frequency band (GHz)	**Aggregate pfd dB(W/m^2)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
12.5 - 12.75	-170	100	4
12.75 - 13.25	-186	100	4
13.75 - 14.5	-170	100	4

TABLE 2 (PART B)

Frequency band (GHz)	**Aggregate pfd dB(W/m^2)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
27.5 - 28.6 GHz	-159	100	40
29.5 - 30 GHz	-145		1000

1.3 The limits given in Table 2 may be exceeded on the territory of any country whose administration has so agreed.

Section II. Earth Station Off-Axis Power Limitations in the Fixed-Satellite Service[1]

2.1 The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station shall not exceed the following values for any off-axis angle φ, which is 2.5° or more off the main lobe axis of an earth station antenna:

Angle off-axis	*Maximum e.i.r.p. per 40 kHz*
$2.5° \leq \varphi \leq 7°$	(39 - 25 log φ) dB(W/40 kHz)
$7° < \varphi \leq 9.2°$	18 dB(W/40 kHz)
$9.2° < \varphi \leq 48°$	(42 - 25 log φ) dB(W/40 kHz)
$48° < \varphi \leq 180°$	0 dB(W/40 kHz)

[1] The provisions of this section are suspended pending the review of the values in 2.1, 2.2 and 2.3 by WRC-99.

2.2 For FM-TV emissions with energy dispersal, the limits in 2.1 above may be exceeded by up to 3 dB provided the off-axis total e.i.r.p. of the transmitted FM-TV carrier does not exceed the following values:

Angle off-axis	*Maximum e.i.r.p.*
$2.5° \leq \varphi \leq 7°$	(53 - 25 log φ) dBW
$7° < \varphi \leq 9.2°$	32 dBW
$9.2° < \varphi \leq 48°$	(56 - 25 log φ) dBW
$48° < \varphi \leq 180°$	14 dBW

2.3 For FM-TV carriers which operate without energy dispersal, such carriers should be modulated at all times with programme material or appropriate test patterns. In this case, the off-axis total e.i.r.p. of the emitted FM-TV carrier shall not exceed the following values:

Angle off-axis	*Maximum e.i.r.p.*
$2.5° \leq \varphi \leq 7°$	(53 - 25 log φ) dBW
$7° < \varphi \leq 9.2°$	32 dBW
$9.2° < \varphi \leq 48°$	(56 - 25 log φ) dBW
$48° < \varphi \leq 180°$	14 dBW

2.4 The e.i.r.p. limits given in 2.1, 2.2 and 2.3 are applicable in the following frequency bands allocated to the fixed-satellite service (Earth-to-space):

12.75 - 13.25 GHz

13.75 - 14 GHz

14 - 14.5 GHz

ANNEX 2 TO DRAFT RESOLUTION [COM5-18]

STUDIES FOR THE ITU-R IN FREQUENCY SHARING BETWEEN NGSO FSS AND GSO FSS

The following is a list of those studies and related activities required.

1) The characterization of short-duration interference peaks which might exceed epfd limits set by a WRC for large earth station antennas, in terms of maximum and mean heights, maximum and mean durations, mean time between occurrences, aggregate percentages of time of occurrences and typical amplitude/time profiles.

2) The acquisition of data regarding the impact of the interference peaks on the performance of a range of earth station demodulators of various types and origins. Administrations are encouraged to cooperate in this matter by arranging for the appropriate measurements to be carried out, and submitting the results to the appropriate Working Parties or Task Groups in time to be included in the ITU-R report to the next conference.

3) The carrying out of computer simulations to determine the impact on epfd statistics of multiple NGSO networks interfering with a GSO downlink, and in particular to discover the percentage-of-time thresholds for which the probability of simultaneous interference peaks from satellites in different NGSO constellations becomes significant. Both homogeneous and inhomogeneous sets of NGSO systems should be simulated where the necessary data is available.

4) The conducting of investigations to find out whether the emissions from the satellites and earth stations of NGSO systems would cause problems for the TT&C of GSO (and NGSO) satellites, during both launch and operational phases of the latter, and the development of ways to avoid such problems.

5) The carrying out of computer simulations to derive the time statistics of short-term interference between two or more NGSO FSS networks, with the objective of determining the approximate number of such networks which could co-exist in the same bands.

6) The identification and accreditation of software which could be used by the BR to check whether a system for which an application for spectrum has been made would comply with the epfd and apfd limits.

7) The carrying out of studies to determine the feasibility of frequency sharing between NGSO FSS networks using circular orbits and networks using slightly-inclined geostationary orbits, and also between NGSO FSS networks and networks using "quasi-geostationary" orbits.

8) The development if practicable of continuous curves of epfd versus the antenna diameter and/or the G/T of the GSO earth station to be protected. Whilst it may be necessary to limit the compliance checking by the BR to a few discrete antenna sizes, administrations will need to know that the protection will be adequate in the cases of antennas of other sizes; hence the desirability of continuous curves.

9) The continuation of the studies into techniques for mitigating the interference between GSO and NGSO networks, and between NGSO and NGSO networks.

10) Refinement of the methodologies in new Recommendation ITU-R [Document BL/14] for the derivation of I/N limits and their conversion to epfd and apfd limits, taking into account propagation fade statistics, the different circumstances of "transparent" and remodulating satellite transponders, and the impact of fade counter-measures such as adaptive power control.

11) The consideration of how account can be taken, in studies concerning the definition of up-path limits, of the gain versus off-axis angle characteristics of the receiving spot beams of geostationary satellites.

DRAFT RESOLUTION [COM5-19]

USE OF THE FREQUENCY BANDS COVERED BY APPENDICES 30 AND 30A BY NGSO SYSTEMS IN THE FIXED-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that provisional limits have been established and included in Article **S22** and in the Annex to this Resolution to ensure that the interference caused by non-geostationary-satellite (NGSO) systems in the fixed-satellite service (FSS) into assignments operated in conformity with the Appendices 30 and 30A Plans is maintained within negligible levels;

b) that the integrity of the above-mentioned Plans and their future modifications is to be ensured;

c) that NGSO systems should not be entered into those Plans and therefore should not apply the procedures associated with these Plans and should not be protected by these procedures;

d) that this Conference has decided to introduce in Article **S5** of the Radio Regulations a new allocation to the FSS in the frequency bands 11.7 GHz to 12.5 GHz in Region 1, 12.2 GHz to 12.7 GHz in Region 2 and 11.7 GHz to 12.2 GHz in Region 3, limited to NGSO/FSS systems,

resolves

1 that, as of 22 November 1997, a NGSO FSS system operating in the frequency bands covered by Appendices 30 and 30A:

a) shall comply with the provisional limits specified in Article **S22** and in the Annex to this Resolution;

b) shall, as of the end of WRC-99, comply with the limits specified in Article **S22,** as revised, if appropriate by WRC-99, irrespective of the date of receipt of the complete notification information relating to this NGSO FSS system;

c) that, as of 22 November 1997, in applying No. **S22.2,** administrations may consider these provisional power limits as corresponding to permissible levels of interference from a NGSO system into a GSO system, irrespective of the dates of receipt by the Bureau of the complete notification information relating to the NGSO system and to the GSO network;

d) that, as of the end of WRC-99, an administration operating a NGSO FSS system in the band 17.8 - 18.1 GHz (space-to-Earth) which is in compliance with the limits appearing in Article **S22** as revised, if appropriate, by WRC-99, shall be considered as having fulfilled its obligations under **S22.2** with respect to any GSO network operating in the Earth-to-space direction, irrespective of the dates of receipt by the Bureau of the complete notification information relating to the NGSO system and of the complete coordination or notification information, as appropriate, relating to the GSO network;

d1) that between 22 November 1997 and the [end of WRC-99], if an administration operating or bringing into use a GSO FSS system before the [end of WRC-99] considers that the NGSO FSS system proposed by another administration might cause unacceptable interference into its GSO system, then:

– the administration having the GSO system shall send to the administration having the NGSO FSS system, the technical details upon which its disagreement is based;

– the administration having the NGSO FSS system shall resolve the difficulties especially taking into account degradation of picture and sound quality or signal availability with regard to GSO systems in operation;

e) shall apply the procedures of Sections I and III of Article 11 Section I of Article **S9**, and **S9.17** and **S9.17A**, and the procedures of Article 13/**S11**; and

f) shall be subject, for the coordination with NGSO systems, to the application of the provisions of paragraph 2.1 of Section II of Resolution **46 (WRC-95)**/No. **S9.12**;

g) shall apply, using an equivalent power flux-density threshold of -185.3 dB(W/m^2/4 kHz) for 99.7% of the time, calculated into the reference 90 cm diameter antenna pattern provided in Annex 5 of Appendix 30 (Orb-85) for Regions 1 and 3, the provisions of Article 7 of Appendix 30/**S9.8** with respect to those assignments in [step 1] of the Appendix 30 Plan for Regions 1 and 3 as revised by WRC-97;

2 that NGSO FSS systems in the frequency bands referred to in *resolves* 1 above shall not be operated before the end of WRC-99,

requests ITU-R

a) to conduct, as a matter of urgency and in time for consideration by WRC-99, the appropriate technical, operational and regulatory studies to review the regulatory provisions concerning the operation of NGSO FSS systems in the frequency bands referred to in *resolves* 1 a) above in order to ensure that these conditions ensure appropriate protection of the Plans and their future modifications and do not pose unreasonable constraints on the development of GSO systems in these bands;

b) to undertake and complete the development of a methodology for calculating the power levels produced by NGSO FSS systems and the compliance of these levels with the limits referred to in *resolves* 1 a) and 1 b) above;

c) to complete the studies relating to the sharing criteria to be applied for determining the need for coordination between NGSO FSS systems, with a view to promote efficient use of spectrum/orbit resources and equitable access to these resources by all countries;

d) to report to CPM-99 on the conclusion of these studies,

instructs the Radiocommunication Bureau

as of the end of WRC-99, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22**, of a NGSO FSS system for which notification information has been received between 22 November 1997 and [the end of WRC-99]. This review shall be based on the values appearing in Article **S22**, as revised if appropriate by [WRC-99].

ANNEX TO DRAFT RESOLUTION [COM5-19]

PROVISIONAL LIMITS

Section I. Control of Interference to Geostationary-Satellite Systems

1.1 In the frequency band 17.8 - 18.1 GHz the maximum aggregate power flux-density produced at the geostationary-satellite orbit by all the space stations in a non-geostationary-satellite system in the fixed-satellite service or in the broadcasting-satellite service shall not exceed the values given in Table 2.

1.2 The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary-satellite orbit, produced by emissions from all the space stations of a non-geostationary system operating in the following frequency bands in the fixed-satellite service, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table 1 for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth as specified in Table 1, for all pointing directions towards the geostationary orbit.

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[1] The equivalent power flux-density is defined as the sum of the power flux-densities produced at a point of the Earth's surface by all space stations within a non-geostationary system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing towards the geostationary orbit. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{\max}}\right]$$

where:

- N_s is the number of non-geostationary space stations visible from the point considered at the Earth's surface, within an elevation angle greater or equal to 0°;
- i is the index of the considered non-geostationary space station;
- pfd_i is the power flux-density produced at the point considered at the Earth's surface in dB(W/m^2) in the reference bandwidth;
- θ_i is the angle between the direction considered towards the geostationary orbit and the direction of the interfering space station in the non-geostationary system;
- $G_r(\theta_i)$ is the gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary network;
- G_{max} is the maximum gain (as a ratio) of the above receive reference antenna;
- $epfd$ is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

TABLE 1

Frequency band allocated to the BSS	**Antenna diameter (cm)**	**Equivalent pfd level (dB(W/m^2/4kHz)) which may not be exceeded during the percentage of time shown**		**Reference antenna radiation pattern**
		99.7%	**100%**	
11.7 - 12.5 GHz in Region 1, 11.7 - 12.2 GHz and 12.5 - 12.75 GHz in Region 3	30 60 90	-172.3 -183.3 -186.8	-169.3 -170.3 -170.3	Recommendation ITU-R BO.1213
12.2 - 12.7 GHz in Region 2	45 100 120 180	-174.3 -186.3 -187.9 -191.4	-165.3 -170.3 -170.3 -170.3	Section 3.7.2 of Annex 5 of Appendix **30**
17.3 - 17.8 GHz in Region 2	For further study[1)]			

[1)] The interference from NGSO FSS systems into GSO BSS systems operating in the frequency bands 17.3 - 17.8 GHz relates to the two following sharing situations:

- NGSO FSS transmit earth station into GSO receive earth station;
- GSO BSS transmit space station into NGSO FSS receive space stations.

Both situations need to be studied, in particular since coexistence of receive BSS earth stations and large numbers of transmit NGSO FSS terminals would not be feasible within the same country.

1.3 The aggregate power flux-density[1] produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary system in the fixed-satellite service, for all conditions and for all methods of modulation, shall not exceed the limits given in Table 2 for the specified percentages of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in this table.

[1] The aggregate power flux-density is defined as the summation of the power flux-densities produced at a point in the geostationary-satellite orbit by all the earth stations of a non-geostationary system. The aggregate power flux-density is computed by means of the following formula:

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_E} 10^{P_i(t)/10} \cdot \frac{G_t(\theta_i)}{4 \cdot \pi \cdot d_i^2}\right]$$

where:

– N_E is the number of earth stations in the non-geostationary system with an elevation angle greater or equal to 0°, from which the point considered in the geostationary orbit is visible;

– i is the index of the earth station considered in the non-geostationary system;

– P_i is the RF power at the input of the transmitting antenna of the earth station considered in the non-geostationary system in dBW in the reference bandwidth;

– $\varphi_i(t)$ is the off-axis angle between the boresight of the earth station considered in the non-geostationary system and the direction of the point considered in the geostationary-satellite orbit;

– $G_t(\varphi_i)$ is the transmit antenna gain (as a ratio) of the earth station considered in the non-geostationary system in the direction of the point considered in the geostationary-satellite orbit;

– d_i is the distance in metres between the earth station considered in the non-geostationary system and the point considered in the geostationary-satellite orbit;

– *apfd* is the aggregate power flux-density in dB(W/m^2) in the reference bandwidth.

TABLE 2

Frequency band	**Aggregate pfd dB(W/m^2/4 kHz)**	**Percentage of time during which pfd level may not be exceeded**
17.3 - 18.1 GHz in Regions 1 and 3 and 17.8 - 18.1 GHz in Region 2	-163	100%

1.4 The limits given in Table 1 may be exceeded on the territory of any country whose administration has so agreed.

NOTE TO WG PL1

The following agenda item should be included in the draft agenda for WRC-99:

On the basis of the results of the studies in accordance with Resolutions [COM5-18], [COM5-19] and [COM5-23]:

1) review and if appropriate, revise the power limits appearing in Articles **S21** and **S22** in relation to the sharing conditions among NGSO FSS, GSO FSS, GSO BSS, space sciences and terrestrial services, to ensure the feasibility of these power limits and that these limits do not impose undue constraints on the development of these systems and services;

2) consider the inclusion in other frequency bands of similar limits in Articles **S21** and **S22**, or other regulatory approaches to be applied in relation to sharing situations.

RESOLUTION [COM5-27] (WRC-97)

USE OF THE BANDS 18.8 - 19.3 GHz AND 28.6 - 29.1 GHz BY NETWORKS OPERATING IN THE FIXED-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that, by its Resolution **118**, the World Radiocommunication Conference (1995) recommended that this Conference review the results of studies carried out by ITU-R relating to the use of the frequency bands 20/30 GHz;

b) that it also recommended that this Conference take appropriate action, including adjustments to spectrum allocations, for the harmonious development of GSO and non-GSO systems and terrestrial services in the same bands;

c) that it has reviewed the above studies, and has taken appropriate action in relation to the use of the frequency bands 18.8 - 18.9 GHz and 28.6 - 28.7 GHz as indicated in provision No. MOD **S5.523A**;

d) that in its Resolution **118**, WRC-95 considered:

- that the development of GSO and non-GSO systems in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz is based on a major source of global investment and consequently their reciprocal coordination needs the firm commitment of all parties concerned on the basis of application of Resolution **46 (Rev.WRC-95)**;
- that WRC-97 should consider the non-application of **S22.2** (No. **2613**) of the Radio Regulations in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz in light of the spectrum requirements for non-GSO systems;

e) that WRC-95 adopted in *resolves* 1 to 5 of Resolution **118** the procedures applicable to the frequency bands 18.9 - 19.3 GHz and 28.7 - 29.1 GHz only;

f) that in light of *considering* d) and e) above, GSO and non-GSO FSS systems referred to in MOD **S5.523A** are being developed in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz;

g) that MOD **S5.523A** will enter into force on the date indicated in Article **S59** of the Radio Regulations;

h) that WRC-97 decided to suppress Resolution **118**, as of 22 November 1997,

noting

that the band 18.8 - 19.3 GHz is heavily used by the fixed service and there is a need to continue the use of this band in many countries,

resolves

1 that, as of 18 November 1995, the provisions of Resolution **46 (Rev.WRC-95)/S9.11A** shall apply and No. **S22.2** of the Radio Regulations shall not apply in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz, to frequency assignments of GSO and non-GSO systems of the fixed-satellite service;

2 that should modifications arise to frequency assignments of NGSO FSS systems which were notified before 18 November 1995, when coordination was not required, then no coordination is required when the characteristics of the modified frequency assignment are within the limits of those of the original notification,

instructs the Radiocommunication Bureau

to apply the provisions of MOD **S5.523A (WRC-97)**, in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz from 22 November 1997.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

Document 357-E
19 November 1997
Original: English

Note by the Secretary-General

SIGNING CEREMONY

1. At the close of the last Plenary Meeting, the Chairman will announce the time at which the signing ceremony and closure of the Conference will take place.

2. The procedure for the signing ceremony will be as follows :

2.1 Before the ceremony begins, delegations are invited to collect the files containing the sheets of paper to be signed. The files will be distributed at the entrance of Room I.

2.2 In the files, delegations will find the following :

a) a sheet marked "ACTES FINALS" for signature to the Final Acts;

b) a sheet marked "DÉCLARATIONS / RÉSERVES" for signature to the Declarations and Reservations;

c) a pink sheet, on which those signing are kindly requested to print their surnames and first names (or initials) in the order in which they sign.

3. At the opening of the signing ceremony, the Secretary of the Plenary will invite delegations to sign the sheets as indicated above.

4. After a period of about ten minutes, the roll will be called of delegations whose credentials entitle them to sign, inviting delegations to deposit the files with the signed sheets on the table below the rostrum.

5. As the signatures are deposited, the name of the delegation which has deposited its signatures will be announced.

6. At the end of the signing ceremony, the total number of delegations that have deposited their signatures will be announced.

Pekka TARJANNE
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

SIXTEENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 5 TO THE EDITORIAL COMMITTEE

Committee 5 has continued its consideration of issues relating to MSS allocations in bands below 1 GHz. As a result of these deliberations, it has adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary

V. RAWAT
Chairman of Committee 5

Annex: 1

MHz
450 – 460

Allocation to Services		
Region 1	Region 2	Region 3
450 – 455 FIXED MOBILE MOD S5.209 S5.271 S5.286 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286D ADD S5.286E		
455 – 456 FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E	**455 – 456** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C	**455 – 456** FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E
456 – 459 FIXED MOBILE S5.271 S5.287 S5.288		
459 – 460 FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E	**459 – 460** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C	**459 – 460** FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E

MOD **S5.286A** The use of the bands ~~455~~454 - 456 MHz and 459 - 460 MHz by the mobile-satellite service is subject to coordination under Resolution **46 (Rev.WRC-9~~5~~7)/**No. **S9.11A**.

MOD **S5.286B** The use of the band 454 - 455 MHz in those countries listed in S5.286D, 455 - 456 MHz and 459 - 460 MHz in Region 2, and 454 - 456 MHz and 459 - 460 MHz in those countries listed in S5.286E ,by s~~S~~tations in the mobile-satellite service ~~in the bands 455 - 456 MHz and 459 - 460 MHz~~ shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services.

MOD **S5.286C** The use of the band 454 - 455 MHz in those countries listed in S5.286D, 455 - 456 MHz and 459 - 460 MHz in Region 2, and 454 - 456 MHz and 459 - 460 MHz in those countries listed in S5.286E ,by s~~S~~tations in the mobile-satellite service ~~in the bands 455 - 456 MHz and 459 - 460 MHz~~ shall not constrain the development and use of the fixed and mobile services.

ADD **S5.286D** *Additional allocation:* in Canada, the United States, Mexico and Panama, the band 454 - 455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis.

ADD **S5.286E** *Additional allocation:* in Cape Verde, Ghana, Indonesia, Mali, Nigeria and Papua New Guinea, the bands 454 - 456 MHz and 459 - 460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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20 November 1997
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PLENARY MEETING

Algeria (People's Democratic Republic of), Saudi Arabia (Kingdom of), Egypt (Arab Republic of), Jordan (Hashemite Kingdom of), Libya (Socialist People's Libyan Arab Jamahiriya), Syrian Arab Republic, Tunisia, Yemen (Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

ADD S5.[XXX] In the bands 10.7 - 11.7 GHz, 11.7 - 12.5 GHz, 12.5 - 12.75 GHz, 12.75 - 13.25 GHz, 13.75 - 14.5 GHz, 17.3 - 18.1 GHz and 17.8 - 18.6 GHz, stations of the non-geostationary fixed-satellite service shall not cause harmful interference to, or claim protection from existing or planned stations of the fixed or mobile services or existing or planned stations of the broadcasting-satellite service, in accordance with the provisions of Appendices **30** and **30A**, in Algeria, Saudi Arabia, Egypt, Jordan, Libya, Syria, Tunisia and Yemen.

NOTE - The reference to this addition to the footnotes to the Radio Regulations should be inserted in all parts of the Article S5 table relating to Region 1 and covering these bands.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 360-E
19 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.9 **PLENARY MEETING**

NINTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 5	337 + Corr.1	**ARTICLE S5** – Table of allocations: band 410 - 420 MHz – Number S5.268 – Table of allocations: band 31.5 - 31.8 GHz – Numbers S5.546 to S5.547A – Table of allocations: band 31.8 - 33.4 GHz – Numbers S5.547B to S5.547E – Table of allocations: band 35.2 - 36 GHz – Numbers S5.551 and S5.551A – Table of allocations: band 40.5 - 42.5 GHz – Numbers S5.551B to S5.551F – Table of allocations: band 50.2 - 50.4 GHz band 51.4 - 54.25 GHz band 54.25 - 71 GHz – Numbers S5.340, S5.555A, S5.556A, S5.556B, S5.557A, S5.557 and S5.558

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Resolution COM5-11 (WRC-97)
Resolution COM5-12 (WRC-97
Resolution COM5-16 (WRC-97)
Resolution COM5-17 (WRC-97)
Resolution COM5-28 (WRC-97)
Resolution COM5-29 (WRC-97)
Resolution 211
Resolution 643
Resolution 710
Resolution 711
Resolution 712
Recommendation 706

A.-M. NEBES
Chairman of Committee 6

Annex: 19 pages

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ARTICLE S5

MOD

MHz
410 – 420

Allocation to Services		
Region 1	Region 2	Region 3
410 – 420	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) MOD S5.268	

MOD S5.268 Use of the band 410 - 420 MHz by the space research service is limited to communications within 5 km of an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from extra-vehicular activities shall not exceed -153 dB(W/m^2) for $0° \leq \Phi \leq 5°$, -153 + 0.077 (Φ-5) dB(W/m^2) for $5° \leq \Phi \leq 70°$ and -148 dB(W/m^2) for $70° \leq \Phi \leq 90^o$, where Φ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. **S4.10** does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile service.

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MOD

GHz
29.9 – 31.8

Allocation to Services		
Region 1	Region 2	Region 3
31.5 – 31.8	**31.5 – 31.8**	**31.5 – 31.8**
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	SPACE RESEARCH (passive)
Fixed		Fixed
Mobile except aeronautical mobile		Mobile except aeronautical mobile
S5.149 MOD S5.546	S5.340	S5.149

MOD S5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, Iran (Islamic Rep. of), Israel, Jordan, Kazakstan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, Russia, Tajikistan, Turkmenistan, Turkey and Ukraine, the allocation of the band 31.5 - 31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **S5.33**).

ADD S5.547 The bands 31.8 - 33.4 GHz, 51.4 - 52.6 GHz, 55.78 - 59 GHz and 64 - 66 GHz are available for high-density applications in the fixed service (see Resolution [**COM5-12 (WRC-97)**]).

ADD S5.547A Use of the band 31.8 - 33.4 GHz by the fixed service shall be in accordance with Resolution [**COM5-11 (WRC-97)**].

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MOD

GHz
31.8 – 37

Allocation to Services		
Region 1	Region 2	Region 3
31.8 – 32	RADIONAVIGATION FIXED ADD S5.547A SPACE RESEARCH (deep space) (space-to-Earth) S5.548 ADD S5.547 ADD S5.547B	
32 – 32.3	INTER-SATELLITE FIXED ADD S5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) S5.548 ADD S5.547 ADD S5.547C	
32.3 – 33	INTER-SATELLITE FIXED ADD S5.547A RADIONAVIGATION S5.548 ADD S5.547 ADD S5.547D	
33 – 33.4	RADIONAVIGATION FIXED ADD S5.547A ADD S5.547 ADD S5.547E	

ADD S5.547B *Alternative allocation*: in the United States, the band 31.8 - 32 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis.

ADD S5.547C *Alternative allocation*: in the United States, the band 32 - 32.3 GHz is allocated to the inter-satellite, radionavigation and space research (deep space) (space-to-Earth) services on a primary basis.

ADD S5.547D *Alternative allocation*: in the United States, the band 32.3 - 33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis.

ADD S5.547E *Alternative allocation*: in the United States, the band 33 - 33.4 GHz is allocated to the radionavigation service on a primary basis.

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MOD

GHz
31.8 – 37

Allocation to Services		
Region 1	Region 2	Region 3
35.2 – 35.5	METEOROLOGICAL AIDS RADIOLOCATION S5.549	
35.5 – 36	EARTH EXPLORATION-SATELLITE (active) METEOROLOGICAL AIDS RADIOLOCATION SPACE RESEARCH (active) S5.549 ADD S5.551A	

SUP **S5.551**

ADD **S5.551A** In the band 35.5 - 36.0 GHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, meteorological aids and other services allocated on a primary basis.

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MOD

GHz
40.5 – 42.5

Allocation to Services		
Region 1	Region 2	Region 3
40.5 – 42.5	**40.5 – 42.5**	**40.5 – 42.5**
BROADCASTING	BROADCASTING	BROADCASTING
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE	BROADCASTING-SATELLITE
FIXED	FIXED	FIXED
Mobile	Mobile	Mobile
	FIXED-SATELLITE (space-to-Earth) ADD S5.551B	FIXED-SATELLITE (space-to-Earth) ADD S5.551B ADD S5.551E
ADD S5.551B ADD S5.551D	ADD S5.551C	ADD S5.551C ADD S5.551F

ADD S5.551B The use of the band 41.5 - 42.5 GHz by the fixed-satellite service (space-to-Earth) is subject to Resolution [**COM5-16 (WRC-97)**].

ADD S5.551C *Alternative allocation:* in the French overseas territories in Regions 2 and 3, the Republic of Korea and India, the band 40.5 - 42.5 GHz is allocated to the broadcasting, broadcasting-satellite and fixed services on a primary basis.

ADD S5.551D *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Benin, Cameroon, Egypt, United Arab Emirates, Israel, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Qatar, Syria, Tunisia and Yemen, the band 40.5 - 42.5 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. The use of this band by the fixed-satellite service shall be in accordance with Resolution [**COM5-29 (WRC-97)**].

ADD S5.551E Use of the band 40.5 - 42.5 GHz by the fixed-satellite service shall be in accordance with Resolution [**COM5-29 (WRC-97)**].

ADD S5.551F *Different category of service*: in Japan, the allocation of the band 41.5 - 42.5 GHz to the mobile service is on a primary basis (see No. **S5.33**).

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MOD

GHz
42.5 – 54.25

Allocation to Services		
Region 1	Region 2	Region 3
50.2 – 50.4	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) MOD S5.340 ADD S5.555A	

MOD

GHz
42.5 – 54.25

Allocation to Services		
Region 1	Region 2	Region 3
51.4 – 52.6	FIXED MOBILE S5.556 ADD S5.547	
52.6 – 54.25	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) MOD S5.340 S5.556	

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MOD

GHz
54.25 – 71

Allocation to Services		
Region 1	Region 2	Region 3
54.25 – 55.78	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE ADD S5.556A SPACE RESEARCH (passive) ADD S5.557A	
55.78 – 56.9	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
56.9 – 57	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556B MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
57 – 58.2	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
58.2 – 59	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) S5.556 ADD S5.547	

Allocation to Services		
Region 1	Region 2	Region 3
59 – 59.3	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 RADIOLOCATION S5.559	
59.3 – 64	FIXED INTER-SATELLITE MOBILE MOD S5.558 RADIOLOCATION S5.559 S5.138	
64 – 65	FIXED INTER-SATELLITE MOBILE except aeronautical mobile S5.556 ADD S5.547	
65 – 66	EARTH EXPLORATION-SATELLITE SPACE RESEARCH INTER-SATELLITE FIXED MOBILE except aeronautical mobile ADD S5.547	
66 – 71	MOBILE S5.553 MOD S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE INTER-SATELLITE S5.554	

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MOD **S5.340** All emissions are prohibited in the following bands:

1 400 - 1 427 MHz,	
2 690 - 2 700 MHz	except those provided for by Nos. **S5.421** and **S5.422**,
10.68 - 10.7 GHz	except those provided for by No. **S5.483**,
15.35 - 15.4 GHz	except those provided for by No. **S5.511**,
23.6 - 24 GHz,	
31.3 - 31.5 GHz,	
31.5 - 31.8 GHz	in Region 2,
48.94 - 49.04 GHz	from airborne stations,
50.2 - 50.4 GHz[1]	except those provided for by No. **S5.555A**,
52.6 - 54.25 GHz,	
86 - 92 GHz,	
105 - 116 GHz,	
140.69 - 140.98 GHz	from airborne stations and from space stations in the space-to-Earth direction,
182 - 185 GHz	except those provided for by No. **S5.563**,
217 - 231 GHz.	

[1] The allocation to the earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2 - 50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands.

ADD **S5.555A** The band 50.2 - 50.4 GHz is also allocated, on a primary basis, to the fixed and mobile services until 1 July 2000.

ADD **S5.556A** Use of the bands 54.25 - 56.9 GHz, 57.0 - 58.2 GHz and 59.0 - 59.3 GHz by the inter-satellite service is limited to satellites in the geostationary satellite orbit. The single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m^2/100 MHz) for all angles of arrival.

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ADD **S5.556B** Use of the band 56.9 - 57 GHz by inter-satellite systems is limited to links between satellites in geostationary satellite orbit and to transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m^2/100 MHz) for all angles of arrival.

ADD **S5.557A** *Additional allocation:* in Japan, the band 54.25 - 55.78 GHz is also allocated to the mobile service on a primary basis for low density use.

MOD **S5.557** *Additional allocation:* in Japan, the band 55.78 - 58.2 GHz is also allocated to the radiolocation service on a primary basis.

MOD **S5.558** In the bands 55.78 - 58.2 GHz, 59 - 64 GHz, 66 - 71 GHz, 116 - 134 GHz, 170 - 182 GHz and 185 - 190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

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RESOLUTION COM5-11 (WRC-97)

USE OF THE FREQUENCY BAND 31.8 - 33.4 GHz FOR HIGH DENSITY SYSTEMS IN THE FIXED SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that in the frequency band 31.8 - 33.4 GHz, high density systems in the fixed service, if deployed, might cause interference to or receive interference from stations in the existing services and that the priority and degree of protection afforded to each service is a matter for each administration to consider;

b) that the band 31.8 - 33.4 GHz is allocated on a primary basis to the radionavigation service and that portions of the band are allocated on a primary basis to the space research (deep space) and inter-satellite services;

c) that sharing criteria for the fixed and other services in the frequency band 31.8 - 33.4 GHz have not yet been developed within ITU-R,

resolves

1 that the date of the provisional application of the allocation to the fixed service in the frequency band 31.8 - 33.4 GHz is 1 January 2001;

2 that [WRC-99] should review this allocation, including the date of 1 January 2001, taking full account of the future requirements and development of the other services to which the band is allocated and available ITU-R studies,

requests ITU-R

to conduct, as a matter of urgency and in time for [WRC-99], the appropriate studies to determine what criteria would be necessary for sharing between stations in the fixed service and stations in the other services to which the frequency band 31.8 - 33.4 GHz is allocated.

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RESOLUTION COM5-12 (WRC-97)

FREQUENCY BANDS ABOVE 30 GHz AVAILABLE FOR HIGH-DENSITY APPLICATIONS IN THE FIXED SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that there is a dramatically increasing demand for high-density applications in the fixed service resulting from the deployment of new mobile networks and from the rapid worldwide deregulation in the provision of local broadband services, including multimedia;

b) that the frequency range from 30 to about 50 GHz is the range preferred to satisfy initial requirements, as indicated in *considering* a), while the bands above about 50 GHz are preferred for similar applications but which take technical advantage of high atmospheric absorption;

c) that the lower part of the spectrum above 30 GHz has advantages for the fixed service in areas where longer path lengths are necessary;

d) that the 38 GHz band is already heavily used by many administrations for high-density applications in the fixed service;

e) that the needs of other services to which the relevant frequency bands are already allocated must be taken into account;

f) that the band 37 - 37.5 GHz is being planned for use by the space research service (space-to-Earth) to provide moon-to-Earth and inter-planetary communication links;

g) that the band 37 - 38 GHz is being planned for use by the space research service to provide very long baseline interferometry;

h) that the deployment of high-density applications in the fixed service in some bands potentially presents sharing difficulties with other primary services allocated to the same band, e.g. the fixed-satellite service;

i) that operations in the space services, such as in the fixed-satellite service, in those bands used by high-density applications in the fixed service may lead to sharing difficulties;

j) that there is a need for global harmonization of new and existing allocations of radio frequency bands to facilitate coordination between administrations, encourage development of competitive products through economies of scale, and the worldwide introduction of new telecommunication services, including the provision of reliable global information infrastructure (GII) access at an affordable cost,

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resolves

that administrations should take into account that the bands 31.8 - 33.4 GHz*, 51.4 - 52.6 GHz, 55.78 - 59 GHz and 64 - 66 GHz are available for high-density applications in the fixed service, when considering allocations or other regulatory provisions in relation to these bands,

requests ITU-R

1 to undertake studies leading to the identification of system characteristics of high-density systems in the fixed service in the bands listed in the *resolves*;

2 to undertake, as a matter of urgency, studies of technical and operational criteria and of methods to facilitate sharing between high-density systems in the fixed service and other services in the bands listed in the *resolves*,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

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* The date of provisional application of this allocation shall be in conformity with Resolution [COM5-11].

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RESOLUTION COM5-16 (WRC-97)

ALLOCATION TO THE FIXED-SATELLITE (SPACE-TO-EARTH) SERVICE IN THE 41.5 - 42.5 GHz BAND AND PROTECTION OF THE RADIO ASTRONOMY SERVICE IN THE 42.5 - 43.5 GHz BAND

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in the band 41.5 - 42.5 GHz in Regions 2 and 3 and in certain countries in Region 1 and that this band is adjacent to the band 42.5 - 43.5 GHz which is allocated, *inter alia*, to the radio astronomy service for both continuum and spectral line observations;

b) that unwanted emissions from space stations in the fixed-satellite (space-to-Earth) service in the band 41.5 - 42.5 GHz may result in harmful interference to the radio astronomy service in the band 42.5 - 43.5 GHz;

c) that various technical means may be used to reduce these unwanted emissions from space stations in the fixed-satellite service;

d) that a limited number of radio astronomy stations worldwide require protection, and that there may be means to limit the susceptibility of radio astronomy receivers to interference,

taking into account

the relevant provisions of the Radio Regulations,

resolves

that administrations shall not implement fixed-satellite systems in the band 41.5 - 42.5 GHz until technical and operational measures have been identified to protect the radio astronomy service from harmful interference in the band 42.5 - 43.5 GHz,

invites ITU-R

1 to study, as a matter of urgency, the harmful interference that space stations in the fixed-satellite (space-to-Earth) service operating in the band 41.5 - 42.5 GHz may cause to stations in the radio astronomy service operating in the band 42.5 - 43.5 GHz;

2 to identify technical and operational measures that may be taken to protect stations in the radio astronomy service operating in the band 42.5 - 43.5 GHz, including geographical separation and out-of-band emission limits to be applied to space stations operating in the fixed-satellite service in the band 41.5 - 42.5 GHz, as well as measures that may be implemented to reduce the susceptibility of stations in the radio astronomy service to harmful interference;

3 to report on the results of these studies to the [CPM] of [WRC-99],

urges administrations

to participate actively in the aforementioned studies by submitting contributions to the ITU-R,

requests

[WRC-99] to take appropriate action based on these studies.

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RESOLUTION COM5-17 (WRC-97)

CRITERIA AND METHODOLOGIES FOR SHARING BETWEEN THE FIXED-SATELLITE SERVICE AND OTHER SERVICES WITH ALLOCATIONS IN THE BAND 40.5 - 42.5 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in Regions 2 and 3 and in certain countries in Region 1 and to the fixed service in the band 40.5 - 42.5 GHz;

b) that these allocations will provide flexibility to those administrations that seek to implement systems in the bands between 36 and 50 GHz;

c) that space service networks (fixed-satellite service and broadcasting-satellite service) will share the band 40.5 - 42.5 GHz on a primary basis with the fixed and broadcasting services;

d) that Section 7.5 of the Report of the Conference Preparatory Meeting to this Conference recognized that sharing of spectrum in frequency bands above 30 GHz between the fixed service and one or more other services could result in service impairments, and that there may be utility in further study of the feasibility of co-frequency sharing between the fixed service and other services with allocations in these bands;

e) that it may be useful to consider the identification of this spectrum range for high-density fixed service applications;

f) that given *considerings* a) to e), it would be useful to conduct such studies in the band 40.5 - 42.5 GHz;

g) that the new co-primary allocations to the fixed-satellite service and fixed service referred to in *considering* a) above are in the band adjacent to the band 42.5 - 43.5 GHz, which is the subject of an ITU-R study programme under Resolution **[COM5-16] (WRC-97)**;

h) that there is a need to establish sharing criteria, including power flux-density limits, to facilitate the co-existence of the space and terrestrial services with allocations in the band 40.5 - 42.5 GHz,

invites ITU-R

1 to undertake, as a matter of urgency, studies of appropriate criteria and methodologies for sharing, including power flux-density limits, between the fixed-satellite service and the other services with allocations in the band 40.5 - 42.5 GHz;

2 to report on the results of these studies to the [CPM] of [WRC-99],

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

requests

[WRC-99] to take appropriate action based on the results of these studies.

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RESOLUTION COM5-28 (WRC-97)

SHARING BETWEEN THE FIXED SERVICE AND OTHER SERVICES IN THE BAND 37 - 40 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the band 37 - 40 GHz is allocated to the fixed service on a primary basis and that an increasing number of stations in the fixed service are deployed or being planned for use;

b) that the band 37.5 - 40.0 GHz is allocated on a primary basis to the fixed-satellite service and that an increasing number of FSS systems are being planned for use;

c) that the deployment of high-density systems in either the fixed or fixed-satellite service may result in interference to the fixed-satellite service from stations in the fixed service, and that the priority and degree of protection afforded to the fixed-satellite service is a matter for each administration to consider;

d) that although sharing is feasible between earth stations in the fixed-satellite service and terrestrial stations provided appropriate coordination procedures and/or operational techniques are employed, sharing may in practice become difficult when high geographic densities of such stations are deployed in bands heavily used by either service;

e) that sharing could be facilitated by the adoption of appropriate frequency sub-bands, such as the gaps between the channelling plans recommended by ITU-R for the fixed service;

f) that it may be useful to consider the identification of this spectrum range for high-density fixed service applications,

requests ITU-R

1 to conduct studies in time for [WRC-99] to determine whether the power flux-density limits included in Article **S21** adequately protect terrestrial services from fixed-satellite service networks;

2 to conduct other studies leading to technical and operational recommendations to facilitate sharing between terrestrial and space services,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

requests

[WRC-99] to consider the identification of spectrum in the band 37 - 40 GHz for high-density applications in the fixed service.

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RESOLUTION COM5-29 (WRC-97)

USE OF THE FREQUENCY BAND 40.5 - 42.5 GHz BY THE FIXED-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the band 40.5 - 42.5 GHz is allocated on a primary basis to the broadcasting, broadcasting-satellite, fixed and fixed-satellite services;

b) that sharing criteria for the use of the band 40.5 - 42.5 GHz by the fixed-satellite service have not been studied by ITU-R,

recognizing

that Resolution [COM5-17] invites ITU-R to undertake, as a matter of urgency, studies of appropriate criteria and methodologies for sharing between the fixed-satellite service and the other services with allocations in the band 40.5 - 42.5 GHz,

resolves

1 that the date of the provisional application of the allocation to the fixed-satellite service in Regions 1 and 3 in the band 40.5 - 42.5 GHz is 1 January 2001;

2 that [WRC-99] should review this allocation, including the date of 1 January 2001, taking full account of the requirements of the other services to which the band is allocated and available ITU-R studies.

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SUP	RESOLUTION 211
SUP	RESOLUTION 643
SUP	RESOLUTION 710
SUP	RESOLUTION 711
SUP	RESOLUTION 712
NOC	RECOMMENDATION 706

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 361-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.15 **PLENARY MEETING**

FIFTEENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading** fifteenth series of texts submitted by the editorial committee to the plenary meeting:

Source	**Document**	**Title**
GTPLEN-1	DT/147	Editorial amendments to certain WARC/WRC Resolutions and Recommendations

A.-M. NEBES
Chairman of Committee 6

Annex: 28 pages

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NOTE FROM THE CHAIRMAN OF WORKING GROUP 1 OF THE PLENARY

EDITORIAL AMENDMENTS TO CERTAIN WARC/WRC
RESOLUTIONS AND RECOMMENDATIONS

Annex 1 to Document 27 (Report of the Director, BR) reviewed all the existing WARC/WRC Resolutions and Recommendations that require editorial amendments mainly from the following viewpoints:

– the recent ITU structural changes (from WARC to WRC, from CCIR to ITU-R, from IFRB to Radiocommunication Bureau, from Administrative Council to Council, etc.);

– renumbering of RR provisions resulting from simplification of the Radio Regulations;

– old CCIR Reports to be replaced by recent ITU-R Recommendations.

After reviewing Annex 1 to Document 27 (see DT/147), GTPLEN-1 concluded that the following WARC/WRC Resolutions and Recommendations require editorial amendments:

Resolutions	1, 2, 5, 7, 14, 15, 18, 44, 63, 105, 111, 205, 207, 208, 405, 411, 412, 522, 525, 526, 527, 528 and 703
Recommendations	9, 32, 61, 63, 64, 71, 316, 319, 402, 405, 506, 507, 604, 605, 606, 701, 702, 705, 707, 709, 710, 715, 718 and 719

It was decided that each Resolution or Recommendation shall have the following footnote "WRC-97 made editorial amendments to this [Resolution/Recommendation]". Table 1 shows proposed editorial amendments.

H. RAILTON
Chairman of Working Group 1 of the Plenary

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RESOLUTION 1

NOTIFICATION OF FREQUENCY ASSIGNMENTS[1]

The World Administrative Radio Conference (Geneva, 1979),

referring to

– the Preamble of the Constitution,

– Article 42 of the Constitution (Special Arrangements),

– Article **S6** of the Radio Regulations (Special Agreements),

– Article **S11** of the Radio Regulations (Notification and Recording of Frequency Assignments),

– Article **S12A** of the Radio Regulations (Planning and Procedures for the Bands Allocated Exclusively to the Broadcasting Service Between 5950 kHz and 26 100 kHz),

resolves

that, unless specifically stipulated otherwise by special arrangements communicated to the Union by administrations, any notification of a frequency assignment to a station shall be made by the administration of the country on whose territory the station is located.

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[1] WRC-97 made editorial amendments to this Resolution.

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RESOLUTION 2

THE EQUITABLE USE, BY ALL COUNTRIES, WITH EQUAL RIGHTS, OF THE GEOSTATIONARY-SATELLITE ORBIT AND OF FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION SERVICES[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

that all countries have equal rights in the use of both the radio frequencies allocated to various space radiocommunication services and the geostationary-satellite orbit for these services,

taking into account

that the radio frequency spectrum and the geostationary-satellite orbit are limited natural resources and should be most effectively and economically used,

having in mind

that the use of the allocated frequency bands and fixed positions in the geostationary-satellite orbit by individual countries or groups of countries can start at various dates depending on the requirements and readiness of technical facilities of countries,

resolves

1. that the registration with the Radiocommunication Bureau of frequency assignments for space radiocommunication services and their use should not provide any permanent priority for any individual country or groups of countries and should not create an obstacle to the establishment of space systems by other countries;

2. that, accordingly, a country or a group of countries having registered with the Radiocommunication Bureau frequencies for their space radiocommunication services should take all practicable measures to realize the possibility of the use of new space systems by other countries or groups of countries so desiring;

3. that the provisions contained in paragraphs 1 and 2 ofthis Resolution should be taken into account by the administrations and the organs in the structure of the Union.

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[1] WRC-97 made editorial amendments to this Resolution.

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RESOLUTION 5

TECHNICAL COOPERATION WITH THE DEVELOPING COUNTRIES IN THE STUDY OF PROPAGATION IN TROPICAL AREAS[1]

The World Administrative Radio Conference (Geneva, 1979),

having noted

that the assistance provided for the developing countries by the Union in cooperation with other United Nations specialized agencies, such as the United Nations Development Programme (UNDP), in the field of telecommunication augurs well for the future,

being aware

a) of the fact that the developing countries, particularly those in tropical areas, require adequate knowledge of radio wave propagation in their territories in order to make rational and economical use of the radio spectrum;

b) of the importance of propagation in radiocommunications;

c) of the importance of the work of the ITU-T and ITU-R study groups for the development of telecommunications in general and radiocommunications in particular,

considering

a) the need for the developing countries themselves to study telecommunications in general and propagation in particular in their territories, this being the best means of enabling them to acquire telecommunication techniques and to plan their systems effectively and in conformity with the special conditions in the tropical areas;

b) the scarcity of resources available in these countries,

resolves to invite the Secretary-General

1. to offer the assistance of the Union to developing countries in the tropical areas which endeavour to carry out national propagation studies in order to improve and develop their radiocommunications;

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[1] WRC-97 made editorial amendments to this Resolution.

2. to assist these countries, if necessary with the collaboration of international and regional organizations such as the African Postal and Telecommunications Union (APTU), the Panafrican Telecommunication Union (PATU) and the Union of National Radio and Television Organizations of Africa (URTNA) which may be concerned, in carrying out national propagation measurement programmes, including collecting appropriate meteorological data, on the basis of ITU-R Recommendations and Questions in order to improve the use of the radio spectrum;

3. to arrange funds and resources for this purpose from the UNDP or other sources in order to enable the Union to provide the countries concerned with adequate and effective technical assistance for the purpose of this Resolution,

urges administrations

to submit the results of these propagation measurements to the ITU-R for consideration in its studies,

invites the Council

to follow the progress made in carrying out programmes of propagation measurements and the results achieved, and to take any action that it considers necessary.

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RESOLUTION 7

DEVELOPMENT OF NATIONAL RADIO FREQUENCY MANAGEMENT[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

a) that the Radio Regulations contain,*inter alia*, procedures for the coordination, notification and registration of frequencies which specify the rights and obligations of Member States;

b) that the application of the above-mentioned procedures necessitates an appropriate radio frequency management unit in each Member State;

c) that the existence of such a unit helps Member States to safeguard their rights and to discharge their obligations under the Radio Regulations;

d) that the application of the Radio Regulations through the agency of such units is in the interest of the international community as a whole,

noting

that such a unit requires an adequate number of suitably qualified staff,

noting further

that the administrations of many developing countries need to create or to strengthen such a unit, appropriate to their administrative structure, with responsibility for the application of the Radio Regulations at the national and international levels,

recommends

that the administrations of such countries take appropriate action,

resolves

1. that meetings shall be organized between representatives of the Radiocommunication Bureau and the personnel involved in frequency management matters from administrations of developing and developed countries;

2. that such meetings shall be aimed at designing standard structures suitable for administrations of developing countries and include discussions concerning the establishment and operation of radio frequency management units;

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[1] WRC-97 made editorial amendments to this Resolution.

3. that such meetings should also identify the particular needs of developing countries in establishing such units, and the means required to meet those needs,

recommends

that developing countries when planning the use of funds, particularly those received from international sources, make provision for participation in these meetings as well as for the introduction and development of such units,

invites the Council

to take the necessary measures for the organization of such meetings,

instructs the Secretary-General

1. to circulate this Resolution to all Member States of the Union, drawing their attention to its importance;

2. to circulate the results of such meetings, particularly to the developing countries;

3. to inform the developing countries of the types of assistance the ITU can provide in setting up the desired structure,

draws the attention of the next Plenipotentiary Conference to

1. the particular problems identified in this Resolution;

2. the need for prompt and effective action to resolve them;

3. the need to take all practicable measures to ensure that resources are made available for this purpose.

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RESOLUTION 14

TRANSFER OF TECHNOLOGY[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

a) the terms of the Resolution relating to International Economic Development and Cooperation (3362(S-VII)) adopted by the United Nations General Assembly at its seventh special session, and the terms of Section III of this Resolution, which emphasizes the role of science and technology in development;

b) the terms of General Assembly Resolution 32/160, which proclaims a Transport and Communications Decade in Africa in the period 1978-1987, during which a World Communications Year is scheduled to be proclaimed;

c) the decisions of the General Assembly relating to the preparation of an international development strategy during the Third United Nations Development Decade, i.e. in the 1980s (Resolution 33/193),

noting

that, at the recent United Nations Conference on Science and Technology for Development, Vienna, August 1979, the governments adopted a Declaration relating to a Programme of Action aimed at accelerating the application of science and technology for development,

aware

of the importance of the application of science and technology in telecommunications for the purposes of developing the services and attaining social, economic and cultural objectives,

also aware

of the important role of the ITU as the United Nations specialized agency responsible for undertaking activities leading to the attainment of the objectives set forth in the Constitution of the International Telecommunication Union,

resolves to urge

1. *the governments of the Member States,* particularly those of the developing countries, and their administrations, to take steps to establish national telecommunication development policies to strengthen their technical cooperation activities in order to achieve the efficient transfer of telecommunication technology, with a view to improving telecommunication services of all types, especially in the field of radiocommunications;

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[1] WRC-97 made editorial amendments to this Resolution.

2. *administrations* to participate to the maximum extent practicable in the Study Groups of the Sectors of the Union, which are important forums for the transfer of information on the progress and application of telecommunication technology,

resolves to instruct the Secretary-General

1. to strengthen further those technical cooperation activities geared to the planning, setting up, maintenance and operation of telecommunication systems and to the training of staff for such purposes, with a view to accelerating the transfer and satisfactory application of technology in favour of development, having regard to the specific requirements of each country;

2. to seek, at the internationallevel, the resources required to accelerate these technical cooperation programmes, particularly funds which could be allocated under the Vienna Programme of Action;

3. to bring the present Resolution to the notice of all the Member States of the Union and the competent bodies of the United Nations,

invites the Council

to keep abreast of the progress made in the attainment of the objectives set forth in this Resolution and to report on such progress, as appropriate, to the next Plenipotentiary Conference.

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RESOLUTION 15

INTERNATIONAL COOPERATION AND TECHNICAL ASSISTANCE IN THE FIELD OF SPACE RADIOCOMMUNICATIONS[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

a) that a large number of Member States of the International Telecommunication Union are not in a position to take immediate advantage of satellite techniques for the development of their telecommunication services;

b) that such Member States would benefit immensely through the technical assistance programmes sponsored by the Union,

recognizing

a) that international satellite-communication systems are subject to the Convention and Regulations and that they permit participation of all countries including, in particular, the developing countries, in space communication systems;

b) that a number of problems need to be solved in order that the developing countries may participate effectively in international space communication systems and integrate these systems with their national telecommunication networks,

resolves to invite the Council

1. to draw the attention of administrations to the means by which they may avail themselves of technical assistance in connection with the introduction of space communications;

2. to consider the most effective manner in which requests for such assistance by Member States of the Union may be formulated and presented in order to secure maximum financial and other assistance;

3. to consider how best to make use of funds made available by the United Nations in accordance with its Resolution 1721 to give technical and other assistance to administrations of Member States of the Union to make effective use of space communications;

4. to consider in what way the work of the ITU-T, ITU-R and ITU-D and other organs in the structure of the Union may be utilized in the most effective way for the information and assistance of administrations of Member States of the Union in the development of space radiocommunications.

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[1] WRC-97 made editorial amendments to this Resolution.

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RESOLUTION 18 (Mob-83)

PROCEDURE FOR IDENTIFYING AND ANNOUNCING POSITION OF SHIPS AND AIRCRAFT OF STATES NOT PARTIES TO AN ARMED CONFLICT[1]

The World Administrative Radio Conference for the Mobile Services (Geneva, 1983),

considering

a) that ships and aircraft encounter considerable risk in the vicinity of an area of armed conflict;

b) that for the safety of life and property it is desirable for ships and aircraft of States not parties to an armed conflict to be able to identify themselves and announce their position in such circumstances;

c) that radiocommunication offers such ships and aircraf a rapid means of self-identification and providing location information prior to their entering areas of armed conflict and during their passage through the areas;

d) that it is considered desirable to provide a supplementary signal and procedure for use, in accordance with customary practice, in the area of armed conflict by ships and aircraft of States representing themselves as not parties to an armed conflict,

resolves

1. that the frequencies for urgency signal and messages specified in Appendix **S13** [No. **3201**] of the Radio Regulations may be used by ships and aircraft of States not parties to an armed conflict for self-identification and establishing communications. The transmission will consist of the urgency or safety signals, as appropriate, described in Appendix **S13** [Article **40**] followed by the addition of the single group "NNN" in radiotelegraphy and by the addition of the single word “NEUTRAL” pronounced as in French “neutral” in radiotelephony. As soon as practicable, communications shall be transferred to an appropriate working frequency;

2. that the use of the signal as described in the preceding paragraph indicates that the message which follows concerns a ship or aircraft of a State not party to an armed conflict. The message shall convey at least the following data:

a) call sign or other recognized means of identification of such ship or aircraft;

b) position of such ship or aircraft;

c) number and type of such ships or aircraft;

d) intended route;

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[1] WRC-97 made editorial amendments to this Resolution.

e) estimated time en route and of departure and arrival, as appropriate;

f) any other information, such as flight altitude, radio frequencies guarded, languages and secondary surveillance radar modes and codes;

3. that the provisions of Appendix **S13** [Article **40**] relating to Urgency and Safety Transmissions, and Medical Transports shall apply as appropriate to the use of the urgency and safety signals, respectively, by such ship or aircraft;

4. that the identification and location of ships of a State not party to an armed conflict may be effected by means of appropriate standard maritime radar transponders. The identification and location of aircraft of a State not party to an armed conflict may be effected by the use of the secondary surveillance radar (SSR) system in accordance with procedures to be recommended by the International Civil Aviation Organization (ICAO);

5. that the use of the signals described above would not confer or imply recognition of any rights or duties of a State not party to an armed conflict or a party to the conflict, except as may be recognized by common agreement between the parties to the conflict and a non-party;

6. to encourage parties to a conflict to enter into such agreements,

requests the Secretary-General

to communicate the contents of this Resolution to the International Maritime Organization (IMO) and the International Civil Aviation Organization (ICAO) for such action as they may consider appropriate,

requests ITU-R

to recommend an appropriate signal in the digital selective calling system for use in the maritime mobile service and other appropriate information as necessary.

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RESOLUTION 105 (Orb-88)

IMPROVEMENT OF THE QUALITY OF CERTAIN ALLOTMENTS IN PART A OF THE FIXED-SATELLITE SERVICE PLAN[1]

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Second Session – Geneva, 1988),

considering

a) that the delegations of the administrations participating in this Conference have made intensive efforts to achieve the goals identified in the agenda of the Conference;

b) that the Conference has made intensive use of the ITU computer facilities and associated software to develop an Allotment Plan for the fixed-satellite service in the frequency bands identified for the Plan;

c) that a Plan has been developed which guarantees one coverage for each administration (Part A of the Plan) and accommodates existing systems (Part B of the Plan);

d) that, in the case of a small number of allotments in the Plan, the reference value of 26 dB has not been achieved for the *C*/*I* ratio,

noting

that in spite of all efforts made by the Conference, some allotments in Part A of the Plan are still below the reference value for *C*/*I*,

noting further

that the evaluation of some solutions for raising the value of *C*/*I* would be facilitated by appropriate consultations after the Conference between administrations working together in a spirit of cooperation to find equitable solutions,

recognizing

the right of each administration to have a value of *C*/*I* of 26 dB for its allotment,

believing

that further cooperation among administrations, and the application of technical aspects to particular situations, could improve the allotments in *considering c)* above, given the progress made in this field,

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[1] WRC-97 made editorial amendments to this Resolution.

resolves

1. that, following the Conference, an administration which has an allotment with a value of C/I lower than 26 dB, and administrations whose allotments may have an impact on that allotment, should make every effort to reach agreement on measures to improve the quality of that allotment;

2. that, with the agreement of the administrations concerned, consideration could be given to slight adjustments to the nominal orbital position of other satellites on condition that all agreed protection criteria are observed,

invites administrations

to implement the provision of this Resolution in the spirit of cooperation which characterizes the relations between Member States of ITU,

calls upon

the Sectors of ITU to provide technical advice, if requested by the administrations concerned, to facilitate mutually satisfactory solutions.

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RESOLUTION 412 (WARC-92)

TRANSFER OF FREQUENCY ASSIGNMENTS OF AERONAUTICAL STATIONS OPERATING IN THE FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (OR) SERVICE BETWEEN 3 025 kHz AND 18 030 kHz[1]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the conditions for use of each of the frequency bands between 3025 kHz and 18030 kHz allocated exclusively to the aeronautical mobile (OR) service were modified by this Conference so as to enable a more efficient usage of the frequency spectrum available;

b) that administrations will need to change the frequencies of their aeronautical and aircraft stations to bring them into conformity with the new Frequency Allotment Plan, as contained in Appendix **S26 [26(Rev.)]**, and to notify such transfers, where appropriate, to the Radiocommunication Bureau,

resolves

1. that, at an appropriate date, the Radiocommunication Bureau shall send each Administration a list of assignments to stations of the aeronautical mobile (OR) service entered on its behalf in the Master Register in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz;

2. that, in the above list, the Radiocommunication Bureau shall indicate, for each frequency assignment, a replacement frequency(-ies) which fulfil(s) the provisions of Appendix **S26 [26(Rev.)]** and which is(are) intended to replace the frequency of the assignment concerned;

3. that, after receipt of the above list, administrations shall take all the necessary measures to modify the characteristics of their assignments, so as to bring them into conformity with the provisions of Appendix **S26 [26(Rev.)]**, as early as possible and in any event, not later than 15 December 1997; any modification which has been implemented shall be notified to the Radiocommunication Bureau in accordance with No. **[1214]** of the Radio Regulations;

4. that the frequency assignments notified by administrations under paragraph 3 above shall be examined by the Radiocommunication Bureau under the relevant provisions of Article **S11 [12]** of the Radio Regulations, as modified by this Conference;

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[1] WRC-97 made editorial amendments to this Resolution.

5. that the assignments existing in the Master Register on 15 December 1997 which are not in conformity with the provisions of Appendix**S26 [26(Rev.)]** shall be treated as follows:

5.1 within 60 days from 15 December 1997, the Radiocommunication Bureau shall send relevant extracts of the Master Register to the administrations concerned advising them that, under this Resolution, the assignments in question are to be modified, within a period of 90 days, so as to meet the provisions of Appendix**S26 [26(Rev.)]**;

5.2 if an administration fails to notify the Radiocommunication Bureau of the modifications within the prescribed period, the original entry will be retained in the Master Register for information only, without a date in Column 2, without a finding in Column 13A and with a suitable remark in the Remarks column. The administration will be advised of this action.

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RESOLUTION 522 (WARC-92)

FURTHER WORK BY ITU-R CONCERNING THE BROADCASTING-SATELLITE SERVICE (SOUND)[1]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this Conference has made frequency allocations for the broadcasting-satellite service (sound) (BSS (sound)) down links and the complementary terrestrial service in the bands specified in Article **S5 [8]**, with an interim procedure to govern the introduction of this service;

b) that further technical development is necessary for the introduction of BSS (sound);

c) that BSS (sound) systems could employ satellites in the geostationary-satellite orbit (GSO) or in non-geostationary-satellite orbits (non-GSO);

d) that the most urgent guidance required will relate to the means to be employed for coordinating and avoiding mutual harmful interference between non-GSO systems, between GSO and non-GSO systems of the broadcasting-satellite service (sound), and between BSS (sound) systems and the systems of other services,

noting

the provisions of No. **S23.13 [2674]** of the Radio Regulations,

resolves

1. that ITU-R should study this subject as a matter of urgency;

2. that ITU-R studies should focus in particular on:

i) the characteristics of GSO and non-GSO BSS (sound) systems compatible with No. **S23.13 [2674]** of the Radio Regulations,

ii) the appropriate sharing criteria;

3. to invite administrations and the Radiocommunication Bureau to participate in the work of the ITU-R study groups on this subject;

4. to invite administrations which introduce BSS (sound) systems to publish reports on their experience of such systems,

invites the Council

to take account of the urgent need for regulatory provisions including measures to ensure frequency sharing between the BSS (sound) and other services in the same frequency bands, and to place this matter on the agenda of the next competent radiocommunication conference,

instructs the Secretary-General

to bring this Resolution to the notice of the Council.

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[1] WRC-97 made editorial amendments to this Resolution.

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RESOLUTION 703 (Rev.WARC-92)

CALCULATION METHODS AND INTERFERENCE CRITERIA RECOMMENDED BY ITU-R FOR SHARING FREQUENCY BANDS BETWEEN SPACE RADIOCOMMUNICATION AND TERRESTRIAL RADIOCOMMUNICATION SERVICES OR BETWEEN SPACE RADIOCOMMUNICATION SERVICES[1]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that, in frequency bands shared with equal rights by space radiocommunication and terrestrial radiocommunication services, it is necessary to impose certain technical limitations and coordination procedures on each of the sharing services for the purpose of limiting mutual interference;

b) that, in frequency bands shared by space stations located on geostationary satellites, it is necessary to impose coordination procedures for the purpose of limiting mutual interference;

c) that the calculation methods andinterference criteria relating to coordination procedures referred to in paragraphs *a)* and *b)* above are based upon ITU-R Recommendations;

d) that, in recognition of the successful sharing of the frequency bands by space radiocommunication and terrestrial radiocommunication services, and the continuing improvements in space technology and that of the Earth segment, each Radiocommunication Assembly has improved upon some of the technical criteria recommended by the preceding Assembly;

e) that the ITU Radiocommunication Assembly has approved a procedure for approving Recommendations between radiocommunication assemblies;

f) that the International Telecommunication Constitution recognizes the right of Member States of the Union to make special arrangements on telecommunication matters; however, such arrangements shall not be in conflict with the terms of the Constitution, the Convention or the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned,

[1] WRC-97 made editorial amendments to this Resolution.

is of the opinion

a) that future decisions of ITU-R are likely to make further changes in the recommended calculation methods and interference criteria;

b) that administrations should receive advance information of the drafts of the relevant ITU-R Recommendations;

c) that the administrations should whenever possible apply the current ITU-R Recommendations on sharing criteria when planning systems for use in frequency bands shared with equal rights between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services,

invites administrations

to submit contributions to the ITU-R study groups, providing information on practical results and experience of sharing between terrestrial and space radiocommunication services or between space services, which help to bring about significant improvements in coordination procedures, calculation methods and harmful interference thresholds, and thereby to optimize the available orbit/spectrum resources,

resolves

1. that the Director of the Radiocommunication Bureau, in consultation with study group Chairmen, shall prepare a list identifying the relevant parts of new or revised Recommendations approved by ITU-R affecting the calculation methods and the interference criteria and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services. This list shall be prepared within thirty days following the approval of these Recommendations;

2. that the Director shall forward this list and the appropriate texts to all administrations within thirty days, asking them to indicate within four months those ITU-R Recommendations or specific technical criteria defined in the Recommendations referred to in paragraph 1 above to which they agree for use in the application of the pertinent provisions of the Radio Regulations;

3. that, should an administration, in its reply to the consultation conducted by the Director under paragraph 2 above, indicate that certain ITU-R Recommendations or technical criteria defined in those Recommendations are unacceptable, the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that administration;

4. that the Radiocommunication Bureau shall publish, for the information of all administrations, a list based on the replies to the enquiry, of the ITU-R Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not and the administrations which did not reply;

5. that the administrations which do not reply within four months to the consultation conducted by the Director under paragraph 2 above should, however, inform the Director of their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations at a later stage;

6. that the Radiocommunication Bureau shall take into account:

a) the applicability of ITU-R calculation methods and interference criteria when making technical examinations with respect to cases involving only administrations to which such methods and criteria are acceptable;

b) the applicability of the calculation methods and interference criteria defined in the Radio Regulations in accordance with the list referred to in paragraph 4 above, when making technical examinations with respect to cases involving the administrations which did not accept or did not reply to the consultation conducted by the Radiocommunication Bureau under paragraph 2 above.

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RECOMMENDATION 9

MEASURES TO BE TAKEN TO PREVENT THE OPERATION OF BROADCASTING STATIONS ON BOARD SHIPS OR AIRCRAFT OUTSIDE NATIONAL TERRITORIES[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

a) that the operation of broadcasting stations on board ships or aircraft outside national territories is in conflict with the provisions of No. **S23.2 [2665]** and Appendix **S13 [No. 3603]** of the Radio Regulations;

b) that such operation is contrary to the orderly use of the radio frequency spectrum and may result in chaotic conditions;

c) that the operation of such broadcasting stations may take place outside the jurisdiction of Member States, thereby making the direct application of national laws difficult;

d) that a particularly difficult legal situation arises when such broadcasting stations are operated on board ships or aircraft not duly registered in any country,

recommends

1. that administrations ask their governments to study possible means, direct or indirect, to prevent or suspend such operations and, where appropriate, take the necessary action;

2. that administrations inform the Secretary-General of the results of these studies and submit any other information which may be of general interest, so that the Secretary-General can inform Member States accordingly.

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[1] WRC-97 made editorial amendments to this Recommendation.

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RECOMMENDATION 32 (Orb-88)

INTERNATIONAL MONITORING OF EMISSIONS ORIGINATING FROM SPACE STATIONS[1]

The World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Second Session – Geneva, 1988),

considering

a) that the geostationary-satellite orbit and the radio-frequency spectrum are limited natural resources and are being increasingly utilized by space services;

b) that it is desirable to ensure efficient and economical use of the radio-frequency spectrum and geostationary-satellite orbit and also to eliminate harmful interference;

c) the provisions of the Radio Regulations, under which the Radiocommunication Bureau shall review the entries in the Master International Frequency Register with a view to bringing them into conformity, to the maximum extent practicable, with the actual use being made of the radio spectrum;

d) that monitoring information obtained should assist the Radiocommunication Bureau in discharging that function;

e) Recommendation **2** of the World Administrative Radio Conference, 1979, relating to the examination by world radiocommunication conferences of the situation with regard to occupation of the frequency spectrum in space radiocommunications;

f) that facilities for monitoring of emissions originating from space stations may be expensive,

noting

that ITU-R is studying the question of monitoring of radio emissions from spacecraft at fixed monitoring stations and Recommendation ITU-R SM.1054 contains current results of these studies,

invites ITU-R

to continue the studies in collaboration with the Bureau, and to provide technical guidelines concerning the space monitoring facilities,

recommends administrations

1. to participate in ITU-R studies concerning the possible development of guidelines for space monitoring facilities;

2. to consider the various aspects of monitoring the emissions originating from space stations to enable the provisions of Article **S16 [20]** of the Radio Regulations to be applied.

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[1] WRC-97 made editorial amendments to this Recommendation.

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RECOMMENDATION 63

RELATING TO THE PROVISION OF FORMULAE AND EXAMPLES FOR THE CALCULATION OF NECESSARY BANDWIDTHS[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

a) that Appendix **S1,** Section I [Article **4**] of the Radio Regulations requires that the necessary bandwidth be part of the full designation of emissions;

b) that Recommendation ITU-R SM.1138, gives a partial list of examples and formulae for the calculation of the necessary bandwidth of some typical emissions;

c) that sufficient informationis not available for the determination of the K-factors used throughout the table of examples of the necessary bandwidth in Appendix **S1 [6]**;

d) that, especially with regard to the efficient utilization of the radio frequency spectrum, monitoring and the notification of emissions, it is required that necessary bandwidths for the individual classes of emission be known;

e) that for reasons of simplification and international uniformity it is desirable that measurements for determining the necessary bandwidth be made as seldom as possible,

recommends that ITU-R

1. provide, from time to time, additional formulae for the determination of necessary bandwidth for common classes of emission, as well as examples to supplement those given in Recommendation ITU-R M.1138;

2. study and provide values of supplementary K-factors required for the calculation of the necessary bandwidth for common classes of emission,

invites the Radiocommunication Bureau

to publish examples of such calculations in the Preface to the International Frequency List.

[1] WRC-97 made editorial amendments to this Recommendation.

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RECOMMENDATION 71

STANDARDIZATION OF THE TECHNICAL AND OPERATIONAL CHARACTERISTICS OF RADIO EQUIPMENT[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

a) that administrations are confronted with the necessity of allocating increasing resources to the regulation of radio equipment performance;

b) that administrations, and in particular those in developing countries, often have difficulty in providing such resources;

c) that it would be of advantage to apply, as far as practicable, any mutually agreed standards and associated type approvals;

d) that a number of international bodies including the ITU-R, ICAO, IMO, CISPR and the IEC already provide recommendations and standards for technical and operating characteristics applicable to equipment performance and its measurement;

e) that in this context the specific requirements of developing countries have not always been taken fully into account,

recommends

1. that administrations endeavour to cooperate with a view to establishing international performance specifications and associated measuring methods that could be used as models for domestic standards for radio equipment;

2. that such international performance specifications and associated measuring methods respond to widely representative conditions including specific requirements of developing countries;

3. that, when such international performance specifications for radio equipment exist, administrations, as far as practicable, adopt these specifications as a basis for their national standards;

4. that administrations consider as far as practicable mutual acceptance for the type approval of equipment which conforms to such performance specifications.

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[1] WRC-97 made editorial amendments to this Recommendation.

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RECOMMENDATION 604 (Rev.Mob-87)

FUTURE USE AND CHARACTERISTICS OF EMERGENCY POSITION-INDICATING RADIOBEACONS (EPIRBS)[1, 2]

The World Administrative Radio Conference for the Mobile Services (Geneva, 1987),

considering

a) that the essential purpose of EPIRB signals is to help locate survivors in search and rescue operations;

b) that requirements for carriage of EPIRBs operating on the frequencies 121.5 and 243 MHz have been included in the 1983 Amendments to the International Convention for the Safety of Life at Sea (1974);

c) that the International Maritime Organization (IMO) has been considering various types of EPIRBs;

d) that the IMO has stressed in its Resolution A.279 (VIII) the urgent need for unification of the characteristics of EPIRBs,

recognizing

a) that there are provisions in the Radio Regulations for EPIRBs on the frequencies 2 182 kHz, 121.5 MHz, 156.525 MHz, 243 MHz, and in the bands 406 - 406.1 MHz and 1 645.5 - 1 646.5 MHz;

b) that Recommendation ITU-R M.690-1 [Appendix **37A**] was approved in order to facilitate the application of a universal standard for EPIRBs operating on the frequencies 121.5 MHz and 243 MHz;

c) that for EPIRBs operating on 121.5 MHz and 243 MHz, there is a need to improve their function of being detected and located by satellite systems,

recommends

1. that, in view of their mutual interest in this matter, IMO and the International Civil Aviation Organization (ICAO) be invited, as a matter of urgency, to review and align their concepts for EPIRBs in regard to search and rescue operations and the safety of life at sea;

2. that ITU-R continue to study technical and operating questions for EPIRBs, in consideration of concepts stated by the IMO and ICAO;

3. that ITU-R and ICAO study, as a matter of urgency, the technical and operational questions arising from paragraph *d)* of Annex 1 to Recommendation ITU-R M.690-1 [Appendix **37A**],

instructs the Secretary-General

to communicate this Recommendation to the IMO and ICAO.

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[1] For the purpose of this Recommendation, references to EPIRBs include references to satellite EPIRBs as appropriate.

[2] WRC-97 made editorial amendments to this Recommendation.

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RECOMMENDATION 705

CRITERIA TO BE APPLIED FOR FREQUENCY SHARING BETWEEN THE BROADCASTING-SATELLITE SERVICE AND THE TERRESTRIAL BROADCASTING SERVICE IN THE BAND 620 - 790 MHz[1]

The World Administrative Radio Conference (Geneva, 1979),

considering

a) that, within the band 620 - 790 MHz, assignments may be made to television stations using frequency modulation in the broadcasting-satellite service;

b) that it is necessary to have a power flux-density limit which will provide adequate protection to the terrestrial broadcasting service,

taking into account

a) that the conclusions of the Special Joint Meeting of the CCIR (Geneva, 1971), indicated that the following power flux-density limits are necessary to protect the terrestrial broadcasting service:

-121 dB(W/m^2) for $\delta \leq 20°$
$-121 + 0.4\,(\delta - 20)$ dB(W/m^2) for $20° < \delta \leq 60°$
-105 dB(W/m^2) for $60° < \delta \leq 90°$

where δ is the angle of arrival above the horizontal plane (in degrees);

b) that additional tests carried out by one administration after the Special Joint Meeting of the CCIR indicated that the following more conservative power flux-density limits may be necessary:

-130 dB(W/m^2) for $\delta \leq 20°$
$-130 + 0.4\,(\delta - 20)$ dB(W/m^2) for $20° < \delta \leq 60°$
-114 dB(W/m^2) for $60° < \delta \leq 90°$

where δ is the angle of arrival above the horizontal plane (in degrees);

c) that Report 631-1 of the former CCIR gives the results of studies carried out upto 1978;

d) that additional information is required on the protection ratio for interference from an FM television signal into a VSB television signal for both the 625- and 525-line systems;

e) that with terrestrial television receiving systems using current technology, the minimum field strength to be protected may in some cases be lessthan the values included in Recommendation ITU-R BT.417;

[1] WRC-97 made editorial amendments to this Recommendation.

f) that account may have to be taken of ground reflections;

g) that energy dispersal techniques may reduce the required protection ratio and should be used if shown to be effective,

recommends

1. that in view of the absence of sufficient information on tests under operational conditions and in order to provide sharing criteria, on a provisional basis, the maximum power flux-density produced at the surface of the Earth within the service area of a terrestrial broadcasting station (see Recommendation ITU-R BT.417) by a space station in the broadcasting-satellite service in the band 620 - 790 MHz should not exceed:

-129 dB(W/m^2) for $\delta \leq 20°$
$-129 + 0.4\ (\delta - 20)$ dB(W/m^2) for $20° < \delta \leq 60°$
-113 dB(W/m^2) for $60° < \delta \leq 90°$

where δ is the angle of arrival above the horizontal plane (in degrees);

2. that these limits be not exceeded on the territory of a country except with the agreement of its administration;

3. that the transmission of unmodulated carriers should be avoided;

4. that ITU-R urgently study the sharing criteria to be applied to frequency sharing between the broadcasting-satellite service, and the terrestrial broadcasting service in the band 620 - 790 MHz and prepare a Recommendation on power flux-densities to be used in lieu of the above provisional limits;

5. that in its studies ITU-R consider in particular the following aspects:

5.1 the required protection ratio for both 525- and 625-line systems for interference from an FM television signal into a VSB television signal;

5.2 the minimum field strength to be protected for the terrestrial television service taking into account the current state of the art;

5.3 the effect of ground reflections;

5.4 the number of broadcasting satellites that may be visible from a terrestrial broadcasting receiver;

5.5 the effect of polarization discrimination;

5.6 the effect of antenna directivity;

6. that in its studies ITU-R should consider the advantages of energy dispersal techniques in the broadcasting-satellite service (television).

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RECOMMENDATION 719 (WARC-92)

MULTISERVICE SATELLITE NETWORKS USING THE GEOSTATIONARY-SATELLITE ORBIT[1]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the Conference has allocated, on a primary basis, the bands 19.7 - 20.2 GHz and 29.5 - 30 GHz in Region 2, and 20.1 - 20.2 GHz and 29.9 - 30 GHz in Regions 1 and 3 to the mobile-satellite service;

b) that these bands are also allocated to the fixed-satellite service;

c) that some administrations have expressed interest in developing multiservice satellite networks in these bands;

d) that Recommendation **715 (Orb-88)** calls for simplification of the process for bringing into use satellite networks with different classes of user terminals;

e) that the Voluntary Group of Experts (VGE), among other means of simplifying the Radio Regulations, completed its study of service definitions accommodating a range of services,

recognizing

that the introduction of multiservice satellite networks using, *inter alia*, mobile earth stations, may have an impact on networks operating in the fixed-satellite service,

recommends

that, as a matter of urgency, studies should be carried out on the technical characteristics, including pointing techniques of multiservice satellite networks using the geostationary-satellite networks encompassing mobile-satellite and fixed-satellite applications, and the sharing criteria necessary for compatibility with the fixed-satellite service in the frequency bands referred to above,

invites ITU-R

to carry out these studies,

recommends administrations

to participate actively in these studies,

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[1] WRC-97 made editorial amendments to this Recommendation.

recommends further

a) that a future competent world radiocommunication conference review the allocations of these bands, taking into account the results of the ITU-R studies and the work of the VGE;

b) that a future competent world radiocommunication conference consider the requirement for a single service definition encompassing mobile-satellite service and fixed-satellite service applications, and the possible need for additional frequency spectrum to accommodate the growth of these services,

invites the Council

to place this matter on the agenda of the next competent world radiocommunication conference.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 362-E
19 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.10 **PLENARY MEETING**

TENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 4	345	**RESOLUTION COM4-20 (WRC-97)**
COM 5	343	**RESOLUTION COM5-25 (WRC-97)** **RESOLUTION 214 (Rev.WRC-97)** **RESOLUTION COM5-15 (WRC-97)**

A.-M. NEBES
Chairman of Committee 6

Annex: 10 pages

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RESOLUTION COM4-20 (WRC-97)

UPDATING OF THE "REMARKS" COLUMNS IN THE TABLES OF ARTICLE 9A OF APPENDIX 30A AND ARTICLE 11 OF APPENDIX 30

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has adopted new texts relating to the symbols in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30;

b) that WRC-97 has adopted new entries in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30, on the understanding that the lists of identified administrations will be reviewed and revised, as appropriate, by WRC-99;

c) that studies of compatibility between the revised Regions 1 and 3 BSS (downlink and feeder link) Plans, and other services having allocations in the planned bands in all three Regions, and between the revised Regions 1 and 3 Plan and the Region 2 Plan, were performed during WRC-97 using data which had been received and published by the Bureau at the time of WRC-97 under relevant provisions of the Radio Regulations;

d) that because it was not possible to analyse fully the effect of all assignments which were received before 27 October 1997 but which had not been processed at the time of WRC-97;

e) that in order to analyse fully the effect of assignments that have not been fully processed, it is necessary to process the assignments which have been received prior to WRC-97,

recognizing

a) that the revised Regions 1 and 3 Plan must be compatible with the Region 2 Plan and with the other services which have primary allocations in the planned bands in all three Regions in accordance with principles adopted at WRC-97;

b) that the Radiocommunication Bureau requires clear instructions from WRC-97 on how to complete the analyses and to finalize the entries to be included in the "Remarks" column (column 9) of both Article 9A of Appendix 30A and Article 11 of Appendix 30;

c) that the instructions to the Bureau shall take effect on 22 November 1997,

resolves

1 that the Radiocommunication Bureau shall complete the required analyses based on the new Notes [10 to 14] to Article 9A of Appendix 30A and Notes [7 to 9] to Article 11.2 of Appendix 30 added during this Conference;

2 that the Radiocommunication Bureau shall publish the results of its analyses after the Conference, together with a modified "Remarks" column (column 9) of Article 9A of Appendix 30A and Article 11 of Appendix 30, in the form of a circular-letter;

3 that the new coordination requirements identified in the above-mentioned circular-letter shall apply provisionally from the date of the above-mentioned circular-letter until a decision is taken by WRC-99;

4 that the Radiocommunication Bureau shall report the results of its analyses and the final lists of administrations to be included in the modified "Remarks" columns to WRC-99,

instructs the Secretary-General

to bring this Resolution to the attention of the Council, at its next session, with a view to including this item on the agenda of WRC-99.

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RESOLUTION COM5-25 (WRC-97)

STUDIES RELATING TO CONSIDERATION OF THE ALLOCATION TO THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICE (MSS) IN THE METEOROLOGICAL AIDS BAND 405 - 406 MHz AND THE IMPACT ON PRIMARY SERVICES ALLOCATED IN THE ADJACENT BANDS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that there is a significant shortfall of spectrum for the non-geostationary orbit (non-GSO) MSS below 1 GHz, and there is an urgent need to make additional spectrum available on a worldwide basis for such non-GSO MSS systems;

b) that the CPM-97 Report to WRC-97 states that the Radiocommunication Bureau (BR) has identified 23 non-GSO MSS networks, at frequencies below 1 GHz, at some state of coordination under (Resolution 46) **S9.11A**, that it is likely that a number of these systems may not be implemented for reasons not connected with spectrum availability and that several administrations have indicated in their information submitted to BR that they plan on implementing these non-GSO MSS systems by the year 2002 or earlier;

c) that the CPM-97 Report for WRC-97 also states that it appears that many of the proposed networks cannot be implemented in the existing allocations because there is not enough spectrum to allow the development of all of these systems in an economically viable manner;

d) that meteorological aids systems are essential to produce the upper air measurements required by the World Meteorological Organization (WMO), as summarized in Recommendation ITU-R SA.1165, and that systems using the band 400.15 - 406 MHz constitute the majority of the mobile and fixed observation stations worldwide;

e) that meteorological aids systems are also essential to produce the upper air measurements required for civilian and other applications;

f) that the amount of spectrum required by meteorological users, including WMO (station spacing requirement of 250 km), civilian users and other related users, in most geographical areas is about 5 MHz in the band 401 - 406 MHz using the currently employed technology;

g) that since this Conference upgraded allocation to the earth exploration-satellite service and the meteorological-satellite service to primary in the band 401 - 403 MHz, this is likely to impose constraints on the meteorological aids service in this band in certain geographical areas;

h) that the development of more spectrum-efficient meteorological aids systems is continuing in order to minimize the bandwidth required by these systems, as outlined in Recommendation SA.1165, and that recent development of these related technologies has been rapid;

i) that sharing studies to date have shown that co-channel sharing between currently proposed non-GSO MSS systems and meteorological aids in the band 401 - 406 MHz is not generally feasible, that any sharing would require band segmentation and that the band 405 - 406 MHz has been named by some administrations as a possible candidate band for such a new allocation;

j) that any transition of meteorological aids from the band 405 - 406 MHz should not increase the operational costs of meteorological aids networks beyond the available financial resources, and should not constrain the future development of the meteorological aids service, while using more spectrum-efficient systems;

k) that the COSPAS-SARSAT system operates within an exclusive allocation in the band 406 - 406.1 MHz, that the radio astronomy service has a primary allocation in the band 406.1 - 410 MHz and that these services need to be protected from MSS transmissions including unwanted emissions,

noting

a) that the use of the band 405 - 406 MHz by the mobile-satellite service is limited to systems using narrow-band modulation techniques until further ITU-R studies conclude that other modulation techniques can protect COSPAS-SARSAT (406 - 406.1 MHz) and the radio astronomy service (406.1 - 410 MHz);

b) that Resolution **214 (Rev.WRC-97)** also addresses sharing studies relating to consideration of the allocation of bands below 1 GHz to the non-GSO mobile-satellite service,

resolves to invite ITU-R

1 as a matter of urgency, with the participation of WMO, to assess further the current and future requirements of the meteorological aids service in the band 401 - 406 MHz, taking into account the requirements of the earth exploration-satellite service and the meteorological-satellite service in the band 401 - 403 MHz;

2 as a matter of urgency, with the participation of WMO, to consider the possible transition of the meteorological aids service out of the band 405 - 406 MHz, which would minimize the impact on the meteorological aids service, while taking into account requirements for the implementation of non-GSO MSS;

3 to consider, based on the outcome of 1 and 2 above, a possible transition plan, including a transition date at which time meteorological aids could migrate their operations out of the band 405 - 406 MHz and MSS operations could commence;

4 as a matter of urgency, to study, with the participation of IUCAF and other relevant entities, the impact of unwanted emissions on the COSPAS-SARSAT system in the band 406 - 406.1 MHz and the radio astronomy service in the band 406.1 - 410 MHz, and identify appropriate protection measures for these services,

resolves

that [the 1999 World Radiocommunication Conference (WRC-99)/a future competent conference] be invited to consider, based on the outcome of *resolves to invite ITU-R* above, the possibility of allocating the band 405 - 406 MHz to the mobile-satellite service, including any appropriate transition plan,

urges administrations

1 to assess their current and future requirements for meteorological aids systems in the band 401 - 406 MHz taking into account the requirements of the earth exploration-satellite service and the meteorological-satellite service in the 401 - 403 MHz band;

2 to, either individually or on a subregional or regional basis, report to WMO and ITU-R on whether the whole of the band 401 - 406 MHz will be needed for meteorological aids, and the possibility of transition out of the band 405 - 406 MHz;

3 to submit to ITU-R the most up-to-date information on their plans for possible implementation of non-GSO MSS systems and the associated spectrum requirements,

instructs the Secretary-General

to bring this Resolution to the attention of WMO.

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RESOLUTION 214 (Rev.WRC-97)

SHARING STUDIES RELATING TO CONSIDERATION OF THE ALLOCATION OF BANDS BELOW 1 GHz TO THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the agenda of this Conference included consideration of additional allocations on a worldwide basis for the non-geostationary mobile-satellite service (non-GSO MSS) below 1 GHz;

b) that the Conference Preparatory Meeting 1997, in its Report, indicated that for the non-GSO MSS below 1 GHz there is not enough spectrum currently allocated to allow development of all the systems currently in coordination, and that, in order to meet projected MSS requirements below 1 GHz, a range of an additional 7 to 10 MHz will be required in the near future although, as well, it recognized that a number of these systems may not be implemented for reasons not connected with spectrum availability;

c) that there is an urgent need to make usable spectrum available on a worldwide basis for non-GSO MSS systems operating below 1 GHz;

d) that some non-GSO MSS systems are already operated by some administrations in existing MSS allocations and are at an advanced stage of consideration for operation in many other administrations, and that studies have been conducted within ITU-R on sharing between non-GSO MSS and certain terrestrial services which demonstrate the feasibility of sharing in the cases studied;

e) that issues concerning the technical and operational means to facilitate sharing between the terrestrial services and non-GSO MSS in the bands below 1 GHz remain to be studied;

f) that the requirements for the introduction of these new technologies have to be balanced with the needs of other services having allocations below 1 GHz;

g) that the bands below 1 GHz are extensively used by administrations for many services, although the extent to which they are used by each administration varies throughout the world,

noting

a) that additional studies may identify other bands below 1 GHz which could also be considered suitable for a worldwide allocation to non-GSO MSS;

b) that, based on the sharing techniques being developed for MSS below 1 GHz and the current use of the band 138 - 470 MHz by terrestrial services, this range may be considered for further study;

c) that constraints on the duration of any single transmission from an individual MSS mobile earth station and constraints on the period between consecutive transmissions from an individual MSS mobile earth station operating on the same frequency may facilitate sharing with terrestrial services;

d) that interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039-1, may be used by non-GSO MSS systems below 1 GHz in the Earth-to-space direction to promote compatibility with terrestrial systems when operating in the same frequency band;

e) that new technologies employed by some radiocommunication services, especially within the terrestrial mobile and broadcasting services, which require spectrum below 1 GHz, may have an impact on the sharing possibilities;

f) that non-GSO MSS systems operating below 1 GHz have undergone advance publication by the Radiocommunication Bureau and that administrations may seek to implement further such systems;

g) that there may be a need to review constraints on the current allocations to the MSS below 1 GHz,

resolves

1. that further studies are urgently required on operational and technical means to facilitate sharing between the non-GSO MSS and other radiocommunication services having allocations and operating below 1 GHz;

2. that [the 1999] World Radiocommunication Conference (WRC-99) be invited to consider, on the basis of the results of the studies conducted within ITU-R and the studies referred to in *resolves* 1 above, additional allocations on a worldwide basis for the non-GSO MSS below 1 GHz;

3. that relevant entities and organizations be invited to participate in these sharing studies;

4. that [the 1999/a future competent] world radiocommunication conference be invited to consider a review of the technical and regulatory constraints on non-GSO MSS allocations in the bands below 1 GHz, taking into account *considering d)*,

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invites ITU-R

1. to study and develop Recommendations, as a matter of urgency, on the performance requirements, sharing criteria and technical and operational issues relating to sharing between both the existing and planned services, and non-GSO MSS below 1 GHz;

2. as a matter of urgency, to carry out studies in preparation for [a future competent Conference/(WRC-99)], including a review of the operating constraints referred to in *noting c)* necessary to protect the existing and planned development of all of the services to which the bands below 1 GHz are allocated, having regard to *noting d)*;

3. as a matter of urgency, to carry out studies in preparation for [a future competent Conference/(WRC-99)] with respect to interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039-1, necessary to permit the continued development of all of the services to which the bands are allocated;

4. to carry out a review [for a future competent conference] of the technical and regulatory constraints on non-GSO MSS allocations in the bands below 1 GHz, having regard to *considering d)*;

5. to bring the results of these studies to the attention of [the next competent Conference/(WRC-99)] and the relevant preparatory meetings,

urges administrations

1. to participate actively in these studies, with the involvement of both terrestrial and satellite interests;

2. to submit to ITU-R reports on their technical studies and on their operational and frequency sharing experience with non-GSO MSS systems operating below 1 GHz,

encourages administrations

to consider the use of dynamic channel assignment techniques, such as those described in Recommendation ITU-R M.1039-1.

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RESOLUTION COM5-15 (WRC-97)

STUDIES RELATING TO CONSIDERATION OF ALLOCATIONS IN BANDS AROUND 1.4 GHz FOR FEEDER LINKS OF THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICES WITH SERVICE LINKS OPERATING BELOW 1 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the agenda of this Conference included consideration of the adoption of additional allocations for non-geostationary mobile-satellite services (non-GSO MSS);

b) that the Report of the 1997 Conference Preparatory Meeting (CPM-97) stated that the Radiocommunication Bureau has identified at least 23 non-GSO MSS networks at frequencies below 1 GHz, at some state of coordination under Resolution 46 and that many of the proposed networks cannot be implemented in the existing allocations because there is not enough spectrum;

c) that CPM-97 stated that due to the extreme sensitivity of radio astronomy observations interference from unwanted (spurious and out-of-band) emissions can be a problem. However, CPM-97 noted that interference to radio astronomy can be avoided using various techniques including low-power transmitter levels, choice of modulation, bit shaping, output filtering and band limiting filters. Use of these techniques can minimize the band separation necessary to meet the recommended interference threshold levels for out-of-band emissions;

d) that, since CPM-97, one administration has carried out additional analyses and hardware demonstrations with a view to determining the feasibility of sharing between non-GSO MSS feeder links and services such as the earth exploration-satellite (passive), radio astronomy and space research (passive) services in bands around 1.4 GHz;

e) that factors taken into account by these post-CPM-97 activities in order to protect the passive services around 1.4 GHz from out-of-band emissions include: the use of narrow-band non-GSO MSS feeder-link transmissions; the use of spectrum-efficient modulation methods, such as GMSK, having inherently rapid roll-off of out-of-band emissions; the use, where necessary, of band-pass filters in satellite transmitters and MSS feeder-link transmitting earth stations; and guardbands where necessary;

f) that factors taken into account by these post-CPM-97 activities concerning sharing with radiolocation include the use of conventional techniques that may be applied in MSS satellite receivers, such as intermediate frequency limiters and time diversity, which have long been employed to protect radiolocation receivers, and techniques such as transmitted waveforms employing time diversity, which have been employed to protect receivers in other services from high-power pulsed radar transmitters,

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recognizing

that the bands near 1.4 GHz are extensively used by many other services operating in accordance with the Radio Regulations, including fixed and mobile systems,

noting

a) that Resolution **214 (WRC-97)** states under *resolves* 1 that further studies are urgently required on operational and technical means to facilitate sharing between non-GSO MSS and other radiocommunication services having allocations and operating below 1 GHz;

b) that a former resolution identified issues relating to frequency sharing between the mobile-satellite service and terrestrial services at frequencies below 3 GHz as being among the urgent studies required in preparation for WRC-97;

c) that one administration performed such studies, which were submitted to ITU-R, but these studies could not be considered due to time limitations;

d) that, since WRC-95, one administration has performed studies on sharing between space and terrestrial services and feeder links near 1.4 GHz for non-GSO MSS systems with service links below 1 GHz,

resolves

1 to invite ITU-R, as a matter of urgency, to carry out studies to determine the operational and technical measures required to facilitate sharing in portions of the band 1 390 - 1 400 MHz between existing and currently planned services and feeder links (Earth-to-space) for non-GSO MSS systems with service links operating below 1 GHz;

2 to invite ITU-R, as a matter of urgency, to carry out studies to determine operational and technical means to facilitate sharing, in portions of the band 1 427 - 1 432 MHz, which may be allocated to non-GSO MSS systems between existing and currently planned services and feeder links (space-to-Earth) for non-GSO MSS systems with service links operating below 1 GHz;

3 to invite ITU-R, as a matter of urgency, to study operational and technical measures required to protect passive services in the band 1 400 - 1 427 MHz from unwanted emissions from feeder links near 1.4 GHz for non-GSO MSS systems with service links operating below 1 GHz;

4 to invite [WRC-99/a future competent conference] to consider, on the basis of completion of studies referred to in *resolves* 1, 2 and 3, additional allocations for feeder links on a worldwide basis for non-GSO MSS systems with service links below 1 GHz,

urges administrations

to participate actively in such studies, with the involvement of interested parties.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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PLENARY MEETING

NOTE FROM THE CHAIRMAN OF COMMITTEE 5 TO THE CHAIRMAN OF THE PLENARY

Committee 5 approved modifications to Article S5 that will allow the frequency bands around 60 GHz to be alleviated from intense use by the inter-satellite service with a view to protecting space science systems in this important spectrum range for meteorological observations.

At the final meeting of Committee 5, it was confirmed by the BR that advance publication information had been received prior to WRC-97 for a limited number of systems that use bands around 60 GHz for non-geostationary inter-satellite links and that these systems would no longer be in conformity with the frequency allocations modified as a result of the Committee 5 decisions.

Noting that Resolution 643 (WRC-95) "*resolves* to urge administrations to refrain from implementing inter-satellite links in the band 54.25 - 58.2 GHz pending a decision on the matter by WRC-97", administrations responsible for the systems mentioned above are strongly encouraged to modify the characteristics of the networks communicated to the BR in order to use the new allocations to the inter-satellite service in the 70 GHz range, or other bands allocated to the inter-satellite service, as appropriate.

In order not to penalize these administrations who have already submitted information for advance publication of non-geostationary systems using inter-satellite links in the 60 GHz band, it is suggested that the Conference instruct the Bureau in the following course of action:

When examining amendments to the systems mentioned in the second paragraph above which seek to shift the frequency band for inter-satellite links from the bands originally submitted to another band allocated to the inter-satellite service, administrations responsible for these systems will not be required to apply the provisions of RR [**1043**]/**S9.2** (recommencement of advance publication).

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 364-E
19 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.11 **PLENARY MEETING**

ELEVENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 5	346	**RESOLUTION COM5-23 (WRC-97)** **ARTICLE S21** – Table S21-4 – Numbers S21.16.6, S21.16.6bis and S21.16.6ter **RESOLUTION 46** – Annex 2 (§ A.2.2.1 and A.2.2.3) **RESOLUTION 121 (Rev.WRC-97)** **RESOLUTION 119 (WRC-95)** **RESOLUTION 70 (WARC-92)**

A.-M. NEBES
Chairman of Committee 6

Annex: 10 pages

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RESOLUTION COM5-23 (WRC-97)

POWER FLUX-DENSITY LIMITS APPLICABLE TO NON-GSO FSS SYSTEMS FOR PROTECTION OF TERRESTRIAL SERVICES IN THE BANDS 10.7 - 12.75 GHz AND 17.7 - 19.3 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the power flux-density (pfd) limits specified in Table **S21-4** for the bands 10.7 - 12.75 GHz and 17.7 - 19.7 GHz for the protection of terrestrial services were originally developed assuming that potentially interfering space stations in the fixed-satellite service (FSS) would operate in the geostationary-satellite orbit (GSO);

b) that the results of studies to date on potential interference from non-GSO FSS networks in the 18.8 - 19.3 GHz range, but which may be extrapolated to the 17.7 - 19.3 GHz range, differ as to whether the power flux-density limits in Article **S21** would provide adequate protection of the fixed service when applied to non-GSO networks with a large number of satellites (i.e. greater than 100);

c) that, in the 10.7 - 12.75 GHz band, some initial sharing studies have been undertaken and further work is required in order to assess the adequacy of the existing power flux-density limits;

d) that further studies are required of the power flux-density limits applicable to non-GSO FSS systems for the protection of terrestrial services in the bands 10.7 - 12.75 GHz and 17.7 - 19.3 GHz,

noting

a) that Resolution **118 (WRC-95)** requested studies of the criteria for sharing between non-GSO FSS systems and terrestrial services in the 20/30 GHz bands;

b) that non-GSO FSS networks are being developed that take into account the power flux-density limits that were in force prior to this Conference; however, in the band 18.8 - 19.3 GHz, these values were subject to review by ITU-R;

c) that modifications to existing FSS network design or operating parameters may be needed in order to obtain conformance with the revised limits adopted by this Conference;

d) that the band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services and that administrations should endeavour to reduce to a minimum the risks of interference to passive sensors; the interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029,

resolves

1 that emissions from a space station in non-GSO FSS networks in the bands 10.7 - 12.75 GHz and 17.7 - 19.3 GHz shall comply with the power flux-density limits contained in Article **S21** and in Annex 1 to this Resolution for the protection of terrestrial services (see *considering* d));

2 that in view of *noting* b) in relation to the 18.8 - 19.3 GHz band in the case of non-GSO FSS networks for which complete coordination or notification information has been received by the Radiocommunication Bureau by 17 November 1995, or are in operation by that date, the power flux-density limits which were in force prior to 27 October 1997 shall continue to apply; in the case of non-GSO FSS networks for which such information was received after 17 November 1995, the power flux-density limits in Annex 1 to this Resolution will apply,

invites ITU-R

to study, as a matter of urgency, the appropriate power flux-density values to be applied to non-GSO networks in the aforementioned bands to ensure protection of the fixed service without unduly constraining the development of either type of network,

requests [WRC-99]

to review the provisional limits referred to in *resolves* 1 based on the results of the studies carried out by ITU-R,

urges administrations

to consider reductions in the power flux-density or the number of satellites in non-GSO FSS networks within the spirit of No. **S9.58**, so as to facilitate sharing between non-GSO FSS networks and systems in the fixed service.

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ANNEX 1

Frequency band	Service	Limits in dB(W/m²) for angle of arrival δ above the horizontal plane			Reference bandwidth
		0° - 5°	5° - 25°	25° - 90°	
10.7 - 11.7 GHz	Fixed-satellite (S-E)	–150[1)]	–150 + 0.5(δ-5)[1)]	–140[1)]	4 kHz
12.2 - 12.5 GHz (R3) 12.5 - 12.75 GHz (R1 and R3 countries listed in Nos. S5.494 and S5.496)	Fixed-satellite (S-E)	–148[1)]	–148 + 0.5(δ-5)[1)]	–138[1)]	4 kHz
11.7 - 12.5 GHz (R1) 12.2 - 12.7 GHz (R2) 11.7 - 12.2 GHz (R3) 11.7 - 12.2 GHz (R2)	Fixed-satellite (S-E), non-GSO	–148[2)]	–148 + 0.5(δ-5)[2)]	–138[2)]	4 kHz
17.7 - 19.3 GHz[3), 4)]	Fixed-satellite (S-E)	-115 or -125[5)]	–115 + 0.5 (δ-5) or –125 + 0.5 (δ-5)[5)]	-105 or -105[5)]	1 MHz

[1)] Although these limits apply to both GSO and non-GSO FSS satellites, values for non-GSO systems require further study (see Resolution [**COM5-23**]).

[2)] These values require further study (see Resolution [**COM5-23**]).

[3)] The equality of rights to operate when a frequency band is allocated in different Regions to different services of the same category is established in No. **S4.8**. Therefore, any limits concerning inter-Regional interference which may appear in ITU-R Recommendations should, as far as practicable, be observed by administrations.

[4)] The band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.

[5)] These values shall apply provisionally only to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems operating with more than 100 satellites (see Resolution [**COM5-23**]).

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ARTICLE S21

TABLE S21-4

MOD

Frequency band	Service	Limits in dB(W/m²) for angle of arrival δ above the horizontal plane			Reference bandwidth
		0° - 5°	5° - 25°	25° - 90°	
10.7 - 11.7 GHz	Fixed-satellite (S-E)	–150 *6bis)*	–150 + 0.5(δ-5) *6bis)*	–140 *6bis)*	4 kHz
12.2 - 12.5 GHz (R3) 12.5 - 12.75 GHz (R1 and R3 countries listed in Nos. S5.494 and S5.496)	Fixed-satellite (S-E)	–148 *6bis)*	–148 + 0.5(δ-5) *6bis)*	–138 *6bis)*	4 kHz
11.7 - 12.5 GHz (R1) 12.2 - 12.7 GHz (R2) 11.7 - 12.2 GHz (R3) 11.7 - 12.2 GHz (R2)	Fixed-satellite (S-E), non-GSO	–148 *6ter)*	–148 + 0.5(δ-5) *6ter)*	–138 *6ter)*	4 kHz
17.7 - 19.3 GHz *1) 1bis)*	Fixed-satellite (S-E)	-115 or -125 *6)*	–115 + 0.5 (δ–5) or –125 + (δ-5) *6)*	-105 or -105 *6)*	1 MHz
19.3 - 19.7 GHz	Fixed-satellite (S-E)	–115	–115 + 0.5 (δ–5)	–105	1 MHz

1) The equality of rights to operate when a frequency band is allocated in different Regions to different services of the same category is established in No. **S4.8**. Therefore, any limits concerning inter-Regional interference which may appear in ITU-R Recommendations should, as far as practicable, be observed by administrations.

1bis) The band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.

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MOD **S21.16.6** [6)] These values shall apply provisionally only to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems operating with more than 100 satellites (see Resolution [**COM5-23**]).

ADD **S21.16.6*bis*** [6*bis*)] Although these limits apply to both GSO and non-GSO FSS satellites, values for non-GSO systems require further study (see Resolution [**COM5-23**]).

ADD **S21.16.6*ter*** [6*ter*)] These values require further study (see Resolution [**COM5-23**]).

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RESOLUTION 46

MOD

ANNEX 2

A2.2.1 *Sharing between feeder links of the non-GSO/MSS (space-to-Earth) and terrestrial services in the same frequency bands*

The power flux-density at the Earth's surface produced by space stations of the fixed-satellite service operating in the space-to-Earth direction in the band 5 150 - 5 216 MHz shall in no case exceed –164 dB(W/m^2) in any 4 kHz band for all angles of arrival.

Emissions from a non-geostationary space station shall not exceed the following limits at the Earth's surface:

Frequency bands	Service	Limit in dB(W/m^2) for angle of arrival above the horizontal plane			Reference bandwidth
		0° – 5°	5° – 25°	25° – 90°	
6 700 - 6 825 MHz	Fixed-satellite (S-E)	–137	–137 + 0.5 (δ–5)	–127	1 MHz
6 825 - 7 075 MHz	Fixed-satellite (S-E)	–154 and –134	–154 + 0.5 (δ–5) and –134 + 0.5 (δ–5)	–144 and –124	4 kHz 1 MHz

Emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of –146 dB(W/m^2/MHz) in the bands 15.4 - 15.45 GHz and 15.65 - 15.7 GHz, and –111 dB(W/m^2/MHz) in the band 15.45 - 15.65 GHz for all angles of arrival. These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

Power flux-density limits between 17.7 GHz and 27.5 GHz.

The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:

–115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

–115 + 0.5(δ-5) dB(W/m^2) in any 1 MHz band for angles of arrival δ between 5 and 25 degrees above the horizontal plane;

–105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

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MOD

A2.2.3 Power flux-density limits produced by non-GSO/FSS in the 20 - 30 GHz band

The power flux-density at the Earth's surface produced by emissions from a space station shall not exceed the following values:

–115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

–115 + 0.5(δ - 5) dB(W/m^2) in any 1 MHz band for angles of arrival δ between 5 and 25 degrees above the horizontal plane;

–105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

However, the following values shall apply provisionally to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems with more than 100 satellites (see Resolution [**COM5-23**]):

–125 dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

–125 + (δ - 5) dB(W/m^2) in any 1 MHz band for angles of arrival δ between 5 and 25 degrees above the horizontal plane;

–105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which could be obtained under assumed free-space propagation conditions.

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RESOLUTION 121 (Rev.WRC-97)

Continued Development of Interference Criteria and Methodologies for Fixed-Satellite Service Coordination Between Feeder Links of Non-Geostationary Satellite Networks in the Mobile-Satellite Service and Geostationary-Satellite Networks in the Fixed-Satellite Service in the Bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-95 made provision for use of the bands 19.3 -19.6 GHz and 29.1 - 29.4 GHz by feeder links of non-geostationary-satellite networks in the mobile-satellite service (non-GSO MSS) and this Conference made provision for an additional 2 x 100 MHz in the bands 19.6 - 19.7 and 29.4 - 29.5 GHz;

b) that coordination between feeder links of non-GSO MSS networks, and geostationary-satellite networks in the fixed-satellite service (GSO FSS) and terrestrial networks in these bands will be in accordance with Annex 2 of Resolution **46 (Rev.WRC-97)**/Annex 1 of Appendix **S5**;

c) that simultaneous operation of GSO FSS networks and feeder links of non-GSO MSS networks will in most cases result in short-term, high-level interference between such networks, unless interference mitigation techniques are applied by both types of network;

d) that the CPM Report to this Conference concluded that, of the interference mitigation techniques that were studied, the use of adaptive power control, high-gain antennas and geographic isolation "appear to offer the most benefit in improving the sharing between non-GSO MSS feeder links and GSO FSS networks";

e) that ITU-R has developed a Recommendation containing several alternative methodologies for deriving long-term and short-term interference criteria applicable for sharing between non-GSO MSS feeder links and GSO FSS networks;

f) that further development of the Recommendation in *considering* e) would facilitate the determination of appropriate interference mitigation techniques;

g) that No. **S5.541A** of the Radio Regulations requires the use of interference mitigation techniques in order to facilitate coordination of feeder links of non-GSO MSS networks with GSO FSS networks;

h) that the continued development and implementation of interference mitigation techniques would facilitate the coordination of feeder links of non-GSO MSS networks with GSO FSS networks when the interference between such networks exceeds the applicable permissible interference criteria,

resolves to invite ITU-R

1. to undertake, as a matter of urgency, the continued development of appropriate permissible interference criteria for both non-GSO MSS feeder links and GSO FSS networks operating in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz;

2. to undertake, as a matter of urgency, studies of interference mitigation techniques (including those techniques listed in *considering* d)) which could facilitate coordination between non-GSO MSS feeder links and GSO FSS networks;

3. to undertake, as a matter of urgency, studies to develop coordination methodologies for GSO FSS networks and non-GSO MSS feeder links operating in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz on an equal basis,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Director of the Radiocommunication Bureau

to report on the progress of these studies to WRC-99.

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SUP RESOLUTION 119 (WRC-95)

NOC RESOLUTION 70 (WARC-92)

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 365-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

Note from the Chairman of Committee 5 to the Chairman of the Plenary

When considering Documents 290 and 294(Rev.2) Committee 5 approved Resolution [COM5-27]. Considering h) of that resolution indicates that this conference suppressed Resolution 118. In order that this action be formalised, WRC-97 should formally suppress Resolution 118.

V. RAWAT
Chairman of Committee 5

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 366-E
19 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.12 **PLENARY MEETING**

TWELVTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
GTPLEN-1	340	**RESOLUTION 26 (Rev.WRC-97)**
COM 4	333	**ARTICLE S5** – Numbers S5.134, S5.135 and S5.148 **ARTICLE S12A** **RESOLUTION 517 (Rev.WRC-97)** **RESOLUTION COM4-6 (WRC-97)** **RESOLUTION COM4-14 (WRC-97)** **RESOLUTION COM4-15 (WRC-97)** **RESOLUTION COM4-16 (WRC-97)** **RECOMMENDATION 503 (Rev.WRC-97)** **RECOMMENDATION 515 (Rev.WRC-97)** **RECOMMENDATION COM4-A (WRC-97)**

A.-M. NEBES
Chairman of Committee 6

Annex: 22 pages

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RESOLUTION 26 (Rev.WRC-97)

FOOTNOTES TO THE TABLE OF FREQUENCY ALLOCATIONS IN ARTICLE S5 OF THE RADIO REGULATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that footnotes are an integral part of the Table of Frequency Allocations in the Radio Regulations and, as such, form part of an international treaty text;

b) that footnotes to the Table of Frequency Allocations should be clear, concise and easy to understand;

c) that footnotes should relate directly to matters of frequency allocation;

d) that, in order to ensure that footnotes allow modification of the Table of Frequency Allocations without introducing unnecessary complications, principles relating to the use of footnotes are needed;

e) that, currently, footnotes are adopted by competent world radiocommunication conferences and any addition, modification or deletion of a footnote is considered and adopted by the competent conference;

f) that some problems concerning country footnotes may be resolved through the application of a special agreement envisaged by Article **S6** of the Radio Regulations;

g) that, in certain cases, administrations are confronted with major difficulties due to inconsistencies or omissions in footnotes;

h) that, in order to keep the footnotes to the Table of Frequency Allocations up to date, there should be clear and effective guidelines for additions, modifications and deletions of footnotes,

resolves

1. that, wherever possible, footnotes to the Table of Frequency Allocations should be confined to altering, limiting or otherwise changing the relevant allocations rather than dealing with the operation of stations, assignment of frequencies or other matters;

2. that the Table of Frequency Allocations should include only those footnotes which have international implications for the use of the radio-frequency spectrum;

3. that new footnotes to the Table of Frequency Allocations should only be adopted in order to:

a) achieve flexibility in the Table of Frequency Allocations;

b) protect the relevant allocations in the body of the Table and in other footnotes in accordance with Section II of Article **S5** of the Radio Regulations;

c) introduce either transitional or permanent restrictions on a new service to achieve compatibility; or

d) meet the specific requirements of a country or area when it is impracticable to satisfy such needs otherwise within the Table of Frequency Allocations;

4. that footnotes serving a common purpose should be in a common format, and, where possible, be grouped into a single footnote with appropriate references to the relevant frequency bands,

further resolves

1. that any addition of a new footnote or modification of an existing footnote should be considered by a world radiocommunication conference only when:

a) the agenda of that conference explicitly includes the frequency band to which the proposed additional or modified footnote relates; or

b) the frequency bands to which the desired additions or modifications of the footnote belong are considered during conference [and are reflected in the decisions of the conference]; or

c) the addition or modification of footnotes is specifically included in the agenda of the conference as a result of the consideration of proposals submitted by one or more interested administration(s);

2. that recommended agendas for future world radiocommunication conferences should include a standing agenda item which would allow for the consideration of proposals by administrations for deletion of country footnotes, or country names in footnotes, if no longer required;

3. that in cases not covered by *further resolves* 1 and 2, proposals for new footnotes or modification of existing footnotes could exceptionally be considered by a world radiocommunication conference if they concern corrections of obvious omissions, inconsistencies, ambiguities or editorial errors, [and which have been submitted to the ITU not later than [x] months prior to the conference],

urges administrations

1. to review footnotes periodically and to propose the deletion of their country footnotes or of their country names from footnotes, as appropriate;

2. to take account of the *further resolves* above in making proposals to world radiocommunication conferences.

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ARTICLE S5

MOD **S5.134** The use of the bands 5900 - 5950 kHz, 7300 - 7350 kHz, 9400 - 9500 kHz, 11600 - 11650 kHz, 12050 - 12100 kHz, 13570 - 13600 kHz, 13800 - 13870 kHz, 15600 - 15800 kHz, 17480 - 17550 kHz and 18900 - 19020 kHz by the broadcasting service is limited to single-sideband emissions with the characteristics specified in Appendix **S11** to the Radio Regulations or to any other spectrum-efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference.

SUP **S5.135**

SUP **S5.148**

SUP ARTICLE S12A

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RESOLUTION 517 (Rev.WRC-97)

TRANSITION FROM DOUBLE-SIDEBAND (DSB) TO SINGLE-SIDEBAND (SSB) OR OTHER SPECTRUM-EFFICIENT MODULATION TECHNIQUES IN THE HF BANDS BETWEEN 5 900 kHz AND 26 100 kHz ALLOCATED TO THE BROADCASTING SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the HF bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz are severely congested;

b) that SSB techniques allow more efficient utilization of the frequency spectrum than DSB techniques;

c) that SSB techniques enable reception quality to be improved;

d) that Recommendation **515 (HFBC-87)** encourages the accelerated design and manufacture of SSB transmitters and receivers;

e) Appendix **S11** to the Radio Regulations concerning the SSB system specification in the HF broadcasting services;

f) that rapid developments are taking place in digital sound broadcasting technologies;

g) that digital modulation or other spectrum-efficient modulation techniques are expected to provide the means to achieve the optimum balance between sound quality, circuit reliability and bandwidth;

h) that digitally modulated emissions can, in general, provide more efficient coverage than amplitude modulated transmissions by using fewer simultaneous frequencies and less power;

i) that the lifetime of a transmitter is at least twenty years;

j) that it is economically unattractive, using current technology, to convert existing conventional DSB broadcasting systems to SSB operation;

k) that some DSB transmitters have been used with digital modulation techniques without transmitter modifications;

l) that the lifetime of a receiver is of the order of ten years;

m) that ITU-R is carrying out urgent studies on the development of broadcast digital modulation emissions in the bands allocated to the broadcasting service below 30 MHz;

n) that other spectrum-efficient modulation techniques may be developed in the future,

resolves

1 that the procedure in the Annex to this Resolution shall be used for the purpose of ensuring an orderly transition from DSB to SSB or other spectrum-efficient modulation techniques recommended by ITU-R in the HF bands between 5900 kHz and 26 100 kHz allocated to the broadcasting service;

2 that the final date for the cessation of DSB emissions specified in the Annex to this Resolution shall be periodically reviewed by competent future world radiocommunication conferences in the light of the latest available complete statistics on the worldwide distribution of SSB and other spectrum-efficient modulation technique transmitters and receivers, as called for in Resolution **COM4-14**,

instructs the Director of the Radiocommunication Bureau

to compile and maintain the statistics referred to in *resolves* 2, to make these statistics available to administrations and to submit summaries thereof to the competent future world radiocommunication conferences,

invites ITU-R

to continue its studies on digital techniques in HF broadcasting as a matter of urgency with a view to the development of this technology for future use,

invites administrations

to assist the Director of the Radiocommunication Bureau by providing the relevant statistical data and to participate in ITU-R studies on matters relating to the development and introduction of digitally modulated transmissions in the HF bands between 5900 kHz and 26 100 kHz allocated to the broadcasting service.

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ANNEX TO RESOLUTION 517 (Rev.WRC-97)

PROCEDURE FOR THE TRANSITION FROM DOUBLE-SIDEBAND (DSB) TO SINGLE-SIDEBAND (SSB) OR OTHER SPECTRUM-EFFICIENT MODULATION TECHNIQUES IN THE HF BANDS BETWEEN 5 900 kHz AND 26 100 kHz ALLOCATED TO THE BROADCASTING SERVICE

1 The early introduction of SSB or other spectrum-efficient modulation techniques recommended by ITU-R is encouraged.

2 All DSB emissions shall cease not later than 31 December 2015, at 2359 hours UTC.

3 SSB emissions shall comply with the characteristics specified in Appendix **S11** to the Radio Regulations.

4 Other spectrum-efficient modulation techniques, including digital, shall comply with the characteristics to be recommended by ITU-R.

5 After 31 December 2015, 2359 hours UTC, SSB emissions shall comply with the characteristics specified in Appendix **S11** to the Radio Regulations which, *inter alia*, require a carrier reduction of 12 dB relative to peak envelope power.

6 Until 31 December 2015, 2359 hours UTC, SSB emissions intended for reception by DSB receivers with envelope demodulation, in the bands currently used under Article **S12**, shall have a carrier reduction of 6 dB relative to peak envelope power.

7 SSB emissions with a carrier reduction of 12 dB relative to peak envelope power can also be introduced in the spectrum allocated for the type of emission described in § 6 above.

8 Other spectrum-efficient modulation techniques recommended by ITU-R, including digital, can also be introduced in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service.

9 Until 31 December 2015, 2359 hours UTC, whenever an administration replaces a DSB emission by an emission using SSB or other spectrum-efficient modulation techniques, including digital, it shall ensure that the level of interference is not greater than that caused by the original DSB emission.

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RESOLUTION COM4-6 (WRC-97)

INFORMATION NEEDED FOR THE APPLICATION OF ARTICLE S12

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference adopted Article **S12** as a simple and flexible seasonal planning procedure for HF broadcasting based on coordination;

b) that Article **S12** responds to the intent of Resolution **508 (WARC-79)** and Resolution **523 (WARC-92)**;

c) that Article **S12** makes reference to the Rules of Procedure,

considering further

that appropriate Rules of Procedure are to be developed by the Bureau and adopted by the Radio Regulations Board,

instructs the Director of the Radiocommunication Bureau

to consider the information contained in the Annex in developing the Rules of Procedure,

urges administrations

1 to support the Director of the Radiocommunication Bureau in the preparation of these Rules of Procedure and in the development and testing of any accompanying computer software;

2 to submit their schedules in a common electronic format to be defined in the Rules of Procedure,

requests the Director of the Telecommunication Development Bureau

to consider the provision of the necessary funding to enable developing countries to participate fully in the application of Article **S12** and relevant radiocommunications seminars.

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ANNEX TO RESOLUTION COM4-6 (WRC-97)

This Annex responds to the need for information in the application of Article **S12**; the flowchart in Description 2 provides an overview of the Procedure.

1 Software development

The Procedure will require a number of user-friendly software modules to be developed, tested and supplied to administrations by the Bureau. This will ensure that the same software modules are used by administrations and the Bureau for the analysis of the schedules.

The Bureau should:

- develop the aforementioned software with assistance from administrations;
- distribute the software, together with user instructions and relevant documentation;
- organize training in the use of the software;
- monitor the functional performance of the software and, if necessary, make necessary modifications.

2 Software modules

Data capture of requirements

A new module will be required that permits the capture of all data elements detailed in Description 3. This module should also contain validation routines that prevent inconsistent data being captured and sent to the Bureau for processing.

Propagation calculation

This new module should calculate the field strength and other necessary data at all relevant test points as described in Descriptions 1 and 4.

It should also include an option that allows administrations to select the optimum frequency bands for their requirements.

The output format of the data and the medium should be such as to allow easy publication and distribution of the results to all administrations.

The results of these calculations should be displayable in a graphical format.

Compatibility analysis

This module should use the output of the propagation calculation to provide a technical analysis of a requirement both alone and in the presence of other requirements as in Description 4. This analysis would be used in the coordination process.

The values for the parameters given in Description 4 should be user selectable, but in the absence of other values the recommended default values should be used.

The results of this analysis should be capable of being displayed in a graphical format for a defined service area as in Description 4.

Data query

This module should enable the user to perform typical data query functions.

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DESCRIPTION 1

SELECTION OF SUITABLE FREQUENCY BAND(S)

General

In order to assist broadcasters and administrations in the preparation of their HF broadcasting requirements, the Bureau will prepare and distribute suitable computer software. This should be easy to use and the output should be easy to understand.

User input data

The user should be able to enter:

– the name of the transmitting station (for reference purposes);
– the geographic coordinates of the transmitting station;
– the transmitter power;
– the bands which are available for use;
– hours of transmission;
– sunspot number;
– months during which a service is required;
– the available antenna types, together with the relevant directions of maximum radiation;
– the required coverage area specified as a set of CIRAF zones and quadrants (or by means of relevant geographic information).

It is desirable that the software should be able to store the above information, once it has been entered correctly, and provide the user with an easy means of recalling any previously entered information.

Methodology and data

The software should use:

– Recommendation ITU-R BS.705 for the calculation of antenna patterns;
– Recommendation ITU-R P.533 for the prediction of wanted field strength values;
– Recommendation ITU-R P.842 for the calculation of reliability values.

The set of 911 test points (agreed at HFBC-87) should be used, supplemented where necessary with test points based on a geographic grid.

The software should calculate the field strength values and the fading margins at each test point inside the required service area for each of the frequency bands declared to be available, taking account of the relevant transmitting antenna characteristics for each frequency band. The desired RF signal-to-noise ratio should be user selectable with a default value of 34 dB.

The dates for which calculations are made should be user selectable, the default values being:

– 0.5 month after the start of the season;

– mid-point of the season;

– 0.5 month before the end of the season.

The times for which calculations are made should be user selectable, the default values being:

– 30 minutes past the hour in which the requirement starts;

– 30 minutes past each successive hour until the hour in which the requirement stops.

Software output data

For rapid assessment of suitable bands, the software should calculate:

– the basic service reliability (BSR) for each available band and for the relevant test points from the set of 911 test points;

– the basic area reliability (BAR) for each available band and for the relevant test points from the set of 911 test points.

In order to provide information about the geographic distribution of wanted signal values within the required service area, additional results should be available from the software:

– a listing should be available giving, for each of the available bands, the basic circuit reliability (BCR) for each of the test points (from the set of 911 test points) inside the required service area.

In some cases, a graphical display of the BCR values throughout the required service area may be desirable. These values should be calculated at test points at 2-degree intervals of latitude and longitude throughout the required service area.

The BCR values should be displayed graphically as a set of coloured or hatched "pixels" scaled in steps of 10 per cent. It should be noted that:

– reliability values relate to the use of a single frequency band;

– reliability values are a function of the desired RF signal-to-noise ratio (user selectable);

– the field strength values should be calculated by the supplied software on the user's own computer hardware. The software supplied should calculate the relevant reliability values based on these field strength values and the user-supplied desired signal-to-noise values.

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DESCRIPTION 2

TIME SEQUENCE FOR THE PROCEDURE

In the sequence outlined below, the start date for a given schedule period is defined as D and the end date for the same schedule period is defined as E.

Date	**Action**
D-4 months	Closing date for administrations to send their schedules[1] to the Radiocommunication Bureau (Bureau), preferably by electronic mail or on 3.5" diskette (720 kbytes or 1.44 Mbytes). Schedule data will be made available via TIES as soon as it has been processed.
D-2 months	Bureau to send to administrations a consolidated schedule (the Tentative Schedule) together with a complete compatibility analysis[2].
D-2 weeks	Closing date for receipt of amendments from administrations to correct errors and other changes resulting from the coordination process to ensure that this information appears in the Schedule for date D.
D	Bureau to issue the High Frequency Broadcasting Schedule and compatibility analysis.
D to E	Administrations to correct errors and coordinate in-season changes of requirements, sending information to the Bureau as it becomes available. Bureau to issue updates of the Schedule and compatibility analysis at intervals of two months.
E	Closing date for receipt of final operational schedules from administrations to Bureau. No input is needed if there have been no changes to the information previously sent.
E+1 month	Bureau to send to administrations the final consolidated schedule (the Final Schedule) together with a compatibility analysis.

Figure 1 shows, in flow chart form, the time sequence for the Procedure.

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[1] See Description 3.

[2] See Description 4. The schedules and the results of the analyses should be available on CD-ROM and in TIES.

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Time sequence for the Procedure

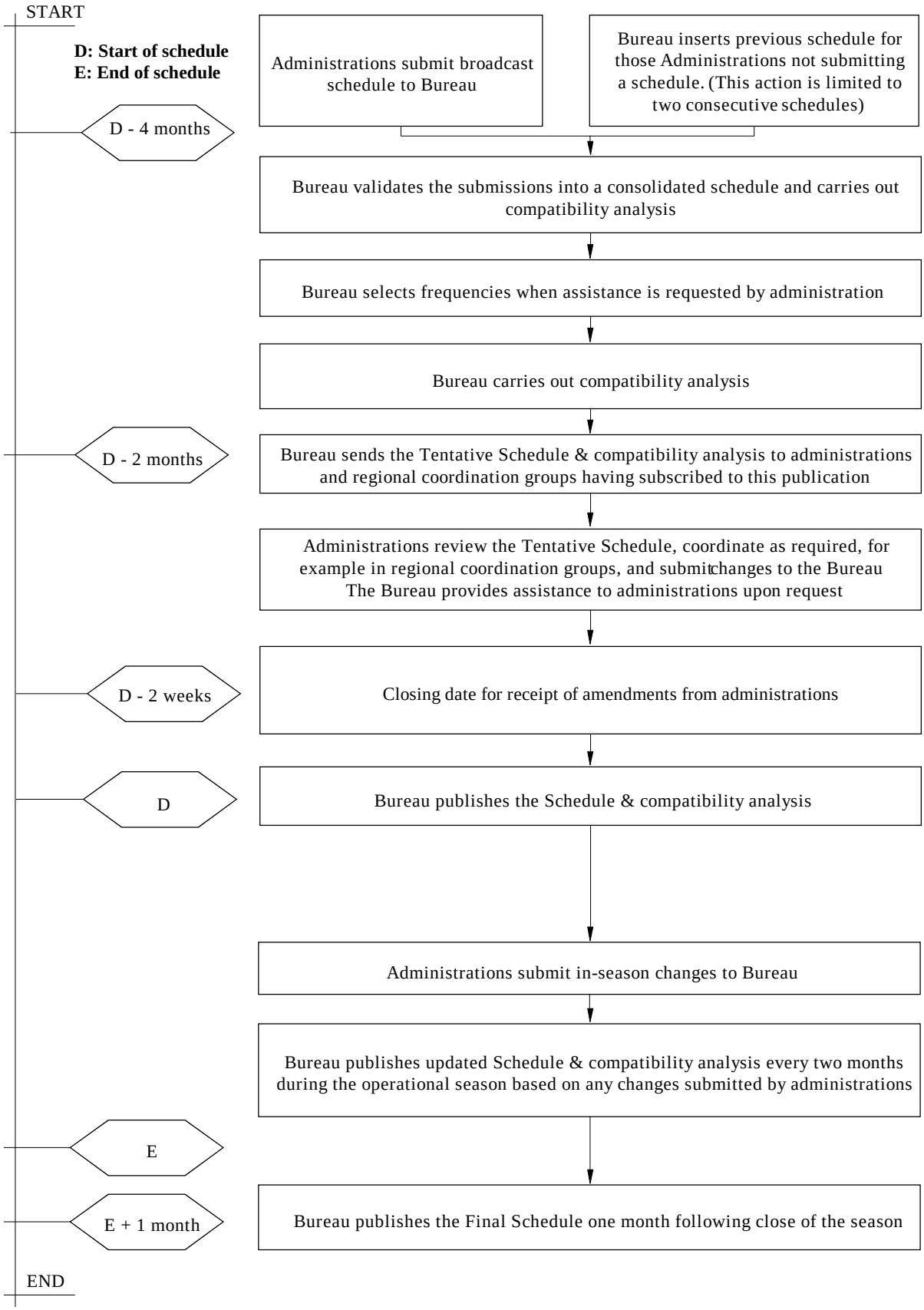

FIGURE 1

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DESCRIPTION 3

SPECIFICATION OF INPUT DATA FOR A REQUIREMENT

The fields needed for a given requirement and their specifications are:

– frequency in kHz, up to 5-digit integer;
– start time, as 4-digit integer;
– stop time, as 4-digit integer;
– target service area, as a set of up to 12 CIRAF zones and quadrants up to a maximum of 30 characters;
– site code, a 3-character code from a list of codes, or a site name and its geographic coordinates;
– power in kW, up to 4-digit integer;
– azimuth of maximum radiation;
– slew angle, up to 2-digit integer representing the difference between the azimuth of maximum radiation and the direction of unslewed radiation;
– antenna code, up to 3-digit integer from a list of values, or a full antenna description, as given in Recommendation ITU-R BS.705;
– days of operation;
– start date, in the case that the requirement starts after the start of the schedule;
– stop date, in the case that the requirement stops before the end of the schedule;
– modulation choice, to specify if the requirement is to use DSB or SSB (see Recommendation ITU-R BS.640). This field may be used to identify any other type of modulation when this has been defined for use by HFBC in an ITU-R Recommendation;
– administration code;
– broadcasting organization code;
– identification number;
– identification of synchronization with other requirements.

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DESCRIPTION 4

COMPATIBILITY ANALYSIS

General

In order to assess the performance of each requirement in the presence of noise and of the potential interference from other requirements using the same or adjacent channels, it is necessary to calculate the relevant reliability values. To this end, the Bureau will prepare suitable software, taking account of user requirements in terms of desired signal-to-noise and signal-to-interference ratios.

Input data

The schedule for a given season - this may be either an initial consolidated schedule (to permit assessment of those requirements which need coordination) or the High Frequency Broadcasting Schedule (to permit assessment of the likely performance of requirements during the relevant season).

Methodology and data

The software should use:

– Recommendation ITU-R BS.705 for the calculation of antenna patterns;

– Recommendation ITU-R P.533 for the prediction of the wanted field strength values at each test point for each wanted requirement;

– Recommendation ITU-R P.533 for the prediction of the potentially interfering field strength values from all other co-channel or adjacent channel requirements at each test point for each wanted requirement;

– Recommendations **517 (HFBC-87)** and ITU-R BS.560 for adjacent channel RF protection ratios;

– Recommendation ITU-R P.842 for the calculation of reliability values.

The set of 911 test points (agreed at HFBC-87) should be used, supplemented where necessary with test points based on a geographic grid.

The software should calculate the wanted and unwanted field strength values and the fading margins at each test point inside the required service area.

The desired RF signal-to-noise and RF protection ratios should be user selectable, the default values being 34 dB and 17 dB (co-channel case), respectively. The latter values should be used by the Bureau for its compatibility analyses.

The dates for which a compatibility analysis is made should be user selectable, the default values being:

– 0.5 month after the start of the season;

– mid-point of the season;

– 0.5 month before the end of the season.

These default values should be used by the Bureau for its compatibility analyses.

The times for which a compatibility analysis is made should be user selectable, the default values being:

– 30 minutes past the hour in which the requirement starts;

– 30 minutes past each successive hour until the hour in which the requirement ends.

These default values should be used by the Bureau for its compatibility analyses.

Software output data

For rapid assessment of the performance of a requirement, the software should calculate:

– the overall service reliability (OSR) for the relevant test points from the set of 911 test points;

– the overall area reliability (OAR) for the relevant test points from the set of 911 test points.

In order to provide information about the geographic distribution of wanted and unwanted signal values for a given requirement, additional results should be available from the software:

– a listing should be available giving the overall circuit reliability (OCR) for each of the relevant test points from the set of 911 test points.

In some cases, a graphical display of the coverage achieved throughout a required service area may be desirable. These values will need to be calculated by the user (with the supplied software and on the user's own computer hardware) at test points at 2-degree intervals of latitude and longitude throughout the required service area. The values should be displayed graphically as a set of coloured or hatched pixels in steps of 10 per cent. It should be noted that:

– reliability values relate to the use of a single frequency;

– reliability values are a function of the desired RF signal-to-noise and RF protection ratios (both user selectable);

– the field strength values for the test points (from the set of 911 test points) inside the required service area should be calculated by the Bureau. The software supplied should calculate the relevant reliability values based on these pre-calculated field strength values and the user supplied desired signal-to-noise and signal-to-interference values.

– the field strength values for the test points at 2-degree intervals should be calculated using the supplied software on the user's own computer hardware. The software supplied should calculate the relevant reliability values based on these field strength values and the user-supplied desired signal-to-noise and signal-to-interference values.

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RESOLUTION COM4-14 (WRC-97)

SURVEY OF HF BROADCASTING TRANSMITTER AND RECEIVER STATISTICS AS CALLED FOR IN RESOLUTION 517 (Rev.WRC-97)

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that Resolution **517 (Rev.WRC-97)** provides for the replacement, by 31 December 2015, of double-sideband (DSB) emissions in the HF bands between 5 900 kHz and 26 100 kHz allocated to the broadcasting service;

b) that Resolution **517 (Rev.WRC-97)** resolves that the date in *considering* a) shall be periodically reviewed by competent future world radiocommunication conferences in the light of the latest available complete statistics on the worldwide distribution of SSB and other spectrum-efficient modulation technique transmitters and receivers;

c) that ITU-R is studying Question ITU-R 217/10 "Digital Broadcasting in AM Bands" and to Question ITU-R 224/3 "The Prediction of System Performance and Reliability for Digital Modulation Techniques at HF",

noting

a) that Recommendation No. **515 (HFBC-87)** recommended that new transmitters installed after 31 December 1990 be capable of operating in the SSB mode;

b) that Recommendation No. **515 (HFBC-87)** invited administrations to encourage receiver manufacturers to begin producing low-cost receivers capable of receiving DSB and SSB broadcasting emissions by 31 December 1990,

recognizing

a) that there is insufficient information on the availability and use of HF broadcasting SSB transmitters and receivers;

b) that broadcasters, unlike most users of other radiocommunication services, have no control over the receivers used by their listeners;

c) that activity is continuing on the development of digital modulation systems for recommendation by ITU-R,

resolves

that the first survey of transmitter and receiver statistics called for in Resolution **517 (Rev.WRC-97)** should be conducted as a matter of urgency, such that its results will be available to [WRC-99] for consideration.

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RESOLUTION COM4-15 (WRC-97)

MEASURES TO SOLVE THE INCOMPATIBILITY BETWEEN BSS IN REGION 1 AND FSS IN REGION 3 IN THE FREQUENCY BAND 12.2 - 12.5 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the band 12.2 - 12.5 GHz is allocated on a primary basis to the BSS in Region 1 and FSS in Region 3;

b) that both services should have equitable access to the orbit and spectrum;

c) that at present, the procedures of Appendix 30 applicable to the FSS in Region 3 in respect of the BSS Plan in Region 1 are such that only the Plan assignments are protected, so that it could lead to situations where an FSS system could receive interference from a BSS system, or vice versa, but for which currently there are no regulatory provisions which require any type of coordination procedure to be undertaken;

d) that several modifications to the Regions 1 and 3 BSS Plan, which have assignments in the band 12.2 - 12.5 GHz, have entered into the Plan by successfully applying the current Article 4 procedure, or are still applying the current Article 4 modification procedure. Some of these assignments have already been brought into use;

e) that some Region 3 FSS systems are currently operating, or are under coordination, applying relevant provisions of the Radio Regulations,

resolves

1 that the Radiocommunication Bureau shall apply the criteria of Annex 4 to Appendix 30 to identify:

– the BSS assignments in the 12.2 - 12.5 GHz frequency band, submitted under paragraphs 4.1a) or 4.1b) of Article 4 of Appendix 30, for which complete Annex 2 information has been received by the Bureau before 27 October 1997 and which are affected by Region 3 FSS networks for which complete Appendix 3 or Appendix S4 information, submitted under paragraph 7.2.1 of Article 7 of the same Appendix, has been received by the Bureau after the date of receipt of the above-mentioned Annex 2 information for BSS and before these modifications and additions have been included in the Regions 1 and 3 BSS Plan.

– The Radiocommunication Bureau shall also identify the administrations whose assignments affect these BSS assignments in the 12.2 - 12.5 GHz frequency band;

2 that the Radiocommunication Bureau shall apply the criteria of Annex 1 to Appendix 30 and relevant Rules of Procedure to identify:

– the Region 3 FSS networks in the frequency band 12.2 - 12.5 GHz for which complete Appendix 3 or Appendix S4 information, submitted under paragraph 7.2.1 of Article 7 of Appendix 30, has been received by the Bureau before 27 October 1997 and which are affected by BSS assignments in the frequency band 12.2 - 12.5 GHz, submitted under paragraphs 4.1a) or 4.1b) of Article 4 of the same Appendix, for which complete Annex 2 information has been received by the Bureau prior to the date of the receipt of the above-mentioned Appendix 3 or Appendix S4 information but for which the date of inclusion of these modifications or additions in the BSS Plan is after the date of receipt of the above-mentioned Appendix 3 or Appendix S4 information.

– The Radiocommunication Bureau shall identify the administrations whose assignments affect the above-mentioned Region 3 FSS networks in the 12.2- 12.5 GHz frequency band;

3 the administrations which have been identified by the BR in *resolves* 1 and 2 above shall make all possible mutual efforts to solve the interference problems.

NOTE 1 - The implications of this Resolution on the workload of the Bureau has to be taken into account.

NOTE 2 - Any retroactive application of this Resolution shall in no way have any implications regarding the status of assignments in both the BSS and the FSS as identified by the Bureau.

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RESOLUTION COM4-16 (WRC-97)

INFORMATION ON THE OCCUPANCY BY FIXED AND MOBILE SERVICES IN THE ADDITIONAL HF BANDS ALLOCATED BY WARC-92 TO THE BROADCASTING SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97, in response to Resolution **529 (WRC-95)**, did not recommend a date or dates by which the fixed and mobile services, in the additional HF bands allocated by WARC-92 to the broadcasting service, would no longer be protected, due to insufficient information on the current use of these bands by the fixed and mobile services;

b) that the fixed and mobile services in use in each of the above-mentioned bands shall be protected until 1 April 2007;

c) that Resolution **21 (Rev.WRC-95)** established a procedure for the transfer of the fixed and mobile service assignments in the above-mentioned bands to other appropriate frequency bands;

d) that it may be possible and desirable for the broadcasting service to use parts of the above-mentioned bands prior to 1 April 2007,

instructs the Director of the Radiocommunication Bureau

1 to present a report to CPM-99 and [WRC-99], providing information gathered by means of consultation with administrations, on the occupancy by fixed and mobile services in each of the additional HF bands allocated by WARC-92 to the broadcasting service;

2 to provide to CPM-99 and [WRC-99] any new information with regard to possible sharing between broadcasting and other services in the HF bands, together with the information already provided to WARC-92,

urges administrations

1 to provide to the Director of the Radiocommunication Bureau the information which would permit the action in *resolves* 1 and 2 to be carried out;

2 to submit to [WRC-99] proposals with regard to the status to be given prior to 1 April 2007 to the broadcasting service in each of the additional HF bands, or portions thereof, allocated by WARC-92 to the broadcasting service.

RECOMMENDATION No. 503 (Rev.WRC-97)

HF BROADCASTING

The World Radiocommunication Conference (Geneva, 1997),

considering

a) the congestion in the HF broadcasting bands;

b) the extent of adjacent channel interference;

noting

the possibility of improving the situation by implementing pertinent ITU-R Recommendations;

recommends that administrations

1. pay special attention to the provisions for "out-of-band spectrum" contained in Recommendation ITU-R SM.328-9;

2. encourage, to the maximum extent possible, manufacturers to design and build HF broadcasting receivers that conform to Recommendation ITU-R SM.332-4 concerning the selectivity of receivers;

invites administrations

to take advantage, to the maximum extent practicable, of synchronized frequency transmitter operation, taking into account Recommendation ITU-R BS.702-1;

invites ITU-R

to carry out further studies in relation to the Recommendations mentioned above, taking into account the requirements of HF broadcasting, with a view to updating these three Recommendations whenever necessary.

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RECOMMENDATION No. 515 (Rev.WRC-97)

INTRODUCTION OF HF BROADCASTING TRANSMITTERS AND RECEIVERS CAPABLE OF OPERATION WITH SPECTRUM-EFFICIENT MODULATION TECHNIQUES

The World Radiocommunication Conference (Geneva,1997),

considering

a) Resolution **517 (Rev.WRC-97)** relating to the introduction of SSB or other spectrum-efficient modulation techniques, including digital;

b) that industry should be encouraged to manufacture appropriate transmitters and receivers;

c) Appendix **S11** of the Radio Regulations relating to the SSB system specification for the HF bands allocated to the broadcasting service,

considering further

a) that the introduction of SSB or other spectrum-efficient modulation techniques can be accelerated by the appropriate transmitting and receiving equipment being more widely available in good time;

b) that lead-time is necessary for manufacturers to produce appropriate equipment,

invites ITU-R

to complete its studies into receivers for spectrum-efficient modulation techniques,

recommends administrations

to bring to the notice of transmitter and receiver manufacturers the most recent results of relevant ITU-R studies on spectrum-efficient modulation techniques suitable for use at HF as well as the information referred to in *considering c)*,

instructs the Secretary-General

to transmit this Recommendation to the International Electrotechnical Commission (IEC).

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RECOMMENDATION COM4-A (WRC-97)

COORDINATION OF HF BROADCASTING SCHEDULES IN THE BANDS ALLOCATED TO THE BROADCASTING SERVICE BETWEEN 5 900 kHz AND 26 100 kHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that Article **S12** establishes the principles and the Procedure for use of the frequency bands allocated to the HF broadcasting service between 5 900 kHz and 26 100 kHz;

b) that the aforementioned principles stipulate, *inter alia*, that the Procedure should promote the development of a voluntary coordination process among administrations to resolve incompatibilities;

c) that the Procedure itself encourages administrations to coordinate their schedules with other administrations as far as possible prior to submission;

d) that the development of coordination among administrations with the assistance of the Bureau, when requested, would result in better use of the spectrum allocated to the HF broadcasting service between 5 900 kHz and 26 100 kHz,

recognizing

a) that the participation of broadcasting organizations in this coordination process would make the task of resolving incompatibilities easier;

b) that multilateral coordination of the use of the HF broadcasting bands is already practiced on an informal basis in various regional coordination groups[1],

recommends administrations

to promote, as far as possible, regular coordination of their broadcasting schedules within appropriate regional coordination groups of administrations or broadcasting organizations in order to resolve or reduce incompatibilities, through bilateral or multilateral meetings or by correspondence (telephone, facsimile, email, etc.).

[1] Not related to the ITU Regions.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 367-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

FIFTH SERIES OF TEXTS SUBMITTED BY WORKING GROUP 1 OF THE PLENARY TO THE EDITORIAL COMMITTEE

DRAFT RESOLUTION

Replace paragraphs 1.6 and 1.6.1 by the following text:

1.6 issues related to the IMT-2000;

1.6.1 review of spectrum and regulatory issues for advanced mobile applications in the context of IMT-2000, noting that there is an urgent need to provide more spectrum for the terrestrial component of such applications, and priority should be given to terrestrial mobile spectrum needs, and adjustments to the Table of Frequency Allocations as necessary.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 367-E
19 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 6

FIFTH SERIES OF TEXTS SUBMITTED BY WORKING GROUP 1
OF THE PLENARY TO THE EDITORIAL COMMITTEE

DRAFT RESOLUTION [GTPLEN1-3]

AGENDA FOR THE 1999 WORLD RADIOCOMMUNICATION CONFERENCE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that in accordance with Nos. 118 and 126 of the Convention of the International Telecommunication Union (Geneva, 1992), the general scope of the agenda for a world radiocommunication conference should be established four years in advance and a final agenda shall be established two years before the conference;

b) Article **13** of the Constitution of the International Telecommunication Union (Geneva, 1992) regarding the competence and scheduling of world radiocommunication conferences and Article **7** of the Convention (Geneva, 1992) regarding their agendas;

c) the relevant Resolutions and Recommendations of previous world administrative radio conferences (WARC) and world radiocommunication conferences (WRC),

recognizing

a) that this Conference identified a number of urgent issues requiring further examination by the 1999 World Radiocommunication Conference (WRC-99);

b) that in preparing this agenda, many proposals from administrations could not be included here and had to be deferred to future conference agendas,

resolves

to recommend to the Council that a world radiocommunication conference be held in late 1999[1] for a period of four weeks, with the following agenda:

1 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, taking account of the results of WRC-97, and with due regard to the requirements of existing and planned services in the bands under consideration, to consider and take appropriate action in respect of the following topics:

1.1 requests from administrations to delete their country footnotes or to have their country's name deleted from footnotes, if no longer required, in accordance with Resolution **26 [(Rev.WRC-97)]**;

1.2 to finalize remaining issues in the review of Appendix **S3** to the Radio Regulations with respect to spurious emissions for space services, taking into account Recommendation **66 (Rev.WRC-97)** and the decisions of WRC-97 on adoption of new values of spurious emissions for space services taking effect at a future time;

1.3 to consider the results of ITU-R studies in respect of Appendix **S7 [28]** on the method for the determination of the coordination area around an earth station in frequency bands shared among space services and terrestrial radiocommunication services and take the appropriate decisions to revise this Appendix;

1.4 to consider issues concerning allocations and regulatory aspects related to Resolutions **[COM5-11], [COM5-12]**, **[COM5-16], [COM5-17]**, **[COM5-28]** and **[COM5-29]**;

1.5 to consider regulatory provisions and possible additional frequency allocations for services using high altitude platform stations, taking into account the results of ITU-R studies conducted in response to Resolution **[COM5-7]**;

1.6[2] issues related to the International Mobile Telecommunication System (IMT-2000):

1.6.1[2] review of the spectrum requirements for the operation of terrestrial IMT-2000 with a view to identifying future expansion bands, and adjustments to the Table of Frequency Allocations as necessary;

1.6.2[2] identification of a global radio control channel to facilitate multimode terminal operation and worldwide roaming of IMT-2000;

1.7 review the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view to protecting the operational, distress and safety communications, taking into account Resolutions **[COM4-9]**;

1.8 to consider regulatory and technical provisions to enable earth stations of the maritime mobile-satellite service to operate in the fixed-satellite service networks in the bands 3 700 - 4 200 MHz and 5 925 - 6 425 MHz, including their coordination with other services allocated in these bands;

[1.9 review of the use of the bands in the frequency range 1.5 - 1.7 GHz by the mobile-satellite service, taking into account Resolutions **[COM5-22]** and **[COM5-XX]**;]

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[1] See Resolution [GTPLEN1-2].

[2] The text of this item has not been finalized.

1.10 to consider results of ITU-R studies in accordance with Resolution **[COM5-24]** and take appropriate action on this subject;

1.11 to consider constraints on existing allocations and to consider additional allocations on a worldwide basis for the non-GSO/MSS below 1 GHz , taking into account the results of ITU-R studies conducted in response to Resolutions **No. 214 (Rev.WRC-97)** and **[COM5-25]**;

1.12 to consider the progress of studies on sharing between feeder links of non-geostationary satellite networks in the mobile-satellite service and geostationary-satellite networks in the fixed-satellite service in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz taking into account Resolution **No. 121 (Rev. WRC-97)**;

1.13 on the basis of the results of the studies in accordance with Resolutions **[COM5-18], [COM5-19]** and **[COM5-23]**:

1.13.1 review and if appropriate, revise the power limits appearing in Articles **S21** and **S22** in relation to the sharing conditions among NGSO FSS, GSO FSS, GSO BSS, space sciences and terrestrial services, to ensure the feasibility of these power limits and that these limits do not impose undue constraints on the development of these systems and services;

1.13.2 consider the inclusion in other frequency bands of similar limits in Articles **S21** and **S22**, or other regulatory approaches to be applied in relation to sharing situations;

1.14 review the results of the studies on the feasibility of implementing non-GSO MSS feeder links in the 15.43- 15.63 GHz in accordance with Resolution **[COM5-8]**;

1.15 issues related to the radionavigation-satellite service:

1.15.1 to consider new allocations to the radionavigation-satellite service required to support developments in the range from 1 to 6 GHz;

1.15.2 to consider the addition of the space-to-space direction to the radionavigation-satellite service allocations in the 1215 - 1 260 MHz and 1 559 - 1 610 MHz frequency bands;

1.15.3 to consider the status of allocations to services other than the radionavigation-satellite (RR S5.355 and S5.359) in the 1559 - 1 610 MHz band;

1.16 to consider allocation of frequency bands above 71 GHz to the earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution **[COM5-1]**;

1.17 to consider possible worldwide allocation for the earth exploration-satellite (passive) and space research (passive) services in the band 18.6- 18.8 GHz taking into account the results of the ITU-R studies;

1.18 consider the use of new digital technology for the maritime mobile service in the band 156 - 174 MHz and consequential revision of Appendix **S18 [18]** taking into account Resolution **[COM4-3]**;

1.19 to consider the report of the IRG submitted by the Director of the Radiocommunication Bureau in accordance with Resolution [**COM4-22**] and determine whether to initiate replanning for completion by a subsequent competent conference;

1.20 consider report from the Radiocommunication Bureau on results of the analysis in accordance with Resolution **[COM4-20]** and take appropriate actions;

2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations which have been communicated by the associated Radiocommunication Assembly, in accordance with Resolution **28 (WRC-95)**; and decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution **27 (Rev.WRC-97)**;

3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;

4 in accordance with Resolution **[GTPLEN1-1]**, to review the Resolutions and Recommendations of the previous Conferences with a view to their possible revision, replacement or abrogation;

5 to review, and take appropriate action on, the report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention (Geneva, 1992);

6 to identify those items requiring urgent actions by the radiocommunication study groups in preparation for the 2001 World Radiocommunication Conference (WRC-01);

7 in accordance with Article 7 of the Convention (Geneva, 1992):

7.1 to consider and approve the report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since the last Conference;

7.2 to recommend to the Council items for inclusion in the agenda for the WRC-01, and to give its views on the preliminary agenda for the 2003 Conference and on possible agenda items for future conferences,

further resolves

8 to recommend to the Council to provide extra budgetary and conference resources so that the following items can be included in this agenda for WRC-99:

8.1 to consider the regulatory and technical provisions for the quasi-geostationary satellite networks;

8.2 to examine the spectrum requirements for telemetry, tracking, and control of fixed-satellite service networks operating with service links in the frequency bands above 17 GHz;

8.3 review the use of the frequency band 415 - 526.5 kHz by the aeronautical radionavigation and maritime mobile services;

8.4 review the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view toward meeting the changing needs of these services;

8.5 to consider possible extension of the allocation to the mobile-satellite service (Earth-to-space) on a secondary basis in the 14.0 - 14.5 GHz band to cover aeronautical applications as stipulated in Resolution **[COM5-2]**;

8.6 to consider the provision of up to 3 MHz of frequency spectrum for the implementation of telecommand links in the space research and space operation services in the frequency range between 100 MHz and 1 GHz, taking into account Resolution **[COM5-1]**;

8.7 consider provision of up to 6 MHz of frequency spectrum to the earth exploration-satellite service (active) in the frequency band 420 - 470 MHz in accordance with Resolution **[COM5-13]**;

8.8 consideration of changes to the allocations in Regions 3 for the band 1 350 - 1 400 MHz to permit co-primary use by the fixed service;

invite the Council

to finalize the agenda and arrange for the convening of WRC-99 and to initiate as soon as possible the necessary consultation with Members,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-99,

instructs the Secretary-General

to communicate this Resolution to concerned international and regional organizations.

SUP

RESOLUTION 720 (WRC-95)

PRELIMINARY AGENDA FOR THE 1999 WORLD RADIOCOMMUNICATION CONFERENCE

RESOLUTION [GTPLEN1-4]

PRELIMINARY AGENDA FOR THE 2001 WORLD RADIOCOMMUNICATION CONFERENCE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that in accordance with Nos. 118 and 126 of the Convention of the International Telecommunication Union (Geneva, 1992), the general scope of the agenda for the 1999 World Radiocommunication Conference (WRC-99) should be established four years in advance;

b) Article 13 of the Constitution of the International Telecommunication Union (Geneva, 1992) regarding the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention (Geneva, 1992) regarding their agendas;

c) the relevant Resolutions and Recommendations of previous world administrative radio conferences and world radiocommunication conferences,

resolves to give the view

that the following items should be included in the preliminary agenda of WRC-01, to be held in late 2001:

1 to take appropriate action in respect of those urgent issues that were specifically requested by the 1999 World Radiocommunication Conference (WRC-99);

2 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, and taking account of the results of WRC-97, to consider and take appropriate action in respect of the following topics:

2.1 requests from administrations to delete their country footnotes or to have their country's name deleted from footnotes, if no longer required, taking into account Resolution **26 (WRC-95)**;

2.2 consideration of Article **S25** concerning the amateur and amateur-satellite services;

2.3 issues related to Appendix **S13**;

2.3.1 to consider the results of studies regarding the boundary between spurious and out-of-band emissions;

2.3.2 to consider the inclusion of general limits for out-of-band emissions into the Radio Regulations, in particular with regard to whether it is appropriate to do so, taking into account the results of ITU-R studies;

2.4 review of the frequency and channel arrangements in the MF and HF bands allocated on a primary basis to the maritime-mobile service, taking into account the use of new digital technology in accordance with Resolution **[COM4-10]**;

2.5 to review in Appendix **S2 [7]** the Table of Transmitter Frequency Tolerances taking into account frequency tolerance limits specified in Recommendation ITU-R SM.1045;

2.6 to consider the status of allocations to radiolocation service in the bands around 3.0 GHz and around 5.5 GHz; [the date of a conference is under discussion];

2.7 sharing between the FSS and FS in the 19 GHz band when used bidirectionally by the FSS to provide feeder links for non-geostationary satellite systems in the mobile-satellite service, in accordance with Resolution **[XXX]**;

2.8 to consider spectrum requirements for wideband aeronautical telemetering in the band between 3 and 30 GHz;

2.9 review of allocations to the space-research service (deep space) (space-to-Earth) and the inter-satellite service in the frequency range 32 - 32.3 GHz with a view to improving the sharing conditions between these services;

2.10 to consider Appendix **S13** and Resolution **331 (Rev.WRC-97)** with a view to their deletion and, if appropriate, consider related changes to Chapter SVII and other provisions of the Radio Regulations as necessary, taking into account the continued transition to the Global Maritime Distress and Safety System (GMDSS);

2.11 to consider the result of studies, and take necessary actions relating to:

2.11.1 the exhaustion of the maritime mobile service identity numbering resource (Resolution **[COM4-5]**);

2.11.2 the shore-to-ship distress communication priorities (Resolution **[COM4-11]**);

2.12 consideration of the need to realign the allocations to the amateur, amateur-satellite and broadcasting services around 7 MHz on a worldwide basis, taking into account Recommendation **718 (WARC-92)**;

2.13 examination of the adequacy of the frequency allocations for HF broadcasting from about 4 MHz to 10 MHz taking into account the seasonal planning procedures adopted by WRC-97 and to consider bringing forward the date of availability of the HF bands allocated by WARC-92 to the broadcasting service in response to Resolution **COM4-16** and Resolution **COM4-14**;

3 to consider the results of the studies related to the following with a view to consider them for inclusion in the agendas of future conference:

3.1 Resolution **528 (WARC-92)**;

3.2 possible allocations in the frequency bands above 275 GHz;

3.3 examination of potential for sharing around 4 300 MHz between radio altimeters and space-based passive earth sensors;

3.4 additional allocations on a worldwide basis for the non-GSO/MSS with service links operating below 1 GHz in accordance with Resolution **[COM5-14]**;

3.5 allocations on a worldwide basis for feeder links in bands around 1.4 GHz to the non-geostationary mobile-satellite services with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution **[COM5-15]**;

3.6 use of frequency adaptive systems in the MF/HF bands in accordance with Resolution **[COM4-7]**;

3.7 allocation of the frequency band 14.5 - 14.8 GHz to the fixed-satellite service (Earth-to-space) in Region 3 (expansion of FSS to include other than feeder links of the BSS);

4 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations which have been communicated by the associated Radiocommunication Assembly, in accordance with Resolution **28 (WRC-95)**; and decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution **27 (Rev.WRC-97)**;

5 to consider such consequentialchanges and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;

6 in accordance with Resolution **[GTPLEN1-1]**, to review those Resolutions and Recommendations of the previous Conferences with a view to their possible revision, replacement or abrogation;

7 to review, and take appropriate action on, the report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and136 of the Convention of the ITU (Geneva, 1992);

8 to identify those items requiring urgent action by the radiocommunication study groups;

9 in accordance with Article 7 of the Convention of the ITU (Geneva, 1992):

9.1 to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since the last conference;

9.2 to recommend to the Council items for inclusion in the agenda for the 2003 World Radiocommunication Conference,

invites the Council

to consider the views given in this Resolution,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a Report to WRC-01,

instructs the Secretary-General

to communicate this Resolution to concerned international and regional organizations.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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19 November 1997
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PLENARY MEETING

NOTE FROM THE CHAIRMAN OF COMMITTEE 5
TO THE CHAIRMAN OF THE PLENARY

A number of MSS and FSS allocation decisions taken by Committee 5 and approved by this Plenary require the application of the Resolution 46 (Rev.WRC-97) procedure. This requirement is indicated in the footnotes associated with the allocations in the Table of Frequency Allocations. The annexed Resolution allows immediate application of the Resolution 46 procedure for these modified allocations in order that administrations can proceed immediately with the coordination of systems planning to use these allocations.

V. RAWAT
Chairman of Committee 5

Annex: 1

ANNEX

RESOLUTION [COM5-XX]

IMPLEMENTATION OF RESOLUTION 46 (Rev.WRC-97)

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has modified Resolution **46**;

b) that the revised version of Resolution **46** is referred to in several footnotes in the Table of Frequency Allocations of the Radio Regulations that have been modified by this Conference;

c) that these footnotes shall apply provisionally only as from 1 January 1999;

d) that some administrations have expressed the wish to start the coordination procedure contained in Resolution **46** (**Rev.WRC-97**) as soon as possible following this Conference,

considering further

that some administrations have already submitted information on projected networks,

instructs the Bureau

to apply, as of 22 November 1997, the provisions of Resolution **46** (**Rev.WRC-97**) to those bands in which the Resolution is mentioned.

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B.13 **PLENARY MEETING**

THIRTEENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 4	351	Annex 2 to Appendix 30 (S30) Annex 2 to Appendix 30A (S30A)

A.-M. NEBES
Chairman of Committee 6

Annex: 7 pages

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ANNEX 2

(to Appendix 30 (S30))

Basic Characteristics to Be Furnished in Notices[2] Relating to Space Stations in the Broadcasting-Satellite Service[3]

(MOD) 1. Country and beam identification.

(NOC) 2. Nominal orbital position (in degrees from the Greenwich meridian) in the case of Regions 1 and 3; orbital position (xxx.xx degrees from the Greenwich meridian) in the case of Region 2.

(MOD) 3. Assigned frequency.

(ADD) 4. Assigned frequency band.

(NOC) 5. Date of bringing into use.

(NOC) 6. Identity of the space station.

(MOD) 7. Service area identified by:

(MOD) *a)* a set of a maximum of twenty test points, and

(ADD) *b)* a service-area contour on the surface of the Earth or a service area defined by a minimum elevation angle in degrees, and

(ADD) *c)* the name of other administration(s) (country/territory symbols) included in the service area.

(NOC) 8. Geographical coordinates of the intersection of the antenna beam axis with the Earth.

(NOC) 9. Class of station.

(NOC) 10. Class of emission and necessary bandwidth.

(NOC) [2] The Bureau shall develop and keep up to date forms of notice to meet fully the statutory provisions of this Annex.

(NOC) [3] In Region 2, only those notices relating to frequency assignments for space stations used for telemetry and tracking purposes associated with the Region 2 Plan shall be furnished in accordance with Appendix **S4** to the Radio Regulations.

(MOD) 11. Power supplied to the antenna (dBW) and maximum power density per Hz supplied to the antenna (dB(W/Hz)), averaged over the worst 5 MHz, 4 kHz and 27 MHz, as well as averaged over the worst 40 kHz in the case of Region 2.

(MOD) 12. Space station transmitting antenna characteristics:

(MOD) *a)* co-polar gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi), as well as the cross-polar gain of the antenna in the case of a beam of other than elliptical shape;

(NOC) *b)* pointing accuracy;

(NOC) *c)* type of polarization;

(NOC) *d)* sense of polarization;

(MOD) *e)* for elliptical beams[5] indicate the following:

(NOC) – co-polar and cross-polar radiation patterns;

(NOC) – rotation accuracy;

(NOC) – orientation;

(NOC) – major axis (degrees) at the half-power beamwidth;

(NOC) – minor axis (degrees) at the half-power beamwidth;

(MOD) *f)* for beams of other than elliptical shape, indicate the following:

(NOC) – co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the line from the centre of the Earth to the satellite. The isotropic or absolute gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;

(NOC) – wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted.

(NOC) 13. Station-keeping accuracy.

(ADD) [5] A circular beam is considered as a particular elliptical beam where major and minor axes are equal and where major axis orientation and rotational accuracy are equal to 0°.

(NOC) 14. Modulation characteristics:

(NOC) *a)* type of modulation;

(NOC) *b)* pre-emphasis characteristics;

(NOC) *c)* TV standard;

(NOC) *d)* sound-broadcasting characteristics;

(NOC) *e)* frequency deviation;

(NOC) *f)* composition of the baseband;

(NOC) *g)* type of multiplexing of the video and sound signals;

(NOC) *h)* energy dispersal characteristics.

(NOC) 15. Minimum angle of elevation in the service area in the case of Regions 1 and 3.

(MOD) 16. Receiving antenna characteristics of the earth station:

(ADD) *a)* isotropic gain (dBi) of the antenna in the direction of maximum radiation;

(ADD) *b)* beamwidth in degrees between the half-power points (describe in detail if not symmetrical);

(ADD) *c)* either the measured co-polar and cross-polar radiation patterns of the antenna (taking as a reference the direction of maximum radiation) or the reference co-polar and cross-polar radiation patterns;

(ADD) *d)* equivalent diameter of the antenna (metres);

(NOC) *e)* type of reception (individual or community) in the case of Regions 1 and 3.

(NOC) 17. Regular hours of operation (UTC).

(NOC) 18. Coordination.

(NOC) 19. Agreements.

(NOC) 20. Other information.

(MOD) 21. Operating administration or agency.

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ANNEX 2

(to Appendix 30A (S30A))

Basic Characteristics to be Furnished in Notices[1] Relating to Feeder-Link Stations in the Fixed-Satellite Service Operating in the Frequency Bands 14.5 - 14.8 GHz and 17.3 - 18.1 GHz[2]

(NOC) 1. The following information shall be provided in notices relating to both transmitting earth stations and receiving space stations.

(NOC) 1.1 Country and beam identification.

(NOC) 1.2 Assigned frequency.

(NOC) 1.3 Assigned frequency band.

(NOC) 1.4 Date of bringing into use.

(NOC) 1.5 Designation of emission (in accordance with Article **S2** of the Radio Regulations).

(NOC) 1.6 Modulation characteristics:

(NOC) *a)* type of modulation;

(NOC) *b)* pre-emphasis characteristics;

(NOC) *c)* TV system;

(NOC) *d)* sound-broadcasting characteristics;

(NOC) *e)* frequency deviation;

(NOC) *f)* composition of the baseband;

(NOC) *g)* type of multiplexing of the video and sound signals;

(NOC) *h)* energy dispersal characteristics.

(NOC) 2. The following additional information shall be provided in notices relating to transmitting earth stations.

(NOC) 2.1 Identity of the transmitting feeder-link station.

(NOC) [1] The Bureau shall develop and keep up to date forms of notice to meet fully the statutory provisions of this Annex. The Bureau is further invited to consider the feasibility of a single notice for feeder-link earth stations operating within more than one feeder-link service area.

(NOC) [2] Only those notices relating to frequency assignments for space stations and earth stations used for telecommand and tracking purposes associated with the Plan shall be furnished in accordance with Appendix **S4**.

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(MOD) 2.2 For a specific feeder-link earth station, identity of the earth station and the geographical coordinates of the antenna site.

(MOD) 2.3 Feeder-link service area identified by:

(MOD) *a)* a set of a maximum of twenty feeder-link test points, and

(ADD) *b)* a service-area contour on the surface of the Earth or a service area defined by a minimum elevation angle in degrees.

(NOC) 2.4 Identity of the associated space station with which communication is to be established.

(NOC) 2.5 Power characteristics of the transmission:

(NOC) *a)* The following information is required for each assigned frequency:

(NOC) – total transmitting power (dBW) in the assigned frequency band supplied to the input of the antenna;

(NOC) – for the band 17.3 - 18.1 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the worst 1 MHz band;

(NOC) – for the band 14.5 - 14.8 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the worst 4 kHz band;

(NOC) – for the band 17.3 - 17.8 GHz, the maximum power density per Hz (dB(W/Hz)) supplied to the input of the antenna averaged over the total RF bandwidth (24 MHz for Region 2 or 27 MHz for Regions 1 and 3).

(MOD) *b)* Additional information required if power control is used (see Sections [3.11] and [4.10] of Annex 3 to this Appendix):

(NOC) – range, expressed in dB, above the transmitting power used in *a)* above.

(NOC) 2.6 Transmitting antenna characteristics of the earth station:

(NOC) *a)* antenna diameter (metres);

(NOC) *b)* gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi);

(NOC) *c)* half-power beamwidth in degrees (describe in detail if not symmetrical);

(NOC) *d)* measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation), or reference radiation diagram to be used for coordination;

(NOC) *e)* type of polarization;

(NOC) *f)* sense of polarization;

(NOC) *g)* horizon elevation angle in degrees and the antenna gain in the direction of the horizon for each azimuth[1] around the earth station;

(NOC) *h)* altitude of the antenna above mean sea level, in metres;

(NOC) *i)* minimum elevation angle, in degrees.

(NOC) 2.7 Regular hours of operation (UTC).

(NOC) 2.8 Coordination.

(NOC) 2.9 Agreements.

(NOC) 2.10 Other information.

(MOD) 2.11 Operating administration or agency.

(NOC) 3. The following information shall be provided in notices relating to receiving space stations.

(NOC) 3.1 Orbital position (from the Greenwich Meridian).

(NOC) 3.2 Identity of the space station.

(NOC) 3.3 Class of station.

(NOC) 3.4 Space station receiving antenna characteristics:

(MOD) *a)* co-polar gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi), as well as the cross-polar gain of the antenna in the case of a beam of other than elliptical shape;

(NOC) *b)* pointing accuracy (degrees);

(NOC) *c)* type of polarization;

(NOC) *d)* sense of polarization;

(MOD) *e)* for elliptical beams[2], indicate the following:

(NOC) – co-polar and cross-polar radiation patterns;

(NOC) – rotation accuracy (degrees);

(NOC) – orientation (degrees);

(NOC) [1] At suitable increments, e.g. every five degrees, in tabular or graphic form.

(ADD) [2] A circular beam is considered as a particular elliptical beam where major and minor axes are equal and where major axis orientation and rotational accuracy are equal to 0.

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(NOC) – major axis (degrees) at the half-power beamwidth;

(NOC) – minor axis (degrees) at the half-power beamwidth;

(NOC) – nominal intersection of the antenna beam axis with the Earth (boresight longitude and latitude);

(MOD) *f)* for beams of other than elliptical shape, indicate the following:

(NOC) – co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic gain shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;

(NOC) – wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted;

(ADD) – nominal intersection of the antenna beam axis with the Earth (boresight or aim point, longitude and latitude);

(NOC) *g)* for an assignment in the bands 14.5 - 14.8 GHz or 17.7 - 18.1GHz, the isotropic gain in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth. Use a diagram showing estimated isotropic gain relative to orbit longitude.

(NOC) 3.5 Receiver system noise temperature referred to the output of the antenna (kelvins).

(NOC) 3.6 Station-keeping accuracy (degrees).

(NOC) 3.7 Regular hours of operation (UTC).

(NOC) 3.8 Coordination.

(NOC) 3.9 Agreements.

(NOC) 3.10 Other information.

(NOC) 3.11 Operating administration or agency.

(NOC) 3.12 Range of automatic gain control[1].

(MOD) [1] See Sections [3.10] and [4.9] of Annex [3] to this Appendix.

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PLENARY MEETING

NOTE FROM THE CHAIRMAN OF COMMITTEE 5 TO THE CHAIRMAN OF THE PLENARY

In Document 349, Committee 5 referred the consideration of items 2 and 3 of Document 262 to the Plenary. It can now forward for consideration the annexed draft Resolution which is the result of informal discussions.

With regard to item 3 of Document 262, it was agreed that no action was required at this time and that the matter should be referred to [the next competent conference/WRC-00].

Annex: 1

DRAFT RESOLUTION [COM5-XX] (WRC-97)

STUDIES TO CONSIDER THE FEASIBILITY OF USING A PORTION OF THE BAND 1 559 - 1 610 MHz BY THE MOBILE-SATELLITE SERVICE (SPACE-TO-EARTH)

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the band 1 559 - 1 610 MHz is allocated on a primary basis to the aeronautical radionavigation and radionavigation-satellite services;

b) that proposals were made to WRC-97 for an allocation to the mobile-satellite service in the band 1 559 - 1 567 MHz;

c) that the aeronautical radionavigation and radionavigation-satellite services are safety services in the space-to-Earth direction and must be protected from harmful interference (No. S4.10 of the Radio Regulations applies);

d) that studies carried out by some administrations indicate that an aggregate power flux-density limit at the Earth's surface of -112 dB(W/m^2/1 MHz) for all angles of arrival for the mobile-satellite service space station is appropriate for the protection of aeronautical radionavigation and radionavigation-satellite services;

e) that other administrations have conducted studies and have concluded that the power flux-density referred to in *considering* d) does not provide protection for the aeronautical radionavigation and radionavigation-satellite service;

f) that studies have not been conducted in ITU-R on the sharing possibilities between the MSS and the aeronautical radionavigation or radionavigation-satellite services in the 1 559 - 1 610 MHz band;

g) that the band 1 559 - 1 610 MHz is used by the GPS and GLONASS radionavigation-satellite systems and their augmentations, and that these systems are components of the International Civil Aviation Organization (ICAO) global navigation satellite system (GNSS);

h) that the International Maritime Organization (IMO) has recognized GPS and GLONASS as elements of their GNSS;

i) that the aeronautical radionavigation and radionavigation-satellite systems are evolutionary systems and that other GNSS systems are under development for operation in the band 1 559 - 1 610 MHz;

j) that studies are currently being conducted in ITU-R for use in the radionavigation-satellite service in the space-space direction,

recognizing

1 the essential need to protect systems operating in the aeronautical radionavigation and radionavigation-satellite service in the band 1 559 - 1 610 MHz;

2 the requirement for additional spectrum for the mobile-satellite service;

3 that Resolution 213 (Rev.WRC-95) identifies the possible use in parts of the band 1 675 - 1 710 MHz in the Earth-to-space direction and invites ITU-R to investigate potentially suitable downlink bands that may assist in meeting the requirements of the MSS,

resolves to request ITU-R

to study, as a matter of urgency, the technical criteria and operational and safety requirements to determine if sharing between the aeronautical radionavigation and radionavigation-satellite services operating, or planned to operate, in the band 1 559 - 1 610 MHz, and the mobile-satellite service in a portion of the 1 559 - 1 567 MHz frequency range, is feasible, taking into account the above *recognizing*,

further resolves

1 to instruct the Director of the Radiocommunication Bureau to facilitate to the greatest extent possible, the completion of these studies in time for consideration by [WRC-00];

2 to recommend that [WRC-00] take into account the results of ITU-R studies in evaluating the feasibility of an allocation in the space-to-Earth direction to the mobile-satellite service in a portion of the 1 559 -1 567 MHz frequency range;

3 to urge all administrations and concerned organizations, including ICAO and IMO, to contribute to these studies and cooperate to the maximum extent possible, to ensure a mutually satisfactory result is presented to [WRC-00].

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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20 November 1997

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B.14 **PLENARY MEETING**

FOURTEENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 4	336	Appendix S30 (Article 11) Appendix S30A (Article 9A)

A.-M. NEBES
Chairman of Committee 6

Annex: 100 pages

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Review of Appendices S30 and S30A of the Radio Regulations in response to Resolution 531 (WRC-95) as decided by the WRC-97.

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APPENDIX S30

ARTICLE 11

Plan for the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz in Region 3 and 11.7 - 12.5 GHz in Region 1

11.1 COLUMN HEADINGS OF THE PLAN

Col. 1. *Notifying administration symbol.*

Col. 2. *Beam identification* (Column 2, normally, contains the symbol designating the country or the geographical area taken from Table B1 of the Preface to the International Frequency List, followed by the symbol designating the service area).

Col. 3. *Nominal orbital position*, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).

Col. 4. *Channel number.*

Col. 5. *Nominal intersection of the beam axis with the Earth* (boresight or aim point in the case of a non-elliptical beam), longitude and latitude, in degrees and hundredths of a degree.

Col. 6. *Space station transmitting antenna characteristics* (elliptical beams). This column contains three numerical values corresponding to the major axis, the minor axis and the major axis orientation respectively of the elliptical cross-section half-power beamwidth, in degrees and hundredths of a degree. Orientation of the ellipse determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse, to the nearest degree.

Col. 7. *Space station transmitting antenna pattern code.*

Col. 8. *Space station transmitting antenna shaped (non-elliptical) beam identification.*

Col. 9. *Maximum space station transmitting antenna co-polar and cross-polar (in the case of shaped beam) isotropic gain*, in dBi.

Col. 10. *Earth station receiving antenna pattern code.*

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Col. 11. *Polarization* (CL - circular left, CR - circular right, LE - linear referenced to the equatorial plane) and polarization angle in degrees and hundredths of a degree (in the case of linear polarization only).

Col. 12. *E.i.r.p.* in the direction of maximum radiation, in dBW.

Col. 13. *Designation of emission.*

Col. 14. *Identity of the space station.*

Col. 15. *Group code* (An identification code which indicates that all assignments with the same group identification code will be treated as a group.)

Col. 16. *Assignment status.*

Col. 17. *Remarks.*

The codes used for the antenna pattern of the transmitting space station (downlink) antenna are defined as follows:

R13TSS	Figure 9 and Section 3.13.3 in Annex 5 of Appendix 30
R123FR	Figure 11 and Section 3.13.3 in Annex 5 of Appendix 30
RAD_TSS	RADIOSAT-3 antenna pattern (antenna pattern data supplied by the Administration of France)

In cases where the "Space station transmitting antenna pattern" field is blank, the necessary antenna pattern data are provided by shaped beam data submitted by the administration. These data are stored in column 8. A particular shaped beam is identified by the combination of column 1, column 8 and column 14. In such cases the maximum cross-polar gain is given in the "Cross-polar gain" field.

The codes used for receiving earth station (downlink) antenna patterns are defined as follows:

R13RES	Figure 7 and Section 3.7.2 in Annex 5 of Appendix 30
MODRES	Recommendation ITU-R BO.1213

The assignment status codes used for beams are defined as follows:

P	Assignment in the Plan for which § 4.3.5 (in terms of 8 years lapsing period) of this Appendix does not apply.
PE	Assignment in the Plan for which § 4.3.5 (in terms of 8 years lapsing period) of this Appendix does not apply. These assignments have been notified and brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, the parameters in force before WRC-97 are applied.
A	Assignment in the Plan for which § 4.3.5 (in terms of 8 years lapsing period) of this Appendix applies.
AE	Assignment in the Plan for which § 4.3.5 (in terms of 8 years lapsing period) of this Appendix applies. These assignments have been notified and brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, the parameters in force before WRC-97 are applied.

Group code: If an assignment is part of the group:

a) The equivalent protection margin to be used for the application of Article 4 of this Appendix shall be calculated on the following basis:

- for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; and
- for the calculation of interference from assignments belonging to a group of assignments that are not part of that same group, only the worst interference contribution from that group shall be used on a test point to test point basis.

b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the aggregate *C/I* ratio produced by all emissions from that group shall not exceed the *C/I* ratio calculated on the basis of *a)* above.

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11.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

1. To be dedicated to the Islamic programme envisaged in the Conference[1] documents.

2. This assignment results from a common requirement of the Administrations of Denmark and Iceland. The service area includes the Faroe Islands and Iceland. The assignment may, after consultations between the two Administrations, be used by either of them.

3. Provisional Beam*. This assignment has been included in the Plan by WRC-97. This assignment is for exclusive use by Palestine, subject to the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution **741** of the ITU Council notwithstanding.

4. Assignment intended to ensure coverage of Algeria, Libya, Morocco, Mauritania and Tunisia, with the agreement of the countries concerned. If required, it may be used with the characteristics of the beam TUN 150.

5. This assignment shall be brought into use only when the limits given in Table 1 are not exceeded or with the agreement of the affected administrations identified in Table 2 with respect to:

a) assignments in the Region 2 Plan on 27 October 1997; or

b) assignments in the terrestrial services which are recorded in the Master Register with a favourable finding or received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on 27 October 1997; or

c) assignments in the FSS that: are recorded in the Master Register with a favourable finding; or those which have been coordinated under the provisions of No. **1060** of the Radio Regulations or § 7.2.1 of Appendix **30**; or those that are in process of coordination under the provisions of No. **1060** of the Radio Regulations or § 7.2.1 of Appendix **30** prior to 27 October 1997.

These administrations shall be informed by the notifying administration of changes in characteristics before these beams are brought into use.

6. This assignment shall not claim protection from the assignments of the administration indicated in Table 3 which are in conformity with Region 2 Plan on 27 October 1997.

7. This assignment shall not claim protection from the assignments of the administration indicated in Table 3 which are recorded in the Master Register with a favourable finding prior to 27 October 1997 to which **S5.487**/RR 838 and **S5.43**/RR 435 do not apply.

8. Pending clarification of bringing into service of the satellite network.

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[1] The World Broadcasting-Satellite Administrative Radio Conference (Geneva, 1977).

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TABLE 1

Symbol	Criteria
a	Paragraph 3 of Annex 1*
b	Paragraphs 4, 5a) and 5b) of Annex 1*
c	Paragraph 6 of Annex 1*
* These paragraphs and Annex are contained in the Radio Regulations in force at the time of WRC-97.	

TABLE 2

Beam name	channels	Ref. Table 1	Affected administrations
ARM06400	24	b	AZE GEO IRN RUS TUR
	28, 32, 36, 40	b	AZE GEO IRN TUR
	28, 32, 36, 40	c	CHN INS J PAK SNG THA TON UAE
AZE06400	4, 8, 12, 16, 20	b	ARM GEO IRN RUS TUR
AZR13400	33, 37	a	G
	21	c	CAN E MLA USA VEN/ASA
BHR2550A	23	b	QAT UAE
BIH14800	2, 6, 10, 14, 18	b	ALB AUT CZE GRC HNG HRV I ROU SVK SVN YUG
BLR06200	1, 5, 9, 13, 17	b	LTU LVA MDA RUS SVK UKR
BRU3300A	12, 14, 16, 18	b	INS MLA
BTN03100	5, 9, 13	b	BGD IND NPL
	17	b	BGD CHN IND
CHN19000	1, 5, 9, 13	b	POR/MAC
COM2070A	19	b	F/MYT
CPV30100	24	c	MLA
CZE14400	23, 27, 31, 35, 39	b	AUT BIH D DNK HNG HRV I POL SVK SVN
	27, 31, 35, 39	c	UAE

ERI09200	23, 27, 31, 35, 39	b	ARS DJI ETH SDN SOM YEM
	27	c	INS J MLA PAK SNG TON UAE
	31, 35, 39	c	CHN INS J KOR MLA PAK SNG THA TON UAE USA
EST06100	1, 5, 9, 13, 17	c	FIN LTU LVA NOR RUS S
	1, 5, 9, 13	c	USA/IT
FJI1930A	13	b	F/WAL
FSM00000	3, 7, 11, 15	b	KIR MHL F/OCE PLW
	19	b	KIR MHL NRU F/OCE PLW
	3, 7, 11, 15, 19	c	ARG J MHL MLA USA/IT USA VEN/ASA
G UKDBS	30, 34, 38	a	GUY JMC
	22	b	BLR EST LTU LVA POL RUS
	26, 30, 34, 38	b	BLR EST LTU LVA POL
	22	c	CAN USA
GEO06400	22	b	ARM AZE IRN RUS TUR
	26, 30, 34, 38	b	ARM AZE IRN TUR
	26	c	J MLA PAK SNG TON UAE
	30, 34, 38	c	CHN INS J KOR MLA PAK PNG SNG THA TON UAE USA
HISPASA2	1, 2, 5, 7, 9, 11, 13, 15, 17, 19	b	KAZ
HRV14800	1, 5, 9, 13, 17	b	AL AUT BIH BUL CZE D GRC HNG I MKD ROU SUI SVK SVN YUG
ISL04900	29	a	JMC
	33, 37	a	GUY JMC
ISR1100A	21	b	ARS AZE EGY IRN IRQ JOR LBN SYR TKM

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KGZ07000	26, 30, 34, 38	b	AFG CHN KAZ MNG RUS TJK TKM UZB
	26	c	INS J MLA PAK SNG TON UAE
	30, 34, 38	c	CHN INS J KOR MLA PAK PNG SNG THA TON UAE USA
KIR00001	3, 7, 11	b	USA/HWL MHL NZL/TKL TUV
	3, 7, 11	c	ARG J MHL MLA USA/IT USA VEN/ASA
KIR00002	15, 19, 23	b	USA/JAR F/OCE USA/PLM
	15, 19, 23	c	ARG CAN J MHL MLA USA USA/IT VEN/ASA
LBR2440A	19	b	CTI GUI SRL
	19	c	ARG USA
LVA06100	21	b	BLR EST FIN LTU NOR POL RUS
	25, 29, 33, 37	b	BLR EST FIN LTU NOR POL
	29, 33, 37	c	UAE
MDA06300	4, 8, 12, 16, 20	b	ROU UKR
MKD14800	2, 6, 10, 14, 18	b	ALB BUL GRC HRV ROU YUG
MLA2280A	10	b	BRU INS PHL
MLT1470A	20	b	I TUN
NMB0250A	21	b	AGL BOT F/CRO LSO MAU MDG MOZ F/REU SWZ ZMB ZWE
	21	c	ARG E MEX MLA USA VEN/ASA
NPL1220A	23	b	BGD BTN CHN IND
POR13300	21, 25, 29, 33, 37	b	E
ROU13600	3, 7, 11, 15, 19	b	ALB BIH BLR BUL CZE HNG HRV MDA MKD POL TUR YUG
	3, 7, 11	c	USA/IT

RUS00400	25	b	CHN J KRE
	27, 31, 35, 39	b	J KRE
	25	c	G J MLA PAK SNG TON
	27	c	CHN G INS J PNG SNG THA TON
	31, 35	c	CHN G INS J KOR LAO PNG SNG THA TON USA
	39	c	CHN G INS J KOR LAO PNG SNG THA TON
SLM00000	1, 5, 9, 13	c	USA/IT
SVN14800	4, 8, 12, 16, 20	b	BIH CZE D HNG HRV I SMR SVK YUG
TJK06900	1, 5, 9, 13, 17	b	AFG CHN KAZ KGZ PAK TKM UZB
TKM06800	23	b	AFG AZE GEO IRN KAZ KGZ RUS TJK UZB
	27, 31, 35, 39	b	AFG AZE GEO IRN KAZ KGZ TJK UZB
	27	c	INS J MLA PAK PNG SNG TON UAE
	31, 35, 39	c	CHN INS J KOR MLA PAK PNG SNG THA TON UAE USA
UKR06300	3, 7, 11, 15, 19	b	AUT BLR BUL CZE DNK/FRO GEO HNG HRV ISL LVA MDA NOR POL RUS TUR YUG
UZB07100	3, 7, 11, 15, 19	b	AFG CHN KAZ KGZ PAK TJK TKM
YYY00001	1, 5, 9, 13, 17	b	ARS EGY ISR JOR LBN SYR

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TABLE 3

Beam name	channels	Affected administrations
ARM06400	28, 32, 36, 40	PAK
AUS0040A	3, 7, 11	USA/IT
AUS0040B	3, 7, 11	USA/IT
AUS0040C	3, 7, 11	USA/IT
AUS0070A	15, 19, 23	J
	3, 7, 11	J USA/IT
AUS0090A	1, 5, 9, 13	J USA/IT
	17, 21	J
AUS0090B	1, 5, 9, 13	J USA/IT
	17, 21	J
AZE06400	4, 8, 12	USA/IT
AZR13400	21, 25	E
BFA10700	21, 25	E
BIH14800	2, 6, 10	USA/IT
BLR06200	1, 5, 9	USA/IT
BRU3300A	12	USA/IT
BTN03100	5, 9	USA/IT
CPV30100	24	E USA/IT
CTI23700	22	E
D 08700	2, 6, 10	USA/IT
EST06100	1, 5, 9	USA/IT
FJI1930A	13	USA/IT
FSM00000	11	J MHL USA/IT
	3, 7, 15, 19	J MHL
G 02700	4, 8, 12, 16, 20	USA/IT

G UKDBS	22, 26	USA/IT
	30, 34, 38	GUY JMC
GEO06400	26, 30, 34, 38	PAK
GNB30400	14, 18	E USA/IT
	2, 6, 10	USA/IT
HISPASA2	1, 3, 5, 7, 9, 11, 13	USA/IT
HRV14800	1, 5, 9	USA/IT
IRL21100	2, 6, 10, 14, 18	USA/IT
ISL04900	21, 25	USA/IT
	29	JMC
	33, 37	GUY JMC
ISR1100A	21	USA
KAZ06600	28, 32, 36, 40	THA UAE
KGZ07000	26	UAE
	30, 34, 38	THA UAE
KIR00001	3, 7, 11	USA/IT
LBR24400	3, 7, 11, 15	USA/IT
LBR2440A	19	E USA/IT
LTU06100	3, 7, 11	USA/IT
MDA06300	4, 8, 12	USA/IT
MHL00000	10	J USA/IT
	2, 6, 14, 18	J
MKD14800	2, 6, 10	USA/IT
MLA2280A	10	USA/IT
MLD3060A	4, 8	USA/IT
MLT1470A	20	USA

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PLW00000	4, 16, 20	J MHL
	8, 12	J MHL USA/IT
POR13300	21, 25	E
ROU13600	3, 7, 11	USA/IT
RUS00400	25	J
	27	CHN J SNG
	31, 35	CHN G J SNG
	39	CHN G J
SLM00000	1, 5	J MHL
	9, 13	J MHL USA/IT
SRL25900	23	USA/IT
	27	GUY
	31, 35	GUY JMC
	39	JMC
SVN14800	4, 8, 12	USA/IT
TJK06900	1, 5, 9	USA/IT
TUV00000	2, 6, 10	USA/IT
UKR06300	3, 7, 11	USA/IT
UZB07100	3, 7, 11	USA/IT
VTN32500	3, 7, 11	USA/IT
YEM26600	2, 6, 10	USA/IT
YEM26700	1, 5, 9, 13	USA/IT
YYY00001	1, 5, 9, 13	USA/IT

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11.3 TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	11 727.48	21	12 111.08
2	11 746.66	22	12 130.26
3	11 765.84	23	12 149.44
4	11 785.02	24	12 168.62
5	11 804.20	25	12 187.80
6	11 823.38	26	12 206.98
7	11 842.56	27	12 226.16
8	11 861.74	28	12 245.34
9	11 880.92	29	12 264.52
10	11 900.10	30	12 283.70
11	11 919.28	31	12 302.88
12	11 938.46	32	12 322.06
13	11 957.64	33	12 341.24
14	11 976.82	34	12 360.42
15	11 996.00	35	12 379.60
16	12 015.18	36	12 398.78
17	12 034.36	37	12 417.96
18	12 053.54	38	12 437.14
19	12 072.72	39	12 456.32
20	12 091.90	40	12 475.50

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
AFG	AFG24600	50.00	1	64.50	33.10	1.44	1.40	21.00	R13TSS		41.40		MODRES	CR		58.40	27M0F8W			P	
AUS	AUS00900	164.00	1	147.50	-32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	CR		59.25	27M0F8W		78	P	
AUS	AUS0090A	164.00	1	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
AUS	AUS0090B	164.00	1	167.93	-29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
BLR	BLR06200	38.00	1	27.91	53.06	1.21	0.60	11.47	R13TSS		45.83		MODRES	CL		58.93	27M0F8W			P	5, 7
CHN	CHN15500	62.00	1	88.30	31.50	3.38	1.45	162.00	R13TSS		37.54		MODRES	CL		57.94	27M0F8W			P	
CHN	CHN16200	92.00	1	115.90	21.00	2.74	2.42	23.00	R13TSS		36.23		MODRES	CL		58.93	27M0F8W			P	
CHN	CHN16300	79.80	1	116.00	39.20	1.20	0.80	132.00	R13TSS		44.62		MODRES	CR		59.42	27M0F8W			P	
CHN	CHN19000	122.00	1	114.17	23.32	0.91	0.60	2.88	R13TSS		47.08		MODRES	CR		58.88	27M0F8W			P	5
CME	CME30000	-13.00	1	12.70	6.20	2.54	1.68	87.00	R13TSS		38.15		MODRES	CR		58.45	27M0F8W			P	
E	HISPASA2	-30.00	1	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5, 7
EST	EST06100	23.00	1	25.01	58.47	0.72	0.60	9.93	R13TSS		48.09		MODRES	CL		58.89	27M0F8W			P	5, 7
F	F 09300	-19.00	1	2.60	45.90	2.50	0.98	160.00	R13TSS		40.56		R13RES	CR		63.76	27M0F8W		19	PE	
F	F 09306	-7.00	1	2.60	45.90	2.50	0.98	160.00	R13TSS		41.00		MODRES	CR		58.90	27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	1	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	1	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	1	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	1	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	1	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	1	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	1	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	1	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	1	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	1	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	1	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FJI	FJI19300	152.00	1	179.40	-17.90	1.04	0.98	67.00	R13TSS		44.36		MODRES	CR		58.66	27M0F8W			P	
GUI	GUI19200	-37.00	1	-11.00	10.20	1.58	1.04	147.00	R13TSS		42.29		MODRES	CL		58.39	27M0F8W			P	
HRV	HRV14800	34.00	1	16.74	44.54	0.88	0.69	5.30	R13TSS		46.57		MODRES	CL		58.87	27M0F8W			P	5, 7
IND	IND03900	56.00	1	72.70	11.20	1.26	0.60	107.00	R13TSS		45.66		MODRES	CR		58.06	27M0F8W			P	
IND	IND04401	68.00	1	79.50	22.30	2.19	1.42	146.00	R13TSS		39.52		MODRES	CR		58.32	27M0F8W			P	
INS	INS03500	104.00	1	124.30	-3.20	3.34	1.94	82.00	R13TSS		36.33		MODRES	CR		58.23	27M0F8W			P	
J	000BS-3N	109.85	1	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		63.20	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	1	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		63.20	27M0F8W		33	PE	
LBY	LBY28000	-25.00	1	21.40	26.00	2.50	1.04	119.00	R13TSS		40.30		MODRES	CL		58.50	27M0F8W			P	
MDG	MDG23600	29.00	1	46.60	-18.80	2.72	1.14	65.00	R13TSS		39.53		MODRES	CL		58.33	27M0F8W			P	
NZL	NZL05500	158.00	1	172.30	-39.70	2.88	1.56	47.00	R13TSS		37.92		MODRES	CR		58.32	27M0F8W			P	
POL	POL13200	-1.00	1	19.30	51.80	1.46	0.64	162.00	R13TSS		44.74		MODRES	CL		59.14	27M0F8W			P	
QAT	QAT24700	17.00	1	51.10	25.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.78	27M0F8W			P	
SLM	SLM00000	146.00	1	159.32	-8.40	1.50	1.18	140.48	R13TSS		41.98		MODRES	CL		58.88	27M0F8W			P	5, 7
SMR	SMR31100	-37.00	1	12.60	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.38	27M0F8W			P	
SWZ	SWZ31300	-1.00	1	31.50	-26.50	0.62	0.60	66.00	R13TSS		48.74		MODRES	CR		57.84	27M0F8W			P	
THA	THA14200	74.00	1	100.70	13.20	2.82	1.54	106.00	R13TSS		38.07		MODRES	CL		58.57	27M0F8W			P	
TJK	TJK06900	44.00	1	71.14	38.37	1.25	0.76	159.15	R13TSS		44.65		MODRES	CL		58.85	27M0F8W			P	5, 7
TUR	TUR14500	5.00	1	34.40	38.90	2.68	1.04	168.00	R13TSS		40.00		MODRES	CR		58.70	27M0F8W			P	
USA	PLM33700	170.00	1	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.38	27M0F8W		9	P	
USA	PLM33701	170.00	1	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.38	27M0F8W		9	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
USA	SMA33500	170.00	1	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.08	27M0F8W		13	P	
USA	SMA33501	170.00	1	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.08	27M0F8W		13	P	
USA	WAK33400	140.00	1	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		11	P	
USA	WAK33401	140.00	1	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		11	P	
YEM	YEM26700	11.00	1	48.61	14.42	1.68	1.44	157.35	R13TSS		40.61		MODRES	CL		58.91	27M0F8W			P	7
	YYY00001	11.00	1	34.99	31.86	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	3, 5, 7
ALG	ALG25100	-25.00	2	4.20	33.20	2.45	1.25	172.00	R13TSS		39.59		MODRES	CR		58.39	27M0F8W			P	
ARS	ARS27500	17.00	2	48.30	24.60	3.84	1.20	138.00	R13TSS		37.81		MODRES	CL		57.71	27M0F8W			P	
AUS	AUS00600	152.00	2	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	CL		58.40	27M0F8W			P	
AUS	AUS00800	164.00	2	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	CL		58.83	27M0F8W			P	
BIH	BIH14800	34.00	2	17.77	44.32	0.62	0.60	166.84	R13TSS		48.71		MODRES	CR		58.91	27M0F8W			P	5, 7
BOT	BOT29700	-1.00	2	23.30	-22.20	2.13	1.50	36.00	R13TSS		39.40		MODRES	CL		58.70	27M0F8W			P	
CHN	CHN15400	62.00	2	83.90	40.50	2.75	2.05	177.00	R13TSS		36.94		MODRES	CR		58.24	27M0F8W			P	
CHN	CHN16100	92.00	2	118.10	31.10	2.49	1.69	117.00	R13TSS		38.21		MODRES	CR		59.41	27M0F8W			P	
CLN	CLN21900	50.00	2	80.60	7.70	1.18	0.60	106.00	R13TSS		45.95		MODRES	CR		58.65	27M0F8W			P	
D	D 08700	-19.00	2	9.60	49.90	1.62	0.72	147.00	R13TSS		43.78		MODRES	CL		60.48	27M0F8W			P	7
F	F2_A2722	-7.00	2	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	2	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2762	-7.00	2	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2762	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	2	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	2	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.70	27M0F8W		6	P	
F	NCL10001	140.00	2	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.70	27M0F8W		6	P	
F	WAL10200	140.00	2	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.37	27M0F8W		8	P	
F	WAL10201	140.00	2	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.37	27M0F8W		8	P	
F /EUT	E2WA7DA2	29.00	2	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	2	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	2	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	2	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	2	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	2	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	2	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FIN	FIN10300	5.00	2	22.50	64.50	1.38	0.76	171.00	R13TSS		44.24		MODRES	CL		62.74	27M0F8W			P	
GNB	GNB30400	-30.00	2	-15.00	12.00	0.90	0.60	172.00	R13TSS		47.12		MODRES	CL		58.12	27M0F8W			P	7
IND	IND03700	68.00	2	93.00	25.50	1.46	1.13	40.00	R13TSS		42.27		MODRES	CL		58.87	27M0F8W			P	
IND	IND04501	56.00	2	76.20	19.50	1.58	1.58	21.00	R13TSS		40.47		MODRES	CL		58.47	27M0F8W			P	
INS	INS02800	80.20	2	101.50	0.00	3.00	1.20	133.00	R13TSS		38.88		MODRES	CL		58.28	27M0F8W			P	
IRL	IRL21100	-33.50	2	-8.20	53.20	0.84	0.60	162.00	R13TSS		47.42		MODRES	CR		59.22	27M0F8W			P	7
KOR	KO11201D	116.00	2	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.60	27M0G7W	KOREASAT-1	20	AE	
KOR	KOR11200	110.00	2	127.50	36.00	1.24	1.02	168.00	R13TSS		43.43		MODRES	CL		58.63	27M0F8W		20	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Channel	Boresight Long	Boresight Lat.	Space Antenna Character. Major	Minor	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
KOR	KOR11201	116.00	2	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.60	27M0F8W	KOREASAT-1	20	AE	
LAO	LAO28400	74.00	2	103.70	18.10	2.16	0.78	133.00	R13TSS		42.18		MODRES	CR		58.78	27M0F8W			P	
MAU	MAU24200	29.00	2	59.80	-18.90	1.62	1.24	55.00	R13TSS		41.42		MODRES	CR		59.02	27M0F8W			P	
MHL	MHL00000	146.00	2	167.64	9.83	2.07	0.90	157.42	R13TSS		41.75		MODRES	CR		58.95	27M0F8W			P	7
MKD	MKD14800	23.00	2	21.61	41.56	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
MLA	MLA22800	86.00	2	114.10	3.90	2.34	1.12	45.00	R13TSS		40.26		MODRES	CR		58.56	27M0F8W			P	
MLI	MLI32700	-37.00	2	-2.00	19.00	2.66	1.26	127.00	R13TSS		39.19		MODRES	CR		58.19	27M0F8W			P	
NOR	BIFROS22	-0.80	2	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
NZL	CKH05200	158.00	2	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.60	27M0F8W		3	P	
NZL	CKH05201	158.00	2	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.60	27M0F8W		3	P	
PAK	PAK12700	38.00	2	69.60	29.50	2.30	2.16	14.00	R13TSS		37.49		MODRES	CR		58.89	27M0F8W		73	P	
PAK	PAK12701	38.00	2	69.60	29.50	2.30	2.16	14.00	R13TSS		37.49		MODRES	CR		58.89	27M0F8W		73	P	
PNG	PNG13100	110.00	2	147.70	-6.30	2.50	2.18	169.00	R13TSS		37.08		MODRES	CR		59.38	27M0F8W			P	
TCD	TCD14300	-13.00	2	18.10	15.50	3.40	1.72	107.00	R13TSS		36.78		MODRES	CL		58.98	27M0F8W			P	
TGO	TGO22600	-25.00	2	0.80	8.60	1.52	0.60	105.00	R13TSS		44.85		MODRES	CL		58.45	27M0F8W			P	
TUV	TUV00000	176.00	2	177.61	-7.11	0.94	0.60	137.58	R13TSS		46.93		MODRES	CR		58.93	27M0F8W			P	7
USA	GUM33100	122.00	2	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.28	27M0F8W		15	P	
USA	GUM33101	122.00	2	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.28	27M0F8W		15	P	
YEM	YEM26600	11.00	2	44.00	15.67	0.80	0.60	114.88	R13TSS		47.66		MODRES	CR		58.86	27M0F8W			P	7
ZAI	ZAI32300	-19.00	2	21.30	-6.80	2.80	1.52	149.00	R13TSS		38.16		MODRES	CR		59.56	27M0F8W			P	
AFG	AFG24500	50.00	3	70.20	35.50	1.32	1.13	53.00	R13TSS		42.71		MODRES	CR		57.81	27M0F8W			P	
AUS	AUS00400	152.00	3	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	CR		58.22	27M0F8W		76	P	
AUS	AUS0040A	152.00	3	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS0040B	152.00	3	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS0040C	152.00	3	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS00700	164.00	3	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	CR		58.49	27M0F8W		77	P	
AUS	AUS0070A	164.00	3	158.91	54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		77	P	7
BEN	BEN23300	-19.00	3	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	CL		58.34	27M0F8W			P	
CHN	CHN15700	62.00	3	102.30	27.80	2.56	1.58	127.00	R13TSS		38.38		MODRES	CL		60.08	27M0F8W			P	
CHN	CHN16000	92.00	3	122.80	45.30	2.50	1.45	150.00	R13TSS		38.85		MODRES	CL		60.05	27M0F8W			P	
COM	COM20700	29.00	3	44.10	-12.10	0.76	0.60	149.00	R13TSS		47.86		MODRES	CL		58.06	27M0F8W			P	
E	HISPASA2	-30.00	3	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5, 7
F	F2_A2733	-7.00	3	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2773	-7.00	3	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	3	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	3	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	3	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	3	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	3	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	3	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	3	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	3	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	3	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	3	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	3	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FSM	FSM00000	146.00	3	151.67	5.42	5.34	1.51	166.52	R13TSS		35.37		MODRES	CL		58.87	27M0F8W			P	5, 7

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long.	Boresight Lat.[2]	Space Antenna Character. Major[3]	Minor[3]	Orient.[3]	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle[4]	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
GAB	GAB26000	-13.00	3	11.80	-0.60	1.43	1.12	64.00	R13TSS		42.40		MODRES	CR		58.30	27M0F8W			P	
GMB	GMB30200	-37.00	3	-15.10	13.40	0.79	0.60	4.00	R13TSS		47.69		MODRES	CL		58.29	27M0F8W			P	
GRC	GRC10500	5.00	3	24.70	38.20	1.78	0.98	156.00	R13TSS		42.03		MODRES	CR		58.33	27M0F8W			P	
IND	IND04300	56.00	3	77.80	11.10	1.36	1.28	172.00	R13TSS		42.04		MODRES	CR		58.34	27M0F8W			P	
IND	IND04701	68.00	3	93.30	11.10	1.92	0.60	96.00	R13TSS		43.83		MODRES	CR		58.43	27M0F8W			P	
INS	INS03600	104.00	3	135.20	-3.80	2.46	2.00	147.00	R13TSS		37.53		MODRES	CR		58.83	27M0F8W			P	
IRN	IRN10900	34.00	3	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		57.83	27M0F8W		72	P	
IRN	IRN10901	34.00	3	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		57.83	27M0F8W		72	P	
J	000BS-3N	109.85	3	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	3	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W		33	PE	
KIR	KIR00001	176.00	3	177.16	-0.79	4.47	1.27	163.00	R13TSS		36.91		MODRES	CL		58.91	27M0F8W			P	5, 7
LBN	LBN27900	11.00	3	35.80	33.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.58	27M0F8W			P	
LBR	LBR24400	-33.50	3	-9.30	6.60	1.22	0.70	133.00	R13TSS		45.13		MODRES	CR		58.23	27M0F8W			P	7
LBY	LBY32100	-25.00	3	13.10	27.20	2.36	1.12	129.00	R13TSS		40.23		MODRES	CL		58.03	27M0F8W			P	
LIE	LIE25300	-37.00	3	9.50	47.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.38	27M0F8W			P	
LTU	LTU06100	23.00	3	23.79	55.66	0.70	0.60	176.00	R13TSS		48.21		MODRES	CL		58.91	27M0F8W			P	7
LUX	LUX11400	-19.00	3	6.00	49.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.88	27M0F8W			P	
NRU	NRU30900	134.00	3	167.00	-0.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		57.48	27M0F8W			P	
ROU	ROU13600	-1.00	3	25.00	45.70	1.38	0.66	155.00	R13TSS		44.85		MODRES	CL		58.75	27M0F8W			P	5, 7
SMO	SMO05700	158.00	3	-172.30	-13.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W			P	
SNG	SNG15100	74.00	3	103.80	1.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.48	27M0F8W			P	
SOM	SOM31200	23.00	3	45.00	6.40	3.26	1.54	71.00	R13TSS		37.44		MODRES	CR		57.34	27M0F8W			P	
SVK	SVK14400	17.00	3	19.65	48.69	0.82	0.60	5.20	R13TSS		47.53		MODRES	CR		58.93	27M0F8W			P	
UGA	UGA05100	11.00	3	32.30	1.20	1.46	1.12	60.00	R13TSS		42.31		MODRES	CR		58.21	27M0F8W			P	
UKR	UKR06300	38.00	3	31.74	48.22	2.29	0.96	177.78	R13TSS		41.01		MODRES	CL		58.91	27M0F8W			P	5, 7
USA	MRA33200	122.00	3	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.47	27M0F8W		14	P	
USA	MRA33201	122.00	3	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.47	27M0F8W		14	P	
UZB	UZB07100	44.00	3	64.01	41.21	2.67	0.96	163.32	R13TSS		40.37		MODRES	CL		58.87	27M0F8W			P	5, 7
VTN	VTN32500	86.00	3	108.00	14.80	3.80	1.90	126.00	R123FR		35.86		MODRES	CL		58.36	27M0F8W			P	7
VUT	VUT12800	140.00	3	168.00	-16.40	1.52	0.68	87.00	R13TSS		44.30		MODRES	CL		57.80	27M0F8W			P	
ZMB	ZMB31400	-1.00	3	27.50	-13.10	2.38	1.48	39.00	R13TSS		38.98		MODRES	CR		58.68	27M0F8W			P	
ALG	ALG25200	-25.00	4	1.60	25.50	3.64	2.16	152.00	R13TSS		35.49		MODRES	CR		57.79	27M0F8W			P	
AND	AND34100	-37.00	4	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.48	27M0F8W			P	
ARS	ARS00300	17.00	4	41.10	23.80	3.52	1.68	134.00	R13TSS		36.73		MODRES	CL		57.73	27M0F8W		70	P	
ARS	ARS00301	17.00	4	41.10	23.80	3.52	1.68	134.00	R13TSS		36.73		MODRES	CL		57.73	27M0F8W		70	P	
AUS	AUS00500	152.00	4	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	CL		59.43	27M0F8W			P	
AUT	AUT01600	-19.00	4	12.20	47.50	1.14	0.63	166.00	R13TSS		45.88		MODRES	CL		59.08	27M0F8W			P	
AZE	AZE06400	23.00	4	47.47	40.14	0.93	0.60	158.14	R13TSS		46.98		MODRES	CR		58.88	27M0F8W			P	5, 7
BUL	BUL02000	-1.00	4	25.00	43.00	1.04	0.60	165.00	R13TSS		46.50		MODRES	CR		58.60	27M0F8W			P	
CHN	CHN15600	62.00	4	97.80	36.30	2.56	1.58	157.00	R13TSS		38.38		MODRES	CR		58.48	27M0F8W			P	
CHN	CHN16100	92.00	4	118.10	31.10	2.49	1.69	117.00	R13TSS		38.21		MODRES	CR		59.41	27M0F8W			P	
EGY	EGY02600	-7.00	4	29.70	26.80	2.33	1.72	136.00	R13TSS		38.42		MODRES	CL		58.12	27M0F8W			P	
F	F2_A2744	-7.00	4	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	4	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	4	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	4	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F	F3_D2784	-7.00	4	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	4	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	OCE10100	-160.00	4	-145.00	-16.30	4.34	3.54	4.00	R13TSS		32.58		MODRES	CL		58.48	27M0F8W			P	
F /EUT	E2WA7DA2	29.00	4	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	4	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	4	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	4	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	4	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	4	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	4	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G_02700	-33.50	4	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.23		MODRES	CR		60.03	27M0F8W			P	7
IND	IND04001	56.00	4	73.00	25.00	1.82	1.48	58.00	R13TSS		40.14		MODRES	CL		58.64	27M0F8W			P	
IND	IND04800	68.00	4	86.20	25.00	1.56	0.90	120.00	R13TSS		42.97		MODRES	CL		58.67	27M0F8W			P	
INS	INS02800	80.20	4	101.50	0.00	3.00	1.20	133.00	R13TSS		38.88		MODRES	CL		58.28	27M0F8W			P	
KOR	KO11201D	116.00	4	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.60	27M0G7W	KOREASAT-1	20	AE	
KOR	KOR11200	110.00	4	127.50	36.00	1.24	1.02	168.00	R13TSS		43.43		MODRES	CL		58.63	27M0F8W		20	P	
KOR	KOR11201	116.00	4	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.60	27M0F8W	KOREASAT-1	20	AE	
LAO	LAO28400	74.00	4	103.70	18.10	2.16	0.78	133.00	R13TSS		42.18		MODRES	CR		58.78	27M0F8W			P	
MAU	MAU24300	29.00	4	56.80	-13.90	1.56	1.38	65.00	R13TSS		41.12		MODRES	CR		58.72	27M0F8W			P	
MDA	MDA06300	38.00	4	28.41	46.99	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
MLA	MLA22800	86.00	4	114.10	3.90	2.34	1.12	45.00	R13TSS		40.26		MODRES	CR		58.56	27M0F8W			P	
MLD	MLD3060A	44.00	4	73.10	6.00	0.96	0.60	90.00	R13TSS		46.84		MODRES	CR		58.74	27M0F8W			P	7
MLI	MLI32800	-37.00	4	-7.60	13.20	1.74	1.24	171.00	R13TSS		41.11		MODRES	CR		58.71	27M0F8W			P	
MLT	MLT14700	-13.00	4	14.30	35.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		55.98	27M0F8W			P	
MOZ	MOZ30700	-1.00	4	34.00	-18.00	3.57	1.38	55.00	R13TSS		37.52		MODRES	CL		59.22	27M0F8W			P	
NZL	CKH05300	158.00	4	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.32	27M0F8W		4	P	
NZL	CKH05301	158.00	4	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.32	27M0F8W		4	P	
PAK	PAK28300	38.00	4	74.70	33.90	1.34	1.13	160.00	R13TSS		42.65		MODRES	CR		59.35	27M0F8W		75	P	
PAK	PAK28301	38.00	4	74.70	33.90	1.34	1.13	160.00	R13TSS		42.65		MODRES	CR		59.35	27M0F8W		75	P	
PLW	PLW00000	146.00	4	132.99	5.52	1.29	0.60	55.84	R13TSS		45.55		MODRES	CR		58.85	27M0F8W			P	7
PNG	PNG27100	128.00	4	148.00	-6.70	2.80	2.05	155.00	R13TSS		36.86		MODRES	CR		58.36	27M0F8W			P	
RRW	RRW31000	11.00	4	30.00	-2.10	0.66	0.60	42.00	R13TSS		48.47		MODRES	CL		59.77	27M0F8W			P	
S	S_13800	5.00	4	16.20	61.00	1.04	0.98	14.00	R13TSS		44.36		MODRES	CL		62.06	27M0F8W		27	P	
S	SIRIUS01	5.20	4	14.00	63.00	1.30	0.70	142.00	R13TSS		42.50		R13RES	CR		59.50	27M0F8W	SIRIUS	27	AE	
STP	STP24100	-13.00	4	7.00	0.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.38	27M0F8W			P	
SVN	SVN14800	34.00	4	15.01	46.18	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
TON	TON21500	170.00	4	-174.70	-18.00	1.41	0.68	85.00	R13TSS		44.63		MODRES	CR		58.33	27M0F8W			P	
ZAI	ZAI32200	-19.00	4	22.40	0.00	2.16	1.88	48.00	R13TSS		38.36		MODRES	CR		59.66	27M0F8W			P	
AFG	AFG24600	50.00	5	64.50	33.10	1.44	1.40	21.00	R13TSS		41.40		MODRES	CR		58.40	27M0F8W			P	
AUS	AUS00900	164.00	5	147.50	-32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	CR		59.25	27M0F8W		78	P	
AUS	AUS0090A	164.00	5	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
AUS	AUS0090B	164.00	5	167.93	-29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
BLR	BLR06200	38.00	5	27.91	53.06	1.21	0.60	11.47	R13TSS		45.83		MODRES	CL		58.93	27M0F8W			P	5, 7
BTN	BTN03100	86.00	5	90.44	27.05	0.72	0.60	175.47	R13TSS		48.11		MODRES	CR		58.91	27M0F8W			P	5, 7
CHN	CHN15500	62.00	5	88.30	31.50	3.38	1.45	162.00	R13TSS		37.54		MODRES	CL		57.94	27M0F8W			P	
CHN	CHN16200	92.00	5	115.90	21.00	2.74	2.42	23.00	R13TSS		36.23		MODRES	CL		59.03	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Channel	Boresight		Space Antenna Character.			Space Antenna	Shap. Beam	Space Ant. Gain		Earth Antenna	Polarization		EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
				Long.°	Lat.°	Major°	Minor°	Orient.°			Co-pol.	X-pol.		Typ.	Angle°						
CHN	CHN16400	79.80	5	112.20	37.40	1.06	0.76	111.00	R13TSS		45.39		MODRES	CR		59.19	27M0F8W			P	
CHN	CHN19000	122.00	5	114.17	23.32	0.91	0.60	2.88	R13TSS		47.08		MODRES	CR		58.88	27M0F8W			P	5
CME	CME30000	-13.00	5	12.70	6.20	2.54	1.68	87.00	R13TSS		38.15		MODRES	CR		58.55	27M0F8W			P	
E	HISPASA2	-30.00	5	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5, 7
EST	EST06100	23.00	5	25.01	58.47	0.72	0.60	9.93	R13TSS		48.09		MODRES	CL		58.89	27M0F8W			P	5, 7
F	F 09300	-19.00	5	2.60	45.90	2.50	0.98	160.00	R13TSS		40.56		R13RES	CR		63.76	27M0F8W		19	PE	
F	F 09306	-7.00	5	2.60	45.90	2.50	0.98	160.00	R13TSS		41.00		MODRES	CR		58.90	27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	5	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	5	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	5	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	5	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	5	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	5	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	5	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	5	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	5	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	5	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	5	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FJI	FJI19300	152.00	5	179.40	-17.90	1.04	0.98	67.00	R13TSS		44.36		MODRES	CR		58.66	27M0F8W			P	
GUI	GUI19200	-37.00	5	-11.00	10.20	1.58	1.04	147.00	R13TSS		42.29		MODRES	CL		58.49	27M0F8W			P	
HRV	HRV14800	34.00	5	16.74	44.54	0.88	0.69	5.30	R13TSS		46.57		MODRES	CL		58.87	27M0F8W			P	5, 7
IND	IND03901	56.00	5	72.70	11.20	1.26	0.60	107.00	R13TSS		45.66		MODRES	CR		58.06	27M0F8W			P	
IND	IND04400	68.00	5	79.50	22.30	2.19	1.42	146.00	R13TSS		39.52		MODRES	CR		58.42	27M0F8W			P	
INS	INS03500	104.00	5	124.30	-3.20	3.34	1.94	82.00	R13TSS		36.33		MODRES	CR		58.23	27M0F8W			P	
J	000BS-3N	109.85	5	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	5	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W		33	PE	
LBY	LBY28000	-25.00	5	21.40	26.00	2.50	1.04	119.00	R13TSS		40.30		MODRES	CL		58.50	27M0F8W			P	
MDG	MDG23600	29.00	5	46.60	-18.80	2.72	1.14	65.00	R13TSS		39.53		MODRES	CL		58.43	27M0F8W			P	
NZL	NZL05500	158.00	5	172.30	-39.70	2.88	1.56	47.00	R13TSS		37.92		MODRES	CR		58.42	27M0F8W			P	
POL	POL13200	-1.00	5	19.30	51.80	1.46	0.64	162.00	R13TSS		44.74		MODRES	CL		59.24	27M0F8W			P	
QAT	QAT24700	17.00	5	51.10	25.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.78	27M0F8W			P	
SLM	SLM00000	146.00	5	159.32	-8.40	1.50	1.18	140.48	R13TSS		41.98		MODRES	CL		58.88	27M0F8W			P	5, 7
SMR	SMR31100	-37.00	5	12.60	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	
SWZ	SWZ31300	-1.00	5	31.50	-26.50	0.62	0.60	66.00	R13TSS		48.74		MODRES	CR		57.84	27M0F8W			P	
THA	THA14200	74.00	5	100.70	13.20	2.82	1.54	106.00	R13TSS		38.07		MODRES	CL		58.67	27M0F8W			P	
TJK	TJK06900	44.00	5	71.14	38.37	1.25	0.76	159.15	R13TSS		44.65		MODRES	CL		58.85	27M0F8W			P	5, 7
TUR	TUR14500	5.00	5	34.40	38.90	2.68	1.04	168.00	R13TSS		40.00		MODRES	CR		58.80	27M0F8W			P	
USA	PLM33700	170.00	5	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.38	27M0F8W		9	P	
USA	PLM33701	170.00	5	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.38	27M0F8W		9	P	
USA	SMA33500	170.00	5	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.18	27M0F8W		13	P	
USA	SMA33501	170.00	5	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.18	27M0F8W		13	P	
USA	WAK33400	140.00	5	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		11	P	
USA	WAK33401	140.00	5	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		11	P	
YEM	YEM26700	11.00	5	48.61	14.42	1.68	1.44	157.35	R13TSS		40.61		MODRES	CL		58.91	27M0F8W			P	7
	YYY00001	11.00	5	34.99	31.86	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	3, 5, 7
ALG	ALG25100	-25.00	6	4.20	33.20	2.45	1.25	172.00	R13TSS		39.59		MODRES	CR		58.39	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Chan nel	Boresight		Space Antenna Character.			Space Antenna	Shap. Beam	Space Ant. Gain		Earth Antenna	Polarization		EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
				Long.	Lat.	Major°	Minor°	Orient.°			Co-pol.	X-pol.		Typ.	Angle°						
ARS	ARS27500	17.00	6	48.30	24.60	3.84	1.20	138.00	R13TSS		37.81		MODRES	CL		57.81	27M0F8W			P	
AUS	AUS00600	152.00	6	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	CL		58.40	27M0F8W			P	
AUS	AUS00800	164.00	6	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	CL		58.83	27M0F8W			P	
BIH	BIH14800	34.00	6	17.77	44.32	0.62	0.60	166.84	R13TSS		48.71		MODRES	CR		58.91	27M0F8W			P	5, 7
BOT	BOT29700	-1.00	6	23.30	-22.20	2.13	1.50	36.00	R13TSS		39.40		MODRES	CL		58.80	27M0F8W			P	
CHN	CHN15400	62.00	6	83.90	40.50	2.75	2.05	177.00	R13TSS		36.94		MODRES	CR		58.34	27M0F8W			P	
CHN	CHN16100	92.00	6	118.10	31.10	2.49	1.69	117.00	R13TSS		38.21		MODRES	CR		59.51	27M0F8W			P	
CLN	CLN21900	50.00	6	80.60	7.70	1.18	0.60	106.00	R13TSS		45.95		MODRES	CR		58.65	27M0F8W			P	
D	D 08700	-19.00	6	9.60	49.90	1.62	0.72	147.00	R13TSS		43.78		MODRES	CL		60.58	27M0F8W			P	7
F	F2_A2722	-7.00	6	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	6	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2762	-7.00	6	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2762	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	6	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	6	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.80	27M0F8W		6	P	
F	NCL10001	140.00	6	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.80	27M0F8W		6	P	
F	WAL10200	140.00	6	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.37	27M0F8W		8	P	
F	WAL10201	140.00	6	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.37	27M0F8W		8	P	
F /EUT	E2WA7DA2	29.00	6	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	6	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	6	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	6	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	6	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	6	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	6	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FIN	FIN10300	5.00	6	22.50	64.50	1.38	0.76	171.00	R13TSS		44.24		MODRES	CL		62.84	27M0F8W			P	
GNB	GNB30400	-30.00	6	-15.00	12.00	0.90	0.60	172.00	R13TSS		47.12		MODRES	CL		58.22	27M0F8W			P	7
IND	IND03701	68.00	6	93.00	25.50	1.46	1.13	40.00	R13TSS		42.27		MODRES	CL		58.97	27M0F8W			P	
IND	IND04500	56.00	6	76.20	19.50	1.58	1.58	21.00	R13TSS		40.47		MODRES	CL		58.57	27M0F8W			P	
INS	INS02800	80.20	6	101.50	0.00	3.00	1.20	133.00	R13TSS		38.88		MODRES	CL		58.28	27M0F8W			P	
IRL	IRL21100	-33.50	6	-8.20	53.20	0.84	0.60	162.00	R13TSS		47.42		MODRES	CR		59.32	27M0F8W			P	7
KOR	KO11201D	116.00	6	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.60	27M0G7W	KOREASAT-1	20	AE	
KOR	KOR11200	110.00	6	127.50	36.00	1.24	1.02	168.00	R13TSS		43.43		MODRES	CL		58.63	27M0F8W		20	P	
KOR	KOR11201	116.00	6	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.60	27M0F8W	KOREASAT-1	20	AE	
LAO	LAO28400	74.00	6	103.70	18.10	2.16	0.78	133.00	R13TSS		42.18		MODRES	CR		58.78	27M0F8W			P	
MAU	MAU24200	29.00	6	59.80	-18.90	1.62	1.24	55.00	R13TSS		41.42		MODRES	CR		59.02	27M0F8W			P	
MHL	MHL00000	146.00	6	167.64	9.83	2.07	0.90	157.42	R13TSS		41.75		MODRES	CR		58.95	27M0F8W			P	7
MKD	MKD14800	23.00	6	21.61	41.56	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
MLA	MLA22800	86.00	6	114.10	3.90	2.34	1.12	45.00	R13TSS		40.26		MODRES	CR		58.56	27M0F8W			P	
MLI	MLI32700	-37.00	6	-2.00	19.00	2.66	1.26	127.00	R13TSS		39.19		MODRES	CR		58.19	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long.°	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
NOR	BIFROS22	-0.80	6	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
NZL	CKH05200	158.00	6	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.60	27M0F8W		3	P	
NZL	CKH05201	158.00	6	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.60	27M0F8W		3	P	
PAK	PAK12700	38.00	6	69.60	29.50	2.30	2.16	14.00	R13TSS		37.49		MODRES	CR		58.99	27M0F8W		73	P	
PAK	PAK12701	38.00	6	69.60	29.50	2.30	2.16	14.00	R13TSS		37.49		MODRES	CR		58.99	27M0F8W		73	P	
PNG	PNG13100	110.00	6	147.70	-6.30	2.50	2.18	169.00	R13TSS		37.08		MODRES	CR		59.38	27M0F8W			P	
TCD	TCD14300	-13.00	6	18.10	15.50	3.40	1.72	107.00	R13TSS		36.78		MODRES	CL		58.98	27M0F8W			P	
TGO	TGO22600	-25.00	6	0.80	8.60	1.52	0.60	105.00	R13TSS		44.85		MODRES	CL		58.45	27M0F8W			P	
TUV	TUV00000	176.00	6	177.61	-7.11	0.94	0.60	137.58	R13TSS		46.93		MODRES	CR		58.93	27M0F8W			P	7
USA	GUM33100	122.00	6	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.38	27M0F8W		15	P	
USA	GUM33101	122.00	6	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.38	27M0F8W		15	P	
YEM	YEM26600	11.00	6	44.00	15.67	0.80	0.60	114.88	R13TSS		47.66		MODRES	CR		58.86	27M0F8W			P	7
ZAI	ZAI32300	-19.00	6	21.30	-6.80	2.80	1.52	149.00	R13TSS		38.16		MODRES	CR		59.66	27M0F8W			P	
AFG	AFG24500	50.00	7	70.20	35.50	1.32	1.13	53.00	R13TSS		42.71		MODRES	CR		57.91	27M0F8W			P	
AUS	AUS00400	152.00	7	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	CR		58.22	27M0F8W		76	P	
AUS	AUS0040A	152.00	7	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS0040B	152.00	7	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS0040C	152.00	7	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS00700	164.00	7	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	CR		58.49	27M0F8W		77	P	
AUS	AUS0070A	164.00	7	158.94	-54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		77	P	7
BEN	BEN23300	-19.00	7	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	CL		58.34	27M0F8W			P	
CHN	CHN15700	62.00	7	102.30	27.80	2.56	1.58	127.00	R13TSS		38.38		MODRES	CL		60.08	27M0F8W			P	
CHN	CHN16000	92.00	7	122.80	45.30	2.50	1.45	150.00	R13TSS		38.85		MODRES	CL		60.05	27M0F8W			P	
COM	COM20700	29.00	7	44.10	-12.10	0.76	0.60	149.00	R13TSS		47.86		MODRES	CL		58.06	27M0F8W			P	
E	HISPASA2	-30.00	7	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5, 7
F	F2_A2733	-7.00	7	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2773	-7.00	7	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	7	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	7	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	7	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	7	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	7	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	7	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	7	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	7	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	7	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	7	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	7	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FSM	FSM00000	146.00	7	151.67	5.42	5.34	1.51	166.52	R13TSS		35.37		MODRES	CL		58.87	27M0F8W			P	5, 7
GAB	GAB26000	-13.00	7	11.80	-0.60	1.43	1.12	64.00	R13TSS		42.40		MODRES	CR		58.40	27M0F8W			P	
GMB	GMB30200	-37.00	7	-15.10	13.40	0.79	0.60	4.00	R13TSS		47.69		MODRES	CL		58.39	27M0F8W			P	
GRC	GRC10500	5.00	7	24.70	38.20	1.78	0.98	156.00	R13TSS		42.03		MODRES	CR		58.43	27M0F8W			P	
IND	IND04301	56.00	7	77.80	11.10	1.36	1.28	172.00	R13TSS		42.04		MODRES	CR		58.44	27M0F8W			P	
IND	IND04700	68.00	7	93.30	11.10	1.92	0.60	96.00	R13TSS		43.83		MODRES	CR		58.53	27M0F8W			P	
INS	INS03600	104.00	7	135.20	-3.80	2.46	2.00	147.00	R13TSS		37.53		MODRES	CR		58.83	27M0F8W			P	
IRN	IRN10900	34.00	7	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		57.83	27M0F8W		72	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
IRN	IRN10901	34.00	7	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		57.83	27M0F8W		72	P	
J	000BS-3N	109.85	7	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	7	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.20	27M0F8W		33	PE	
KIR	KIR00001	176.00	7	177.16	-0.79	4.47	1.27	163.00	R13TSS		36.91		MODRES	CL		58.91	27M0F8W			P	5, 7
LBN	LBN27900	11.00	7	35.80	33.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.68	27M0F8W			P	
LBR	LBR24400	-33.50	7	-9.30	6.60	1.22	0.70	133.00	R13TSS		45.13		MODRES	CR		58.33	27M0F8W			P	7
LBY	LBY32100	-25.00	7	13.10	27.20	2.36	1.12	129.00	R13TSS		40.23		MODRES	CL		58.13	27M0F8W			P	
LIE	LIE25300	-37.00	7	9.50	47.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	
LTU	LTU06100	23.00	7	23.79	55.66	0.70	0.60	176.00	R13TSS		48.21		MODRES	CL		58.91	27M0F8W			P	7
LUX	LUX11400	-19.00	7	6.00	49.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.98	27M0F8W			P	
NRU	NRU30900	134.00	7	167.00	-0.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		57.58	27M0F8W			P	
ROU	ROU13600	-1.00	7	25.00	45.70	1.38	0.66	155.00	R13TSS		44.85		MODRES	CL		58.85	27M0F8W			P	5, 7
SMO	SMO05700	158.00	7	-172.30	-13.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.68	27M0F8W			P	
SNG	SNG15100	74.00	7	103.80	1.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.58	27M0F8W			P	
SOM	SOM31200	23.00	7	45.00	6.40	3.26	1.54	71.00	R13TSS		37.44		MODRES	CR		57.44	27M0F8W			P	
SVK	SVK14400	17.00	7	19.65	48.69	0.82	0.60	5.20	R13TSS		47.53		MODRES	CR		58.93	27M0F8W			P	
UGA	UGA05100	11.00	7	32.30	1.20	1.46	1.12	60.00	R13TSS		42.31		MODRES	CR		58.31	27M0F8W			P	
UKR	UKR06300	38.00	7	31.74	48.22	2.29	0.96	177.78	R13TSS		41.01		MODRES	CL		58.91	27M0F8W			P	5, 7
USA	MRA33200	122.00	7	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.47	27M0F8W		14	P	
USA	MRA33201	122.00	7	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.47	27M0F8W		14	P	
UZB	UZB07100	44.00	7	64.01	41.21	2.67	0.96	163.32	R13TSS		40.37		MODRES	CL		58.87	27M0F8W			P	5, 7
VTN	VTN32500	86.00	7	108.00	14.80	3.80	1.90	126.00	R123FR		35.86		MODRES	CL		58.36	27M0F8W			P	7
VUT	VUT12800	140.00	7	168.00	-16.40	1.52	0.68	87.00	R13TSS		44.30		MODRES	CL		57.90	27M0F8W			P	
ZMB	ZMB31400	-1.00	7	27.50	-13.10	2.38	1.48	39.00	R13TSS		38.98		MODRES	CR		58.78	27M0F8W			P	
ALG	ALG25200	-25.00	8	1.60	25.50	3.64	2.16	152.00	R13TSS		35.49		MODRES	CR		57.79	27M0F8W			P	
AND	AND34100	-37.00	8	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.48	27M0F8W			P	
ARS	ARS00300	17.00	8	41.10	23.80	3.52	1.68	134.00	R13TSS		36.73		MODRES	CL		57.83	27M0F8W		70	P	
AUS	AUS00500	152.00	8	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	CL		59.43	27M0F8W			P	
AUT	AUT01600	-19.00	8	12.20	47.50	1.14	0.63	166.00	R13TSS		45.88		MODRES	CL		59.18	27M0F8W			P	
AZE	AZE06400	23.00	8	47.47	40.14	0.93	0.60	158.14	R13TSS		46.98		MODRES	CR		58.88	27M0F8W			P	5, 7
BUL	BUL02000	-1.00	8	25.00	43.00	1.04	0.60	165.00	R13TSS		46.50		MODRES	CR		58.70	27M0F8W			P	
CHN	CHN15600	62.00	8	97.80	36.30	2.56	1.58	157.00	R13TSS		38.38		MODRES	CR		58.48	27M0F8W			P	
CHN	CHN17300	92.00	8	115.70	27.40	1.14	0.94	99.00	R13TSS		44.15		MODRES	CR		59.05	27M0F8W			P	
EGY	EGY02600	-7.00	8	29.70	26.80	2.33	1.72	136.00	R13TSS		38.42		MODRES	CL		58.22	27M0F8W			P	
F	F2_A2744	-7.00	8	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	8	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	8	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	8	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	8	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	8	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	OCE10100	-160.00	8	-145.00	-16.30	4.34	3.54	4.00	R13TSS		32.58		MODRES	CL		58.58	27M0F8W			P	
F /EUT	E2WA7DA2	29.00	8	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	8	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	8	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	8	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	8	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long.°	Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F /EUT	E2WA7DF2	29.00	8	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	8	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G 02700	-33.50	8	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.23		MODRES	CR		60.13	27M0F8W			P	7
IND	IND04000	56.00	8	73.00	25.00	1.82	1.48	58.00	R13TSS		40.14		MODRES	CL		58.74	27M0F8W			P	
IND	IND04801	68.00	8	86.20	25.00	1.56	0.90	120.00	R13TSS		42.97		MODRES	CL		58.67	27M0F8W			P	
INS	INS02800	80.20	8	101.50	0.00	3.00	1.20	133.00	R13TSS		38.88		MODRES	CL		58.38	27M0F8W			P	
KOR	KO11201D	116.00	8	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.70	27M0G7W	KOREASAT-1	20	AE	
KOR	KOR11200	110.00	8	127.50	36.00	1.24	1.02	168.00	R13TSS		43.43		MODRES	CL		58.73	27M0F8W		20	P	
KOR	KOR11201	116.00	8	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.70	27M0F8W	KOREASAT-1	20	AE	
LAO	LAO28400	74.00	8	103.70	18.10	2.16	0.78	133.00	R13TSS		42.18		MODRES	CR		58.78	27M0F8W			P	
MAU	MAU24300	29.00	8	56.80	-13.90	1.56	1.38	65.00	R13TSS		41.12		MODRES	CR		58.82	27M0F8W			P	
MDA	MDA06300	38.00	8	28.41	46.99	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
MLA	MLA22800	86.00	8	114.10	3.90	2.34	1.12	45.00	R13TSS		40.26		MODRES	CR		58.66	27M0F8W			P	
MLD	MLD3060A	44.00	8	73.10	6.00	0.96	0.60	90.00	R13TSS		46.84		MODRES	CR		58.74	27M0F8W			P	7
MLI	MLI32800	-37.00	8	-7.60	13.20	1.74	1.24	171.00	R13TSS		41.11		MODRES	CR		58.81	27M0F8W			P	
MLT	MLT14700	-13.00	8	14.30	35.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		55.98	27M0F8W			P	
MOZ	MOZ30700	-1.00	8	34.00	-18.00	3.57	1.38	55.00	R13TSS		37.52		MODRES	CL		59.22	27M0F8W			P	
NZL	CKH05300	158.00	8	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.32	27M0F8W		4	P	
NZL	CKH05301	158.00	8	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.32	27M0F8W		4	P	
PAK	PAK28300	38.00	8	74.70	33.90	1.34	1.13	160.00	R13TSS		42.65		MODRES	CR		59.35	27M0F8W		75	P	
PAK	PAK28301	38.00	8	74.70	33.90	1.34	1.13	160.00	R13TSS		42.65		MODRES	CR		59.35	27M0F8W		75	P	
PLW	PLW00000	146.00	8	132.99	5.52	1.29	0.60	55.84	R13TSS		45.55		MODRES	CR		58.85	27M0F8W			P	7
PNG	PNG27100	128.00	8	148.00	-6.70	2.80	2.05	155.00	R13TSS		36.86		MODRES	CR		58.36	27M0F8W			P	
RRW	RRW31000	11.00	8	30.00	-2.10	0.66	0.60	42.00	R13TSS		48.47		MODRES	CL		59.87	27M0F8W			P	
S	S 13800	5.00	8	16.20	61.00	1.04	0.98	14.00	R13TSS		44.36		MODRES	CL		62.06	27M0F8W		27	P	
S	SIRIUS01	5.20	8	14.00	63.00	1.30	0.70	142.00	R13TSS		42.50		R13RES	CR		59.50	27M0F8W	SIRIUS	27	AE	
STP	STP24100	-13.00	8	7.00	0.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.48	27M0F8W			P	
SVN	SVN14800	34.00	8	15.01	46.18	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
TON	TON21500	170.00	8	-174.70	-18.00	1.41	0.68	85.00	R13TSS		44.63		MODRES	CR		58.33	27M0F8W			P	
ZAI	ZAI32200	-19.00	8	22.40	0.00	2.16	1.88	48.00	R13TSS		38.36		MODRES	CR		59.76	27M0F8W			P	
AFG	AFG24600	50.00	9	64.50	33.10	1.44	1.40	21.00	R13TSS		41.40		MODRES	CR		58.40	27M0F8W			P	
AUS	AUS00900	164.00	9	147.50	-32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	CR		59.25	27M0F8W		78	P	
AUS	AUS0090A	164.00	9	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
AUS	AUS0090B	164.00	9	167.93	-29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
BLR	BLR06200	38.00	9	27.91	53.06	1.21	0.60	11.47	R13TSS		45.83		MODRES	CL		58.93	27M0F8W			P	5, 7
BTN	BTN03100	86.00	9	90.44	27.05	0.72	0.60	175.47	R13TSS		48.11		MODRES	CR		58.91	27M0F8W			P	5, 7
CHN	CHN15500	62.00	9	88.30	31.50	3.38	1.45	162.00	R13TSS		37.54		MODRES	CL		58.04	27M0F8W			P	
CHN	CHN16200	92.00	9	115.90	21.00	2.74	2.42	23.00	R13TSS		36.23		MODRES	CL		59.03	27M0F8W			P	
CHN	CHN16500	79.80	9	111.40	41.80	1.58	1.20	15.00	R13TSS		41.67		MODRES	CR		58.57	27M0F8W			P	
CHN	CHN19000	122.00	9	114.17	23.32	0.91	0.60	2.88	R13TSS		47.08		MODRES	CR		58.88	27M0F8W			P	5
CME	CME30000	-13.00	9	12.70	6.20	2.54	1.68	87.00	R13TSS		38.15		MODRES	CR		58.55	27M0F8W			P	
E	HISPASA2	-30.00	9	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5, 7
EST	EST06100	23.00	9	25.01	58.47	0.72	0.60	9.93	R13TSS		48.09		MODRES	CL		58.89	27M0F8W			P	5, 7
F	F 09300	-19.00	9	2.60	45.90	2.50	0.98	160.00	R13TSS		40.56		R13RES	CR		63.86	27M0F8W		19	PE	
F	F 09306	-7.00	9	2.60	45.90	2.50	0.98	160.00	R13TSS		41.00		MODRES	CR		58.90	27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	9	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Channel	Boresight Long	Boresight Lat.	Space Antenna Character. Major	Minor°	Orient.°	Space Antenna	Shap Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F	F3_A3351	-7.00	9	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	9	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	9	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	9	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	9	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	9	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	9	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	9	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	9	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	9	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FJI	FJI19300	152.00	9	179.40	17.90	1.04	0.98	67.00	R13TSS		44.36		MODRES	CR		58.76	27M0F8W			P	
GUI	GUI19200	-37.00	9	-11.00	10.20	1.58	1.04	147.00	R13TSS		42.29		MODRES	CL		58.49	27M0F8W			P	
HRV	HRV14800	34.00	9	16.74	44.54	0.88	0.69	5.30	R13TSS		46.57		MODRES	CL		58.87	27M0F8W			P	5, 7
IND	IND03900	56.00	9	72.70	11.20	1.26	0.60	107.00	R13TSS		45.66		MODRES	CR		58.16	27M0F8W			P	
IND	IND04401	68.00	9	79.50	22.30	2.19	1.42	146.00	R13TSS		39.52		MODRES	CR		58.52	27M0F8W			P	
INS	INS03500	104.00	9	124.30	-3.20	3.34	1.94	82.00	R13TSS		36.33		MODRES	CR		58.33	27M0F8W			P	
J	000BS-3N	109.85	9	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.30	27M0F8W	BS-3N	33	AE	
J	J_11100	110.00	9	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.30	27M0F8W		33	PE	
LBY	LBY28000	-25.00	9	21.40	26.00	2.50	1.04	119.00	R13TSS		40.30		MODRES	CL		58.60	27M0F8W			P	
MDG	MDG23600	29.00	9	46.60	-18.80	2.72	1.14	65.00	R13TSS		39.53		MODRES	CL		58.43	27M0F8W			P	
NZL	NZL05500	158.00	9	172.30	-39.70	2.88	1.56	47.00	R13TSS		37.92		MODRES	CR		58.42	27M0F8W			P	
POL	POL13200	-1.00	9	19.30	51.80	1.46	0.64	162.00	R13TSS		44.74		MODRES	CL		59.24	27M0F8W			P	
QAT	QAT24700	17.00	9	51.10	25.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.88	27M0F8W			P	
SLM	SLM00000	146.00	9	159.32	8.40	1.50	1.18	140.48	R13TSS		41.98		MODRES	CL		58.88	27M0F8W			P	5, 7
SMR	SMR31100	-37.00	9	12.60	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	
SWZ	SWZ31300	-1.00	9	31.50	-26.50	0.62	0.60	66.00	R13TSS		48.74		MODRES	CR		57.94	27M0F8W			P	
THA	THA14200	74.00	9	100.70	13.20	2.82	1.54	106.00	R13TSS		38.07		MODRES	CL		58.67	27M0F8W			P	
TJK	TJK06900	44.00	9	71.14	38.37	1.25	0.76	159.15	R13TSS		44.65		MODRES	CL		58.85	27M0F8W			P	5, 7
TUR	TUR14500	5.00	9	34.40	38.90	2.68	1.04	168.00	R13TSS		40.00		MODRES	CR		58.80	27M0F8W			P	
USA	PLM33700	170.00	9	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W		9	P	
USA	PLM33701	170.00	9	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W		9	P	
USA	SMA33500	170.00	9	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.28	27M0F8W		13	P	
USA	SMA33501	170.00	9	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.28	27M0F8W		13	P	
USA	WAK33400	140.00	9	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.68	27M0F8W		11	P	
USA	WAK33401	140.00	9	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.68	27M0F8W		11	P	
YEM	YEM26700	11.00	9	48.61	14.42	1.68	1.44	157.35	R13TSS		40.61		MODRES	CL		58.91	27M0F8W			P	7
	YYY00001	11.00	9	34.99	31.86	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	3, 5, 7
ALG	ALG25100	-25.00	10	4.20	33.20	2.45	1.25	172.00	R13TSS		39.59		MODRES	CR		58.49	27M0F8W			P	
ARS	ARS27500	17.00	10	48.30	24.60	3.84	1.20	138.00	R13TSS		37.81		MODRES	CL		57.91	27M0F8W			P	
AUS	AUS00600	152.00	10	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	CL		58.40	27M0F8W			P	
AUS	AUS00800	164.00	10	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	CL		58.83	27M0F8W			P	
BIH	BIH14800	34.00	10	17.77	44.32	0.62	0.60	166.84	R13TSS		48.71		MODRES	CR		58.91	27M0F8W			P	5, 7
BOT	BOT29700	-1.00	10	23.30	-22.20	2.13	1.50	36.00	R13TSS		39.40		MODRES	CL		58.90	27M0F8W			P	
CHN	CHN15400	62.00	10	83.90	40.50	2.75	2.05	177.00	R13TSS		36.94		MODRES	CR		58.34	27M0F8W			P	
CHN	CHN17100	92.00	10	117.20	32.00	1.20	0.74	126.00	R13TSS		44.96		MODRES	CR		59.16	27M0F8W			P	
CHN	CHN18700	79.80	10	106.60	26.70	1.14	0.94	179.00	R13TSS		44.15		MODRES	CL		59.05	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Chan nel	Boresight Long.°	Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
CLN	CLN21900	50.00	10	80.60	7.70	1.18	0.60	106.00	R13TSS		45.95		MODRES	CR		58.75	27M0F8W			P	
D	D 08700	-19.00	10	9.60	49.90	1.62	0.72	147.00	R13TSS		43.78		MODRES	CL		60.58	27M0F8W			P	7
F	F2_A2722	-7.00	10	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	10	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2762	-7.00	10	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2762	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	10	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	10	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.80	27M0F8W		6	P	
F	NCL10001	140.00	10	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.80	27M0F8W		6	P	
F	WAL10200	140.00	10	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.47	27M0F8W		8	P	
F	WAL10201	140.00	10	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.47	27M0F8W		8	P	
F /EUT	E2WA7DA2	29.00	10	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	10	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	10	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	10	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	10	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	10	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	10	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FIN	FIN10300	5.00	10	22.50	64.50	1.38	0.76	171.00	R13TSS		44.24		MODRES	CL		62.94	27M0F8W			P	
GNB	GNB30400	-30.00	10	-15.00	12.00	0.90	0.60	172.00	R13TSS		47.12		MODRES	CL		58.22	27M0F8W			P	7
IND	IND03700	68.00	10	93.00	25.50	1.46	1.13	40.00	R13TSS		42.27		MODRES	CL		58.97	27M0F8W			P	
IND	IND04501	56.00	10	76.20	19.50	1.58	1.58	21.00	R13TSS		40.47		MODRES	CL		58.57	27M0F8W			P	
IRL	IRL21100	-33.50	10	-8.20	53.20	0.84	0.60	162.00	R13TSS		47.42		MODRES	CR		59.42	27M0F8W			P	7
KOR	KO11201D	116.00	10	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.70	27M0G7W	KOREASAT-1	20	AE	
KOR	KOR11200	110.00	10	127.50	36.00	1.24	1.02	168.00	R13TSS		43.43		MODRES	CL		58.73	27M0F8W		20	P	
KOR	KOR11201	116.00	10	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.70	27M0F8W	KOREASAT-1	20	AE	
LAO	LAO28400	74.00	10	103.70	18.10	2.16	0.78	133.00	R13TSS		42.18		MODRES	CR		58.88	27M0F8W			P	
MAU	MAU24200	29.00	10	59.80	-18.90	1.62	1.24	55.00	R13TSS		41.42		MODRES	CR		59.12	27M0F8W			P	
MHL	MHL00000	146.00	10	167.64	9.83	2.07	0.90	157.42	R13TSS		41.75		MODRES	CR		58.95	27M0F8W			P	7
MKD	MKD14800	23.00	10	21.61	41.56	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
MLA	MLA2280A	86.00	10	114.10	3.90	2.34	1.12	45.00	R13TSS		40.26		MODRES	CR		58.66	27M0F8W			P	5, 7
MLI	MLI32700	-37.00	10	-2.00	19.00	2.66	1.26	127.00	R13TSS		39.19		MODRES	CR		58.19	27M0F8W			P	
NOR	BIFROS22	-0.80	10	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
NZL	CKH05200	158.00	10	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.70	27M0F8W		3	P	
NZL	CKH05201	158.00	10	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.70	27M0F8W		3	P	
PAK	PAK12700	38.00	10	69.60	29.50	2.30	2.16	14.00	R13TSS		37.49		MODRES	CR		58.99	27M0F8W		73	P	
PNG	PNG13100	110.00	10	147.70	-6.30	2.50	2.18	169.00	R13TSS		37.08		MODRES	CR		59.48	27M0F8W			P	
TCD	TCD14300	-13.00	10	18.10	15.50	3.40	1.72	107.00	R13TSS		36.78		MODRES	CL		59.08	27M0F8W			P	
TGO	TGO22600	-25.00	10	0.80	8.60	1.52	0.60	105.00	R13TSS		44.85		MODRES	CL		58.55	27M0F8W			P	
TUV	TUV00000	176.00	10	177.61	-7.11	0.94	0.60	137.58	R13TSS		46.93		MODRES	CR		58.93	27M0F8W			P	7

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position°	Chan nel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
USA	GUM33100	122.00	10	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.38	27M0F8W		15	P	
USA	GUM33101	122.00	10	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.38	27M0F8W		15	P	
YEM	YEM26600	11.00	10	44.00	15.67	0.80	0.60	114.88	R13TSS		47.66		MODRES	CR		58.86	27M0F8W			P	7
ZAI	ZAI32300	-19.00	10	21.30	-6.80	2.80	1.52	149.00	R13TSS		38.16		MODRES	CR		59.66	27M0F8W			P	
AFG	AFG24500	50.00	11	70.20	35.50	1.32	1.13	53.00	R13TSS		42.71		MODRES	CR		57.91	27M0F8W			P	
AUS	AUS00400	152.00	11	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	CR		58.22	27M0F8W		76	P	
AUS	AUS0040A	152.00	11	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS0040B	152.00	11	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS0040C	152.00	11	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	7
AUS	AUS00700	164.00	11	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	CR		58.49	27M0F8W		77	P	
AUS	AUS0070A	164.00	11	158.94	-54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		77	P	7
BEN	BEN23300	-19.00	11	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	CL		58.44	27M0F8W			P	
CHN	CHN15700	62.00	11	102.30	27.80	2.56	1.58	127.00	R13TSS		38.38		MODRES	CL		60.18	27M0F8W			P	
CHN	CHN16000	92.00	11	122.80	45.30	2.50	1.45	150.00	R13TSS		38.85		MODRES	CL		60.15	27M0F8W			P	
COM	COM20700	29.00	11	44.10	-12.10	0.76	0.60	149.00	R13TSS		47.86		MODRES	CL		58.16	27M0F8W			P	
E	HISPASA2	-30.00	11	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5, 7
F	F2_A2733	-7.00	11	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2773	-7.00	11	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	11	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	11	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	11	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	11	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	11	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	11	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	11	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	11	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	11	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	11	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	11	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FSM	FSM00000	146.00	11	151.67	5.42	5.34	1.51	166.52	R13TSS		35.37		MODRES	CL		58.87	27M0F8W			P	5, 7
GAB	GAB26000	-13.00	11	11.80	-0.60	1.43	1.12	64.00	R13TSS		42.40		MODRES	CR		58.40	27M0F8W			P	
GMB	GMB30200	-37.00	11	-15.10	13.40	0.79	0.60	4.00	R13TSS		47.69		MODRES	CL		58.39	27M0F8W			P	
GRC	GRC10500	5.00	11	24.70	38.20	1.78	0.98	156.00	R13TSS		42.03		MODRES	CR		58.43	27M0F8W			P	
IND	IND04300	56.00	11	77.80	11.10	1.36	1.28	172.00	R13TSS		42.04		MODRES	CR		58.54	27M0F8W			P	
IND	IND04701	68.00	11	93.30	11.10	1.92	0.60	96.00	R13TSS		43.83		MODRES	CR		58.53	27M0F8W			P	
INS	INS03600	104.00	11	135.20	-3.80	2.46	2.00	147.00	R13TSS		37.53		MODRES	CR		58.93	27M0F8W			P	
IRN	IRN10900	34.00	11	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		57.93	27M0F8W		72	P	
IRN	IRN10901	34.00	11	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		57.93	27M0F8W		72	P	
J	000BS-3N	109.85	11	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.30	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	11	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.30	27M0F8W		33	PE	
KIR	KIR00001	176.00	11	177.16	-0.79	4.47	1.27	163.00	R13TSS		36.91		MODRES	CL		58.91	27M0F8W			P	5, 7
LBN	LBN27900	11.00	11	35.80	33.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.68	27M0F8W			P	
LBR	LBR24400	-33.50	11	-9.30	6.60	1.22	0.70	133.00	R13TSS		45.13		MODRES	CR		58.33	27M0F8W			P	7
LBY	LBY32100	-25.00	11	13.10	27.20	2.36	1.12	129.00	R13TSS		40.23		MODRES	CL		58.13	27M0F8W			P	
LIE	LIE25300	-37.00	11	9.50	47.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	
LTU	LTU06100	23.00	11	23.79	55.66	0.70	0.60	176.00	R13TSS		48.21		MODRES	CL		58.91	27M0F8W			P	7

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
LUX	LUX11400	-19.00	11	6.00	49.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.98	27M0F8W			P	
NRU	NRU30900	134.00	11	167.00	-0.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		57.58	27M0F8W			P	
ROU	ROU13600	-1.00	11	25.00	45.70	1.38	0.66	155.00	R13TSS		44.85		MODRES	CL		58.85	27M0F8W			P	5, 7
SMO	SMO05700	158.00	11	-172.30	-13.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.78	27M0F8W			P	
SNG	SNG15100	74.00	11	103.80	1.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.68	27M0F8W			P	
SOM	SOM31200	23.00	11	45.00	6.40	3.26	1.54	71.00	R13TSS		37.44		MODRES	CR		57.44	27M0F8W			P	
SVK	SVK14400	17.00	11	19.65	48.69	0.82	0.60	5.20	R13TSS		47.53		MODRES	CR		58.93	27M0F8W			P	
UGA	UGA05100	11.00	11	32.30	1.20	1.46	1.12	60.00	R13TSS		42.31		MODRES	CR		58.31	27M0F8W			P	
UKR	UKR06300	38.00	11	31.74	48.22	2.29	0.96	177.78	R13TSS		41.01		MODRES	CL		58.91	27M0F8W			P	5, 7
USA	MRA33200	122.00	11	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.57	27M0F8W		14	P	
USA	MRA33201	122.00	11	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.57	27M0F8W		14	P	
UZB	UZB07100	44.00	11	64.01	41.21	2.67	0.96	163.32	R13TSS		40.37		MODRES	CL		58.87	27M0F8W			P	5, 7
VTN	VTN32500	86.00	11	108.00	14.80	3.80	1.90	126.00	R123FR		35.86		MODRES	CL		58.36	27M0F8W			P	7
VUT	VUT12800	140.00	11	168.00	-16.40	1.52	0.68	87.00	R13TSS		44.30		MODRES	CL		58.00	27M0F8W			P	
ZMB	ZMB31400	-1.00	11	27.50	-13.10	2.38	1.48	39.00	R13TSS		38.98		MODRES	CR		58.78	27M0F8W			P	
ALG	ALG25200	-25.00	12	1.60	25.50	3.64	2.16	152.00	R13TSS		35.49		MODRES	CR		57.89	27M0F8W			P	
AND	AND34100	-37.00	12	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.58	27M0F8W			P	
ARS	ARS00300	17.00	12	41.10	23.80	3.52	1.68	134.00	R13TSS		36.73		MODRES	CL		57.83	27M0F8W		70	P	
AUS	AUS00500	152.00	12	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	CL		59.43	27M0F8W			P	
AUT	AUT01600	-19.00	12	12.20	47.50	1.14	0.63	166.00	R13TSS		45.88		MODRES	CL		59.18	27M0F8W			P	
AZE	AZE06400	23.00	12	47.47	40.14	0.93	0.60	158.14	R13TSS		46.98		MODRES	CR		58.88	27M0F8W			P	5, 7
BRU	BRU3300A	74.00	12	114.70	4.40	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	5, 7
BUL	BUL02000	-1.00	12	25.00	43.00	1.04	0.60	165.00	R13TSS		46.50		MODRES	CR		58.80	27M0F8W			P	
CHN	CHN15600	62.00	12	97.80	36.30	2.56	1.58	157.00	R13TSS		38.38		MODRES	CR		58.58	27M0F8W			P	
CHN	CHN17000	92.00	12	119.50	33.00	1.34	0.64	155.00	R13TSS		45.11		MODRES	CR		59.41	27M0F8W			P	
CHN	CHN17800	79.80	12	111.50	27.40	1.22	0.86	130.00	R13TSS		44.24		MODRES	CL		59.44	27M0F8W			P	
DNK	DNK08900	5.00	12	12.30	57.10	1.20	0.60	177.00	R13TSS		45.87		MODRES	CL		59.27	27M0F8W		28	P	
EGY	EGY02600	-7.00	12	29.70	26.80	2.33	1.72	136.00	R13TSS		38.42		MODRES	CL		58.22	27M0F8W			P	
F	F2_A2744	-7.00	12	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	12	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	12	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	12	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	12	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	12	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	OCE10100	-160.00	12	-145.00	-16.30	4.34	3.54	4.00	R13TSS		32.58		MODRES	CL		58.58	27M0F8W			P	
F /EUT	E2WA7DA2	29.00	12	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	12	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	12	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	12	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	12	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	12	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	12	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G 02700	-33.50	12	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.23		MODRES	CR		60.13	27M0F8W			P	7
IND	IND04001	56.00	12	73.00	25.00	1.82	1.48	58.00	R13TSS		40.14		MODRES	CL		58.84	27M0F8W			P	
IND	IND04800	68.00	12	86.20	25.00	1.56	0.90	120.00	R13TSS		42.97		MODRES	CL		58.77	27M0F8W			P	
KOR	KO11201D	116.00	12	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.70	27M0G7W	KOREASAT-1	20	AE	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Channel	Boresight Long.	Boresight Lat	Space Antenna Character. Major	Minor	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
KOR	KOR11200	110.00	12	127.50	36.00	1.24	1.02	168.00	R13TSS		43.43		MODRES	CL		58.73	27M0F8W		20	P	
KOR	KOR11201	116.00	12	127.50	36.00	1.24	1.02	168.00	R13TSS		43.40		R13RES	CL		63.70	27M0F8W	KOREASAT-1	20	AE	
MAU	MAU24300	29.00	12	56.80	-13.90	1.56	1.38	65.00	R13TSS		41.12		MODRES	CR		58.82	27M0F8W			P	
MDA	MDA06300	38.00	12	28.41	46.99	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
MLD	MLD30600	44.00	12	73.10	6.00	0.96	0.60	90.00	R13TSS		46.84		MODRES	CR		58.74	27M0F8W			P	
MLI	MLI32800	-37.00	12	-7.60	13.20	1.74	1.24	171.00	R13TSS		41.11		MODRES	CR		58.81	27M0F8W			P	
MLT	MLT14700	-13.00	12	14.30	35.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.08	27M0F8W			P	
MOZ	MOZ30700	-1.00	12	34.00	-18.00	3.57	1.38	55.00	R13TSS		37.52		MODRES	CL		59.32	27M0F8W			P	
NZL	CKH05300	158.00	12	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.42	27M0F8W		4	P	
NZL	CKH05301	158.00	12	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.42	27M0F8W		4	P	
PAK	PAK21000	38.00	12	72.10	30.80	1.16	0.72	90.00	R13TSS		45.23		MODRES	CR		58.53	27M0F8W		74	P	
PAK	PAK21001	38.00	12	72.10	30.80	1.16	0.72	90.00	R13TSS		45.23		MODRES	CR		58.53	27M0F8W		74	P	
PLW	PLW00000	146.00	12	132.99	5.52	1.29	0.60	55.84	R13TSS		45.55		MODRES	CR		58.85	27M0F8W			P	7
PNG	PNG27100	128.00	12	148.00	-6.70	2.80	2.05	155.00	R13TSS		36.86		MODRES	CR		58.46	27M0F8W			P	
RRW	RRW31000	11.00	12	30.00	-2.10	0.66	0.60	42.00	R13TSS		48.47		MODRES	CL		59.87	27M0F8W			P	
S	SIRIUS02	5.20	12	14.00	63.00	1.30	0.70	142.00	R13TSS		42.50		R13RES	CR		58.00	27M0F8W	SIRIUS	28	AE	
STP	STP24100	-13.00	12	7.00	0.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.48	27M0F8W			P	
SVN	SVN14800	31.00	12	15.01	46.18	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5, 7
TON	TON21500	170.00	12	174.70	-18.00	1.41	0.68	85.00	R13TSS		44.63		MODRES	CR		58.43	27M0F8W			P	
ZAI	ZAI32200	-19.00	12	22.40	0.00	2.16	1.88	48.00	R13TSS		38.36		MODRES	CR		59.76	27M0F8W			P	
AFG	AFG24600	50.00	13	64.50	33.10	1.44	1.40	21.00	R13TSS		41.40		MODRES	CR		58.40	27M0F8W			P	
AUS	AUS00900	164.00	13	147.50	32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	CR		59.25	27M0F8W		78	P	
AUS	AUS0090A	164.00	13	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
AUS	AUS0090B	164.00	13	167.93	29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
BLR	BLR06200	38.00	13	27.91	53.06	1.21	0.60	11.47	R13TSS		45.83		MODRES	CL		58.93	27M0F8W			P	5
BTN	BTN03100	86.00	13	90.44	27.05	0.72	0.60	175.47	R13TSS		48.11		MODRES	CR		58.91	27M0F8W			P	5
CHN	CHN15501	62.00	13	88.30	31.50	3.38	1.45	162.00	R13TSS		37.54		MODRES	CL		58.04	27M0F8W			P	
CHN	CHN18000	92.00	13	113.70	12.90	3.76	2.18	72.00	R13TSS		35.31		MODRES	CL		58.61	27M0F8W			P	
CHN	CHN19000	122.00	13	114.17	23.32	0.91	0.60	2.88	R13TSS		47.08		MODRES	CR		58.88	27M0F8W			P	5
CME	CME30000	-13.00	13	12.70	6.20	2.54	1.68	87.00	R13TSS		38.15		MODRES	CR		58.65	27M0F8W			P	
E	HISPASA2	-30.00	13	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5, 7
EST	EST06100	23.00	13	25.01	58.47	0.72	0.60	9.93	R13TSS		48.09		MODRES	CL		58.89	27M0F8W			P	5
F	F_09300	-19.00	13	2.60	45.90	2.50	0.98	160.00	R13TSS		40.56		R13RES	CR		63.96	27M0F8W		19	PE	
F	F_09306	-7.00	13	2.60	45.90	2.50	0.98	160.00	R13TSS		41.00		MODRES	CR		58.90	27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	13	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	13	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	13	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	13	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	13	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	13	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	13	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	13	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	13	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	13	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	13	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FJI	FJI1930A	152.00	13	179.40	-17.90	1.04	0.98	67.00	R13TSS		44.36		MODRES	CR		58.76	27M0F8W			P	5, 7

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm	Beam	Orbital	Chan	Boresight		Space Antenna Character.			Space	Shap.	Space Ant. Gain		Earth	Polarization		EIRP	Designation	Satellite	Group	Status	Re-
Symb	Identification	Position	nel	Long.°	Lat.	Major°	Minor°	Orient.°	Antenna	Beam	Co-pol.	X-pol.	Antenna	Typ.	Angle°	dBW	of Emission	Identification	Code		marks
GUI	GUI19200	-37.00	13	-11.00	10.20	1.58	1.04	147.00	R13TSS		42.29		MODRES	CL		58.59	27M0F8W			P	
HRV	HRV14800	34.00	13	16.74	44.54	0.88	0.69	5.30	R13TSS		46.57		MODRES	CL		58.87	27M0F8W			P	5
IND	IND03901	56.00	13	72.70	11.20	1.26	0.60	107.00	R13TSS		45.66		MODRES	CR		58.26	27M0F8W			P	
IND	IND04400	68.00	13	79.50	22.30	2.19	1.42	146.00	R13TSS		39.52		MODRES	CR		58.52	27M0F8W			P	
INS	INS03500	104.00	13	124.30	-3.20	3.34	1.94	82.00	R13TSS		36.33		MODRES	CR		58.43	27M0F8W			P	
J	000BS-3N	109.85	13	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.30	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	13	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.30	27M0F8W		33	PE	
LBY	LBY28000	-25.00	13	21.40	26.00	2.50	1.04	119.00	R13TSS		40.30		MODRES	CL		58.60	27M0F8W			P	
MDG	MDG23600	29.00	13	46.60	-18.80	2.72	1.14	65.00	R13TSS		39.53		MODRES	CL		58.53	27M0F8W			P	
NZL	NZL05500	158.00	13	172.30	-39.70	2.88	1.56	47.00	R13TSS		37.92		MODRES	CR		58.52	27M0F8W			P	
NZL	NZL28700	128.00	13	173.00	-41.00	3.30	1.28	48.00	R13TSS		38.19		MODRES	CR		59.79	27M0F8W			P	
POL	POL13200	-1.00	13	19.30	51.80	1.46	0.64	162.00	R13TSS		44.74		MODRES	CL		59.34	27M0F8W			P	
QAT	QAT24700	17.00	13	51.10	25.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.98	27M0F8W			P	
SLM	SLM00000	146.00	13	159.32	-8.40	1.50	1.18	140.48	R13TSS		41.98		MODRES	CL		58.88	27M0F8W			P	5, 7
SMR	SMR31100	-37.00	13	12.60	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	
SWZ	SWZ31300	-1.00	13	31.50	-26.50	0.62	0.60	66.00	R13TSS		48.74		MODRES	CR		58.04	27M0F8W			P	
THA	THA14200	74.00	13	100.70	13.20	2.82	1.54	106.00	R13TSS		38.07		MODRES	CL		58.77	27M0F8W			P	
TJK	TJK06900	44.00	13	71.14	38.37	1.25	0.76	159.15	R13TSS		44.65		MODRES	CL		58.85	27M0F8W			P	5
TUR	TUR14500	5.00	13	34.40	38.90	2.68	1.04	168.00	R13TSS		40.00		MODRES	CR		58.90	27M0F8W			P	
USA	PLM33700	170.00	13	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W		9	P	
USA	PLM33701	170.00	13	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W		9	P	
USA	SMA33500	170.00	13	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.28	27M0F8W		13	P	
USA	SMA33501	170.00	13	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.28	27M0F8W		13	P	
USA	WAK33400	140.00	13	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.68	27M0F8W		11	P	
USA	WAK33401	140.00	13	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.68	27M0F8W		11	P	
YEM	YEM26700	11.00	13	48.61	14.42	1.68	1.44	157.35	R13TSS		40.61		MODRES	CL		58.91	27M0F8W			P	7
	YYY00001	11.00	13	34.99	31.86	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	3, 5, 7
ALG	ALG25100	-25.00	14	4.20	33.20	2.45	1.25	172.00	R13TSS		39.59		MODRES	CR		58.59	27M0F8W			P	
ARS	ARS27500	17.00	14	48.30	24.60	3.84	1.20	138.00	R13TSS		37.81		MODRES	CL		58.01	27M0F8W			P	
AUS	AUS00600	152.00	14	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	CL		58.40	27M0F8W			P	
AUS	AUS00800	164.00	14	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	CL		58.83	27M0F8W			P	
BIH	BIH14800	34.00	14	17.77	44.32	0.62	0.60	166.84	R13TSS		48.71		MODRES	CR		58.91	27M0F8W			P	5
BOT	BOT29700	-1.00	14	23.30	-22.20	2.13	1.50	36.00	R13TSS		39.40		MODRES	CL		58.90	27M0F8W			P	
BRU	BRU3300A	74.00	14	114.70	4.40	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	5
CHN	CHN15401	62.00	14	83.90	40.50	2.75	2.05	177.00	R13TSS		36.94		MODRES	CR		58.44	27M0F8W			P	
CHN	CHN17200	92.00	14	120.40	29.10	0.96	0.84	123.00	R13TSS		45.38		MODRES	CR		59.28	27M0F8W			P	
CHN	CHN18100	79.80	14	108.50	23.80	1.41	1.08	153.00	R13TSS		42.62		MODRES	CL		59.12	27M0F8W			P	
CLN	CLN21900	50.00	14	80.60	7.70	1.18	0.60	106.00	R13TSS		45.95		MODRES	CR		58.85	27M0F8W			P	
D	D 08700	-19.00	14	9.60	49.90	1.62	0.72	147.00	R13TSS		43.78		MODRES	CL		60.68	27M0F8W			P	
F	F2_A2722	-7.00	14	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		57.70	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	14	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		57.70	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2762	-7.00	14	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		57.70	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2762	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Chan nel	Boresight Long.°	Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F	F3_D2722	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	14	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	14	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.90	27M0F8W		6	P	
F	NCL10001	140.00	14	166.00	-21.00	1.14	0.72	146.00	R13TSS		45.30		MODRES	CR		58.90	27M0F8W		6	P	
F	WAL10200	140.00	14	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.57	27M0F8W		8	P	
F	WAL10201	140.00	14	-176.80	-14.00	0.74	0.60	29.00	R13TSS		47.97		MODRES	CR		59.57	27M0F8W		8	P	
F /EUT	E2WA7DA2	29.00	14	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	14	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	14	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	14	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	14	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	14	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	14	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GNB	GNB30400	-30.00	14	-15.00	12.00	0.90	0.60	172.00	R13TSS		47.12		MODRES	CL		58.32	27M0F8W			P	7
IND	IND03701	68.00	14	93.00	25.50	1.46	1.13	40.00	R13TSS		42.27		MODRES	CL		59.07	27M0F8W			P	
IND	IND04500	56.00	14	76.20	19.50	1.58	1.58	21.00	R13TSS		40.47		MODRES	CL		58.67	27M0F8W			P	
IRL	IRL21100	-33.50	14	-8.20	53.20	0.84	0.60	162.00	R13TSS		47.42		MODRES	CR		59.42	27M0F8W			P	7
KRE	KRE28600	110.00	14	127.00	39.10	1.30	1.10	31.00	R13TSS		42.89		MODRES	CL		58.99	27M0F8W			P	
MAU	MAU24200	29.00	14	59.80	-18.90	1.62	1.24	55.00	R13TSS		41.42		MODRES	CR		59.12	27M0F8W			P	
MHL	MHL00000	146.00	14	167.64	9.83	2.07	0.90	157.42	R13TSS		41.75		MODRES	CR		58.95	27M0F8W			P	7
MKD	MKD14800	23.00	14	21.61	41.56	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5
MLI	MLI32700	-37.00	14	-2.00	19.00	2.66	1.26	127.00	R13TSS		39.19		MODRES	CR		58.19	27M0F8W			P	
NOR	BIFROS22	-0.80	14	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
NOR	NOR12000	5.00	14	13.10	64.10	1.84	0.88	10.00	R13TSS		42.35		MODRES	CL		59.95	27M0F8W			P	
NZL	CKH05200	158.00	14	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.80	27M0F8W		3	P	
NZL	CKH05201	158.00	14	-161.00	-19.80	1.02	0.64	132.00	R13TSS		46.30		MODRES	CL		59.80	27M0F8W		3	P	
PAK	PAK21000	38.00	14	72.10	30.80	1.16	0.72	90.00	R13TSS		45.23		MODRES	CR		58.63	27M0F8W		74	P	
PNG	PNG13100	110.00	14	147.70	-6.30	2.50	2.18	169.00	R13TSS		37.08		MODRES	CR		59.58	27M0F8W			P	
TCD	TCD14300	-13.00	14	18.10	15.50	3.40	1.72	107.00	R13TSS		36.78		MODRES	CL		59.08	27M0F8W			P	
TGO	TGO22600	-25.00	14	0.80	8.60	1.52	0.60	105.00	R13TSS		44.85		MODRES	CL		58.55	27M0F8W			P	
TUV	TUV00000	176.00	14	177.61	-7.11	0.94	0.60	137.58	R13TSS		46.93		MODRES	CR		58.93	27M0F8W			P	
USA	GUM33100	122.00	14	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.48	27M0F8W		15	P	
USA	GUM33101	122.00	14	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.48	27M0F8W		15	P	
YEM	YEM26600	11.00	14	44.00	15.67	0.80	0.60	114.88	R13TSS		47.66		MODRES	CR		58.86	27M0F8W			P	
ZAI	ZAI32300	-19.00	14	21.30	-6.80	2.80	1.52	149.00	R13TSS		38.16		MODRES	CR		59.76	27M0F8W			P	
AFG	AFG24500	50.00	15	70.20	35.50	1.32	1.13	53.00	R13TSS		42.71		MODRES	CR		58.01	27M0F8W			P	
AUS	AUS00400	152.00	15	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	CR		58.22	27M0F8W		76	P	
AUS	AUS0040A	152.00	15	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS0040B	152.00	15	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS0040C	152.00	15	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS00700	164.00	15	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	CR		58.49	27M0F8W		77	P	
AUS	AUS0070A	164.00	15	158.94	-54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		77	P	7
BEN	BEN23300	-19.00	15	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	CL		58.44	27M0F8W			P	
BGD	BGD22000	74.00	15	90.30	23.60	1.46	0.84	135.00	R13TSS		43.56		MODRES	CR		58.66	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long.	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
CHN	CHN15800	79.80	15	111.80	38.00	2.60	1.74	124.00	R13TSS		37.89		MODRES	CR		59.89	27M0F8W			P	
CHN	CHN17400	92.00	15	118.10	25.90	1.02	0.84	82.00	R13TSS		45.12		MODRES	CL		59.12	27M0F8W			P	
COM	COM20700	29.00	15	44.10	-12.10	0.76	0.60	149.00	R13TSS		47.86		MODRES	CL		58.26	27M0F8W			P	
E	HISPASA2	-30.00	15	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5
F	F2_A2733	-7.00	15	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		57.70	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2773	-7.00	15	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		57.70	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	15	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	15	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	15	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	15	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	15	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	15	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	15	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	15	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	15	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	15	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	15	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FSM	FSM00000	146.00	15	151.67	5.42	5.34	1.51	166.52	R13TSS		35.37		MODRES	CL		58.87	27M0F8W			P	5, 7
GAB	GAB26000	-13.00	15	11.80	-0.60	1.43	1.12	64.00	R13TSS		42.40		MODRES	CR		58.50	27M0F8W			P	
GMB	GMB30200	-37.00	15	-15.10	13.40	0.79	0.60	4.00	R13TSS		47.69		MODRES	CL		58.49	27M0F8W			P	
GRC	GRC10500	5.00	15	24.70	38.20	1.78	0.98	156.00	R13TSS		42.03		MODRES	CR		58.53	27M0F8W			P	
IND	IND04301	56.00	15	77.80	11.10	1.36	1.28	172.00	R13TSS		42.04		MODRES	CR		58.54	27M0F8W			P	
IND	IND04700	68.00	15	93.30	11.10	1.92	0.60	96.00	R13TSS		43.83		MODRES	CR		58.63	27M0F8W			P	
INS	INS03600	104.00	15	135.20	-3.80	2.46	2.00	147.00	R13TSS		37.53		MODRES	CR		58.93	27M0F8W			P	
IRN	IRN10900	34.00	15	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		58.03	27M0F8W		72	P	
J	000BS-3N	109.85	15	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.40	27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	15	134.50	31.50	3.52	3.30	68.00	R13TSS		33.80		R13RES	CR		64.40	27M0F8W		33	PE	
KIR	KIR00002	176.00	15	-157.78	-0.33	2.40	0.64	110.62	R13TSS		42.60		MODRES	CL		58.90	27M0F8W			P	5
LBN	LBN27900	11.00	15	35.80	33.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.78	27M0F8W			P	
LBR	LBR24400	-33.50	15	-9.30	6.60	1.22	0.70	133.00	R13TSS		45.13		MODRES	CR		58.43	27M0F8W			P	7
LBY	LBY32100	-25.00	15	13.10	27.20	2.36	1.12	129.00	R13TSS		40.23		MODRES	CL		58.23	27M0F8W			P	
LIE	LIE25300	-37.00	15	9.50	47.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	
LTU	LTU06100	23.00	15	23.79	55.66	0.70	0.60	176.00	R13TSS		48.21		MODRES	CL		58.91	27M0F8W			P	
LUX	LUX11400	-19.00	15	6.00	49.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.08	27M0F8W			P	
NRU	NRU30900	134.00	15	167.00	-0.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		57.68	27M0F8W			P	
ROU	ROU13600	-1.00	15	25.00	45.70	1.38	0.66	155.00	R13TSS		44.85		MODRES	CL		58.95	27M0F8W			P	5
SMO	SMO05700	158.00	15	-172.30	-13.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.78	27M0F8W			P	
SNG	SNG15100	74.00	15	103.80	1.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.68	27M0F8W			P	
SOM	SOM31200	23.00	15	45.00	6.40	3.26	1.54	71.00	R13TSS		37.44		MODRES	CR		57.54	27M0F8W			P	
SVK	SVK14400	17.00	15	19.65	48.69	0.82	0.60	5.20	R13TSS		47.53		MODRES	CR		58.93	27M0F8W			P	
UGA	UGA05100	11.00	15	32.30	1.20	1.46	1.12	60.00	R13TSS		42.31		MODRES	CR		58.41	27M0F8W			P	
UKR	UKR06300	38.00	15	31.74	48.22	2.29	0.96	177.78	R13TSS		41.01		MODRES	CL		58.91	27M0F8W			P	5
USA	MRA33200	122.00	15	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.57	27M0F8W		14	P	
USA	MRA33201	122.00	15	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.57	27M0F8W		14	P	
UZB	UZB07100	44.00	15	64.01	41.21	2.67	0.96	163.32	R13TSS		40.37		MODRES	CL		58.87	27M0F8W			P	5
VTN	VTN32500	86.00	15	108.00	14.80	3.80	1.90	126.00	R123FR		35.86		MODRES	CL		58.36	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Chan nel	Boresight		Space Antenna Character.			Space Antenna	Shap. Beam	Space Ant. Gain		Earth Antenna	Polarization		EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
				Long.°	Lat.°	Major°	Minor°	Orient.°			Co-pol.	X-pol.		Typ.	Angle°						
VUT	VUT12800	140.00	15	168.00	-16.40	1.52	0.68	87.00	R13TSS		44.30		MODRES	CL		58.00	27M0F8W			P	
ZMB	ZMB31400	-1.00	15	27.50	-13.10	2.38	1.48	39.00	R13TSS		38.98		MODRES	CR		58.88	27M0F8W			P	
ALG	ALG25200	-25.00	16	1.60	25.50	3.64	2.16	152.00	R13TSS		35.49		MODRES	CR		57.99	27M0F8W			P	
AND	AND34100	-37.00	16	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.58	27M0F8W			P	
ARS	ARS00300	17.00	16	41.10	23.80	3.52	1.68	134.00	R13TSS		36.73		MODRES	CL		57.83	27M0F8W		70	P	
AUS	AUS00500	152.00	16	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	CL		59.43	27M0F8W			P	
AUT	AUT01600	-19.00	16	12.20	47.50	1.14	0.63	166.00	R13TSS		45.88		MODRES	CL		59.28	27M0F8W			P	
AZE	AZE06400	23.00	16	47.47	40.14	0.93	0.60	158.14	R13TSS		46.98		MODRES	CR		58.88	27M0F8W			P	5
BRU	BRU3300A	74.00	16	114.70	4.40	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	5
BUL	BUL02000	-1.00	16	25.00	43.00	1.04	0.60	165.00	R13TSS		46.50		MODRES	CR		58.80	27M0F8W			P	
CHN	CHN16900	92.00	16	118.50	36.40	1.16	0.76	11.00	R13TSS		44.99		MODRES	CR		59.69	27M0F8W			P	
CHN	CHN18600	62.00	16	102.50	30.20	1.91	1.23	147.00	R13TSS		40.74		MODRES	CL		60.54	27M0F8W			P	
DNK	DNK08900	5.00	16	12.30	57.10	1.20	0.60	177.00	R13TSS		45.87		MODRES	CL		59.37	27M0F8W		28	P	
EGY	EGY02600	-7.00	16	29.70	26.80	2.33	1.72	136.00	R13TSS		38.42		MODRES	CL		58.32	27M0F8W			P	
F	F2_A2744	-7.00	16	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	16	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	16	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	16	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	16	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	16	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	OCE10100	-160.00	16	-145.00	-16.30	4.34	3.54	4.00	R13TSS		32.58		MODRES	CL		58.68	27M0F8W			P	
F /EUT	E2WA7DA2	29.00	16	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	16	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	16	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	16	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	16	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	16	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	16	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G_02700	-33.50	16	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.23		MODRES	CR		60.23	27M0F8W			P	7
IND	IND04000	56.00	16	73.00	25.00	1.82	1.48	58.00	R13TSS		40.14		MODRES	CL		58.84	27M0F8W			P	
IND	IND04801	68.00	16	86.20	25.00	1.56	0.90	120.00	R13TSS		42.97		MODRES	CL		60.47	27M0F8W			P	
KRE	KRE28600	110.00	16	127.00	39.10	1.30	1.10	31.00	R13TSS		42.89		MODRES	CL		58.99	27M0F8W			P	
MAU	MAU24300	29.00	16	56.80	-13.90	1.56	1.38	65.00	R13TSS		41.12		MODRES	CR		58.92	27M0F8W			P	
MDA	MDA06300	38.00	16	28.41	46.99	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5
MLA	MLA22700	86.00	16	102.10	4.10	1.62	0.82	135.00	R13TSS		43.21		MODRES	CR		58.21	27M0F8W			P	1
MLD	MLD30600	44.00	16	73.10	6.00	0.96	0.60	90.00	R13TSS		46.84		MODRES	CR		58.74	27M0F8W			P	
MLI	MLI32800	-37.00	16	-7.60	13.20	1.74	1.24	171.00	R13TSS		41.11		MODRES	CR		58.91	27M0F8W			P	
MLT	MLT14700	-13.00	16	14.30	35.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.18	27M0F8W			P	
MOZ	MOZ30700	-1.00	16	34.00	-18.00	3.57	1.38	55.00	R13TSS		37.52		MODRES	CL		59.42	27M0F8W			P	
NZL	CKH05300	158.00	16	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.52	27M0F8W		4	P	
NZL	CKH05301	158.00	16	-163.00	-11.20	1.76	0.72	30.00	R13TSS		43.42		MODRES	CL		59.52	27M0F8W		4	P	
PHL	PHL28500	98.00	16	121.30	11.10	3.46	1.76	99.00	R13TSS		36.60		MODRES	CL		58.70	27M0F8W			P	
PLW	PLW00000	146.00	16	132.99	5.52	1.29	0.60	55.84	R13TSS		45.55		MODRES	CR		58.85	27M0F8W			P	7
RRW	RRW31000	11.00	16	30.00	-2.10	0.66	0.60	42.00	R13TSS		48.47		MODRES	CL		59.97	27M0F8W			P	
S	SIRIUS02	5.20	16	14.00	63.00	1.30	0.70	142.00	R13TSS		42.50		R13RES	CR		58.00	27M0F8W	SIRIUS	28	AE	
STP	STP24100	-13.00	16	7.00	0.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.58	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm.	Beam	Orbital	Chan	Boresight		Space Antenna Character.			Space	Shap.	Space Ant. Gain		Earth	Polarization		EIRP	Designation	Satellite	Group	Status	Re-
Symb	Identification	Position	nel	Long.°	Lat.°	Major°	Minor°	Orient.°	Antenna	Beam	Co-pol.	X-pol.	Antenna	Typ.	Angle°	dBW	of Emission	Identification	Code		marks
SVN	SVN14800	34.00	16	15.01	46.18	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5
TON	TON21500	170.00	16	-174.70	-18.00	1.41	0.68	85.00	R13TSS		44.63		MODRES	CR		58.53	27M0F8W			P	
ZAI	ZAI32200	-19.00	16	22.40	0.00	2.16	1.88	48.00	R13TSS		38.36		MODRES	CR		59.86	27M0F8W			P	
AUS	AUS00900	164.00	17	147.50	-32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	CR		59.25	27M0F8W		78	P	
AUS	AUS0090A	164.00	17	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
AUS	AUS0090B	164.00	17	167.93	-29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
BLR	BLR06200	38.00	17	27.91	53.06	1.21	0.60	11.47	R13TSS		45.83		MODRES	CL		58.93	27M0F8W			P	5
BRM	BRM29800	74.00	17	97.10	19.10	3.58	1.48	104.00	R13TSS		37.21		MODRES	CL		58.91	27M0F8W			P	
BTN	BTN03100	86.00	17	90.44	27.05	0.72	0.60	175.47	R13TSS		48.11		MODRES	CR		58.91	27M0F8W			P	5
CHN	CHN16700	92.00	17	124.30	43.70	1.98	0.72	156.00	R13TSS		42.91		MODRES	CL		59.71	27M0F8W			P	
CHN	CHN18200	79.80	17	108.70	35.10	1.42	0.88	109.00	R13TSS		43.48		MODRES	CR		59.18	27M0F8W			P	
CME	CME30000	-13.00	17	12.70	6.20	2.54	1.68	87.00	R13TSS		38.15		MODRES	CR		58.65	27M0F8W			P	
E	HISPASA2	-30.00	17	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5
EST	EST06100	23.00	17	25.01	58.47	0.72	0.60	9.93	R13TSS		48.09		MODRES	CL		58.89	27M0F8W			P	5
F	F 09300	-19.00	17	2.60	45.90	2.50	0.98	160.00	R13TSS		40.56		R13RES	CR		63.96	27M0F8W		19	PE	
F	F 09306	-7.00	17	2.60	45.90	2.50	0.98	160.00	R13TSS		41.00		MODRES	CR		58.90	27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	17	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	17	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	17	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	17	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	17	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	17	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	17	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	17	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	17	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	17	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	17	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GUI	GUI19200	-37.00	17	-11.00	10.20	1.58	1.04	147.00	R13TSS		42.29		MODRES	CL		58.69	27M0F8W			P	
HRV	HRV14800	34.00	17	16.74	44.54	0.88	0.69	5.30	R13TSS		46.57		MODRES	CL		58.87	27M0F8W			P	5
IND	IND03801	56.00	17	75.90	33.40	1.52	1.08	33.00	R13TSS		42.29		MODRES	CR		59.29	27M0F8W			P	
IND	IND04600	68.00	17	84.70	20.50	1.60	0.86	30.00	R13TSS		43.06		MODRES	CR		58.56	27M0F8W			P	
INS	INS03200	80.20	17	112.30	-0.30	2.66	2.32	109.00	R13TSS		36.54		MODRES	CL		59.04	27M0F8W			P	
LBY	LBY28000	-25.00	17	21.40	26.00	2.50	1.04	119.00	R13TSS		40.30		MODRES	CL		58.70	27M0F8W			P	
MDG	MDG23600	29.00	17	46.60	-18.80	2.72	1.14	65.00	R13TSS		39.53		MODRES	CL		58.53	27M0F8W			P	
NPL	NPL12200	50.00	17	83.70	28.30	1.72	0.60	163.00	R13TSS		44.31		MODRES	CL		59.61	27M0F8W			P	
NZL	NZL28700	128.00	17	173.00	-41.00	3.30	1.28	48.00	R13TSS		38.19		MODRES	CR		59.79	27M0F8W			P	
POL	POL13200	-1.00	17	19.30	51.80	1.46	0.64	162.00	R13TSS		44.74		MODRES	CL		59.34	27M0F8W			P	
QAT	QAT24700	17.00	17	51.10	25.30	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.98	27M0F8W			P	1
SMR	SMR31100	-37.00	17	12.60	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.68	27M0F8W			P	
SWZ	SWZ31300	-1.00	17	31.50	-26.50	0.62	0.60	66.00	R13TSS		48.74		MODRES	CR		58.04	27M0F8W			P	
TJK	TJK06900	44.00	17	71.14	38.37	1.25	0.76	159.15	R13TSS		44.65		MODRES	CL		58.85	27M0F8W			P	5
TUR	TUR14500	5.00	17	34.40	38.90	2.68	1.04	168.00	R13TSS		40.00		MODRES	CR		58.90	27M0F8W			P	
USA	PLM33700	170.00	17	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W		9	P	
USA	PLM33701	170.00	17	-161.40	7.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W		9	P	
USA	SMA33500	170.00	17	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.38	27M0F8W		13	P	
USA	SMA33501	170.00	17	-170.10	-14.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.38	27M0F8W		13	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Admin Symb	Beam Identification	Orbital Position	Channel	Boresight Long.°	Boresight Lat.	Space Antenna Character. Major	Minor°	Orient.°	Space Antenna	Shap Beam	Space Ant. Gain Co-pol	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
USA	WAK33400	140.00	17	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.78	27M0F8W		11	P	
USA	WAK33401	140.00	17	166.50	19.20	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.78	27M0F8W		11	P	
YEM	YEM26700	11.00	17	48.61	14.42	1.68	1.44	157.35	R13TSS		40.61		MODRES	CL		58.91	27M0F8W			P	
	YYY00001	11.00	17	34.99	31.86	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	3, 5
ALG	ALG25100	-25.00	18	4.20	33.20	2.45	1.25	172.00	R13TSS		39.59		MODRES	CR		58.59	27M0F8W			P	
ARS	ARS27500	17.00	18	48.30	24.60	3.84	1.20	138.00	R13TSS		37.81		MODRES	CL		58.01	27M0F8W			P	
AUS	AUS00600	152.00	18	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	CL		58.40	27M0F8W			P	
AUS	AUS00800	164.00	18	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	CL		58.83	27M0F8W			P	
BGD	BGD22000	74.00	18	90.30	23.60	1.46	0.84	135.00	R13TSS		43.56		MODRES	CR		58.66	27M0F8W			P	
BIH	BIH14800	34.00	18	17.77	44.32	0.62	0.60	166.84	R13TSS		48.71		MODRES	CR		58.91	27M0F8W			P	5
BOT	BOT29700	-1.00	18	23.30	-22.20	2.13	1.50	36.00	R13TSS		39.40		MODRES	CL		59.00	27M0F8W			P	
BRU	BRU3300A	74.00	18	114.70	4.40	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	5
CBG	CBG29900	68.00	18	105.00	12.70	1.01	0.90	110.00	R13TSS		44.86		MODRES	CR		59.26	27M0F8W			P	
CHN	CHN15900	79.80	18	109.40	27.30	2.14	1.72	107.00	R13TSS		38.79		MODRES	CL		59.49	27M0F8W			P	
CHN	CHN18500	62.00	18	95.70	35.40	2.10	1.14	156.00	R13TSS		40.66		MODRES	CR		58.36	27M0F8W			P	
D	D 08700	-19.00	18	9.60	49.90	1.62	0.72	147.00	R13TSS		43.78		MODRES	CL		60.68	27M0F8W			P	
F	F2_A2722	-7.00	18	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		57.20	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	18	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		57.20	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2762	-7.00	18	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		57.20	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2762	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	18	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA2	29.00	18	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	18	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	18	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	18	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	18	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	18	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	18	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GNB	GNB30400	-30.00	18	-15.00	12.00	0.90	0.60	172.00	R13TSS		47.12		MODRES	CL		58.32	27M0F8W			P	7
IND	IND04100	56.00	18	78.40	16.00	2.08	1.38	35.00	R13TSS		39.87		MODRES	CL		58.77	27M0F8W			P	
IND	IND04201	68.00	18	79.30	27.70	2.14	1.16	147.00	R13TSS		40.50		MODRES	CL		58.80	27M0F8W			P	
INS	INS03000	80.20	18	112.30	-8.10	3.14	1.46	169.00	R13TSS		37.83		MODRES	CR		59.23	27M0F8W			P	
IRL	IRL21100	-33.50	18	-8.20	53.20	0.84	0.60	162.00	R13TSS		47.42		MODRES	CR		59.52	27M0F8W			P	7
KRE	KRE28600	110.00	18	127.00	39.10	1.30	1.10	31.00	R13TSS		42.89		MODRES	CL		58.99	27M0F8W			P	
MAU	MAU24200	29.00	18	59.80	-18.90	1.62	1.24	55.00	R13TSS		41.42		MODRES	CR		59.22	27M0F8W			P	
MHL	MHL00000	146.00	18	167.64	9.83	2.07	0.90	157.42	R13TSS		41.75		MODRES	CR		58.95	27M0F8W			P	7
MKD	MKD14800	23.00	18	21.61	41.56	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5
MLA	MLA22700	86.00	18	102.10	4.10	1.62	0.82	135.00	R13TSS		43.21		MODRES	CR		58.31	27M0F8W			P	
MLI	MLI32700	-37.00	18	-2.00	19.00	2.66	1.26	127.00	R13TSS		39.19		MODRES	CR		58.19	27M0F8W			P	
NOR	BIFROS22	-0.80	18	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
NOR	NOR12000	5.00	18	13.10	64.10	1.84	0.88	10.00	R13TSS		42.35		MODRES	CL		59.95	27M0F8W			P	
PAK	PAK28100	38.00	18	65.20	27.90	1.52	1.42	28.00	R13TSS		41.11		MODRES	CR		58.01	27M0F8W			P	
PHL	PHL28500	98.00	18	121.30	11.10	3.46	1.76	99.00	R13TSS		36.60		MODRES	CL		58.70	27M0F8W			P	
TCD	TCD14300	-13.00	18	18.10	15.50	3.40	1.72	107.00	R13TSS		36.78		MODRES	CL		59.18	27M0F8W			P	
TGO	TGO22600	-25.00	18	0.80	8.60	1.52	0.60	105.00	R13TSS		44.85		MODRES	CL		58.65	27M0F8W			P	
USA	GUM33100	122.00	18	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.48	27M0F8W		15	P	
USA	GUM33101	122.00	18	144.50	13.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		58.48	27M0F8W		15	P	
YEM	YEM26600	11.00	18	44.00	15.67	0.80	0.60	114.88	R13TSS		47.66		MODRES	CR		58.86	27M0F8W			P	
ZAI	ZAI32300	-19.00	18	21.30	-6.80	2.80	1.52	149.00	R13TSS		38.16		MODRES	CR		59.86	27M0F8W			P	
AUS	AUS00400	152.00	19	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	CR		58.22	27M0F8W		76	P	
AUS	AUS0040A	152.00	19	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS0040B	152.00	19	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS0040C	152.00	19	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS00700	164.00	19	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	CR		58.49	27M0F8W		77	P	
AUS	AUS0070A	164.00	19	158.94	-54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		77	P	7
BEN	BEN23300	-19.00	19	2.20	9.50	1.44	0.68	97.00	R13TSS		44.54		MODRES	CL		58.54	27M0F8W			P	
BRM	BRM29800	74.00	19	97.10	19.10	3.58	1.48	104.00	R13TSS		37.21		MODRES	CL		58.91	27M0F8W			P	
CHN	CHN15800	79.80	19	111.80	38.00	2.60	1.74	124.00	R13TSS		37.89		MODRES	CR		59.89	27M0F8W			P	
CHN	CHN17900	92.00	19	112.20	21.90	1.84	1.22	37.00	R13TSS		40.94		MODRES	CL		58.84	27M0F8W			P	
COM	COM2070A	29.00	19	44.10	-12.10	0.76	0.60	149.00	R13TSS		47.86		MODRES	CL		58.26	27M0F8W			P	5
E	HISPASA2	-30.00	19	-8.80	35.40	3.00	1.90	45.00	R13TSS		36.90		MODRES	CL		59.00	27M0F8W	HISPASAT-2		A	5
F	F2_A2733	-7.00	19	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		57.20	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2773	-7.00	19	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CR		57.20	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	19	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	19	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	19	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	19	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	68.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	19	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	19	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	19	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	19	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	19	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	19	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	19	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FSM	FSM00000	146.00	19	151.67	5.42	5.34	1.51	166.52	R13TSS		35.37		MODRES	CL		58.87	27M0F8W			P	5, 7
GAB	GAB26000	-13.00	19	11.80	-0.60	1.43	1.12	64.00	R13TSS		42.40		MODRES	CR		58.60	27M0F8W			P	
GMB	GMB30200	-37.00	19	-15.10	13.40	0.79	0.60	4.00	R13TSS		47.69		MODRES	CL		58.49	27M0F8W			P	
GRC	GRC10500	5.00	19	24.70	38.20	1.78	0.98	156.00	R13TSS		42.03		MODRES	CR		58.53	27M0F8W			P	
IND	IND03800	56.00	19	75.90	33.40	1.52	1.08	33.00	R13TSS		42.29		MODRES	CR		59.29	27M0F8W			P	
IND	IND04601	68.00	19	84.70	20.50	1.60	0.86	30.00	R13TSS		43.06		MODRES	CR		58.56	27M0F8W			P	
INS	INS03200	80.20	19	112.30	-0.30	2.66	2.32	109.00	R13TSS		36.54		MODRES	CL		59.14	27M0F8W			P	
INS	INS03600	104.00	19	135.20	-3.80	2.46	2.00	147.00	R13TSS		37.53		MODRES	CR		59.03	27M0F8W			P	1
IRN	IRN10900	34.00	19	54.20	32.40	3.82	1.82	149.00	R13TSS		36.03		MODRES	CL		58.03	27M0F8W		72	P	
KIR	KIR00002	176.00	19	-157.78	-0.33	2.40	0.64	110.62	R13TSS		42.60		MODRES	CL		58.90	27M0F8W			P	5
LBN	LBN27900	11.00	19	35.80	33.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.78	27M0F8W			P	
LBR	LBR2440A	-31.00	19	-9.30	6.60	1.22	0.70	133.00	R13TSS		45.13		MODRES	CR		58.43	27M0F8W			P	5, 7

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long.°	Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
LBY	LBY32100	-25.00	19	13.10	27.20	2.36	1.12	129.00	R13TSS		40.23		MODRES	CL		58.33	27M0F8W			P	
LIE	LIE25300	-37.00	19	9.50	47.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	
LTU	LTU06100	23.00	19	23.79	55.66	0.70	0.60	176.00	R13TSS		48.21		MODRES	CL		58.91	27M0F8W			P	
LUX	LUX11400	-19.00	19	6.00	49.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.08	27M0F8W			P	
NPL	NPL12200	50.00	19	83.70	28.30	1.72	0.60	163.00	R13TSS		44.31		MODRES	CL		59.61	27M0F8W			P	
NZL	NIU05400	158.00	19	-169.80	-19.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		59.08	27M0F8W		2	P	
NZL	NIU05401	158.00	19	-169.80	-19.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		59.08	27M0F8W		2	P	
ROU	ROU13600	-1.00	19	25.00	45.70	1.38	0.66	155.00	R13TSS		44.85		MODRES	CL		58.95	27M0F8W			P	5
SOM	SOM31200	23.00	19	45.00	6.40	3.26	1.54	71.00	R13TSS		37.44		MODRES	CR		57.64	27M0F8W			P	
SVK	SVK14400	17.00	19	19.65	48.69	0.82	0.60	5.20	R13TSS		47.53		MODRES	CR		58.93	27M0F8W			P	
UGA	UGA05100	11.00	19	32.30	1.20	1.46	1.12	60.00	R13TSS		42.31		MODRES	CR		58.41	27M0F8W			P	
UKR	UKR06300	38.00	19	31.74	48.22	2.29	0.96	177.78	R13TSS		41.01		MODRES	CL		58.91	27M0F8W			P	5
USA	MRA33200	122.00	19	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.67	27M0F8W		14	P	
USA	MRA33201	122.00	19	145.90	16.90	1.20	0.60	76.00	R13TSS		45.87		MODRES	CR		58.67	27M0F8W		14	P	
UZB	UZB07100	44.00	19	64.01	41.21	2.67	0.96	163.32	R13TSS		40.37		MODRES	CL		58.87	27M0F8W			P	5
ZMB	ZMB31400	-1.00	19	27.50	-13.10	2.38	1.48	39.00	R13TSS		38.98		MODRES	CR		58.88	27M0F8W			P	
ALG	ALG25200	-25.00	20	1.60	25.50	3.64	2.16	152.00	R13TSS		35.49		MODRES	CR		57.99	27M0F8W			P	
AND	AND34100	-37.00	20	1.60	42.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.68	27M0F8W			P	
ARS	ARS00300	17.00	20	41.10	23.80	3.52	1.68	134.00	R13TSS		36.73		MODRES	CL		57.93	27M0F8W		70	P	
AUS	AUS00500	152.00	20	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	CL		59.43	27M0F8W			P	
AUT	AUT01600	-19.00	20	12.20	47.50	1.14	0.63	166.00	R13TSS		45.88		MODRES	CL		59.28	27M0F8W			P	
AZE	AZE06400	23.00	20	47.47	40.14	0.93	0.60	158.14	R13TSS		46.98		MODRES	CR		58.88	27M0F8W			P	5
BGD	BGD22000	74.00	20	90.30	23.60	1.46	0.84	135.00	R13TSS		43.56		MODRES	CR		58.66	27M0F8W			P	
BUL	BUL02000	-1.00	20	25.00	43.00	1.04	0.60	165.00	R13TSS		46.50		MODRES	CR		58.90	27M0F8W			P	
CBG	CBG29900	68.00	20	105.00	12.70	1.01	0.90	110.00	R13TSS		44.86		MODRES	CR		59.26	27M0F8W			P	
CHN	CHN15900	79.80	20	109.40	27.30	2.14	1.72	107.00	R13TSS		38.79		MODRES	CL		59.59	27M0F8W			P	
CHN	CHN18400	62.00	20	101.00	37.90	2.78	0.82	144.00	R13TSS		40.87		MODRES	CR		58.67	27M0F8W			P	
DNK	DNK08901	5.00	20	12.30	57.10	1.20	0.60	177.00	R13TSS		45.87		MODRES	CL		59.37	27M0F8W		29	P	
EGY	EGY02600	-7.00	20	29.70	26.80	2.33	1.72	136.00	R13TSS		38.42		MODRES	CL		58.32	27M0F8W			P	
F	F2_A2744	-7.00	20	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	20	3.40	45.60	2.00	0.95	155.00	R13TSS		42.70		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	20	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	20	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	20	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	55.20	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	20	3.40	45.60	2.00	0.95	155.00	RAD_TSS		42.70		MODRES	LE	158.00	54.70	33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA2	29.00	20	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	20	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	20	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	20	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	20	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	20	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	20	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G 02700	-33.50	20	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.23		MODRES	CR		60.23	27M0F8W			P	7
IND	IND04101	56.00	20	78.40	16.00	2.08	1.38	35.00	R13TSS		39.87		MODRES	CL		58.77	27M0F8W			P	
IND	IND04200	68.00	20	79.30	27.70	2.14	1.16	147.00	R13TSS		40.50		MODRES	CL		58.80	27M0F8W			P	
INS	INS03000	80.20	20	112.30	-8.10	3.14	1.46	169.00	R13TSS		37.83		MODRES	CR		59.23	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long	Lat.	Space Antenna Character. Major	Minor	Orient.°	Space Antenna	Ship Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
KRE	KRE28600	110.00	20	127.00	39.10	1.30	1.10	31.00	R13TSS		42.89		MODRES	CL		59.99	27M0F8W			P	
MDA	MDA06300	38.00	20	28.41	46.99	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5
MLA	MLA22700	86.00	20	102.10	4.10	1.62	0.82	135.00	R13TSS		43.21		MODRES	CR		58.31	27M0F8W			P	
MLI	MLI32800	-37.00	20	-7.60	13.20	1.74	1.24	171.00	R13TSS		41.11		MODRES	CR		58.91	27M0F8W			P	
MLT	MLT1470A	-13.00	20	14.30	35.90	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		56.18	27M0F8W			P	5, 7
MOZ	MOZ30700	-1.00	20	34.00	-18.00	3.57	1.38	55.00	R13TSS		37.52		MODRES	CL		59.42	27M0F8W			P	
NZL	TKL05800	158.00	20	-171.80	-8.90	0.70	0.60	35.00	R13TSS		48.21		MODRES	CR		58.81	27M0F8W		1	P	
NZL	TKL05801	158.00	20	-171.80	-8.90	0.70	0.60	35.00	R13TSS		48.21		MODRES	CR		58.81	27M0F8W		1	P	
PAK	PAK28200	38.00	20	68.50	25.80	1.32	0.62	133.00	R13TSS		45.32		MODRES	CR		58.32	27M0F8W			P	
PHL	PHL28500	98.00	20	121.30	11.10	3.46	1.76	99.00	R13TSS		36.60		MODRES	CL		58.70	27M0F8W			P	
PLW	PLW00000	146.00	20	132.99	5.52	1.29	0.60	55.84	R13TSS		45.55		MODRES	CR		58.85	27M0F8W			P	7
RRW	RRW31000	11.00	20	30.00	-2.10	0.66	0.60	42.00	R13TSS		48.47		MODRES	CL		59.97	27M0F8W			P	
S	SIRIUS03	5.20	20	14.00	63.00	1.30	0.70	142.00	R13TSS		42.50		R13RES	CR		58.00	27M0F8W	SIRIUS	29	AE	
STP	STP24100	-13.00	20	7.00	0.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		56.68	27M0F8W			P	
SVN	SVN14800	34.00	20	15.01	46.18	0.60	0.60	90.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W			P	5
ZAI	ZAI32200	-19.00	20	22.40	0.00	2.16	1.88	48.00	R13TSS		38.36		MODRES	CR		59.86	27M0F8W			P	
AFS	AFS02100	5.00	21	24.50	-28.00	3.13	1.68	27.00	R13TSS		37.24		MODRES	CL		59.14	27M0F8W			P	
AUS	AUS00900	164.00	21	147.50	-32.10	2.31	1.43	187.00	R13TSS		39.25		MODRES	CR		59.25	27M0F8W		78	P	
AUS	AUS0090A	164.00	21	159.06	-31.52	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
AUS	AUS0090B	164.00	21	167.93	-29.02	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		78	P	7
BEL	BEL01800	-19.00	21	4.60	50.60	0.82	0.60	167.00	R13TSS		47.53		MODRES	CR		59.23	27M0F8W			P	
BFA	BFA10700	-30.00	21	-1.50	12.20	1.45	1.14	29.00	R13TSS		42.26		MODRES	CR		58.96	27M0F8W			P	7
BRM	BRM29800	74.00	21	97.10	19.10	3.58	1.48	104.00	R13TSS		37.21		MODRES	CL		58.91	27M0F8W			P	
CHN	CHN17500	92.00	21	121.40	23.80	1.14	0.82	64.00	R13TSS		44.74		MODRES	CL		59.34	27M0F8W			P	
CHN	CHN17600	79.80	21	113.70	33.90	1.20	0.80	141.00	R13TSS		44.62		MODRES	CR		59.32	27M0F8W			P	
CYP	CYP08600	5.00	21	33.30	35.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W			P	
D	D2-21600	-1.00	21	12.60	52.10	0.83	0.63	172.00	R13TSS		47.26		MODRES	CL		59.16	27M0F8W			P	
DJI	DJI09900	23.00	21	42.50	11.60	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	
F /EUT	E2WA7DA1	29.00	21	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	21	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	21	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	21	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	21	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	21	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	21	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
IND	IND03800	56.00	21	75.90	33.40	1.52	1.08	33.00	R13TSS		42.29		MODRES	CR		59.39	27M0F8W			P	
IND	IND04601	68.00	21	84.70	20.50	1.60	0.86	30.00	R13TSS		43.06		MODRES	CR		58.66	27M0F8W			P	
INS	INS03200	80.20	21	112.30	-0.30	2.66	2.32	109.00	R13TSS		36.54		MODRES	CL		59.14	27M0F8W			P	
ISL	ISL04900	-33.50	21	-19.00	64.90	1.00	0.60	177.00	R13TSS		46.67		MODRES	CL		60.77	27M0F8W			P	7
ISR	ISR1100A	-13.00	21	34.90	31.40	0.94	0.60	117.00	R13TSS		46.93		MODRES	CL		58.83	27M0F8W			P	5, 7
KEN	KEN24900	11.00	21	37.90	1.10	2.29	1.56	94.00	R13TSS		38.92		MODRES	CR		58.72	27M0F8W			P	
LVA	LVA06100	23.00	21	24.53	56.20	0.83	0.60	0.05	R13TSS		47.50		MODRES	CL		58.90	27M0F8W			P	5
MCO	MCO11600	-37.00	21	7.40	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.38	27M0F8W			P	
MRC	MRC20900	-25.00	21	-9.00	29.20	2.72	1.47	43.00	R13TSS		38.43		MODRES	CL		58.33	27M0F8W			P	
NMB	NMB0250A	-19.00	21	17.50	-21.60	2.66	1.90	48.00	R13TSS		37.41		MODRES	CL		59.71	27M0F8W			P	5
NPL	NPL12200	50.00	21	83.70	28.30	1.72	0.60	163.00	R13TSS		44.31		MODRES	CL		59.61	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long.	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
NZL	NZL28700	128.00	21	173.00	-41.00	3.30	1.28	48.00	R13TSS		38.19		MODRES	CR		59.89	27M0F8W			P	
POR	AZR13400	-30.00	21	-23.40	36.10	2.56	0.70	158.00	R13TSS		41.91		MODRES	CL		58.01	27M0F8W		21	P	7
POR	POR13300	-30.00	21	-8.00	39.60	0.92	0.60	112.00	R13TSS		47.03		MODRES	CL		58.43	27M0F8W		21	P	5, 7
SEN	SEN22201	-37.00	21	-14.40	13.80	1.46	1.04	139.00	R13TSS		42.63		MODRES	CL		58.63	27M0F8W			P	
UAE	UAE27400	17.00	21	53.60	24.20	0.98	0.80	162.00	R13TSS		45.50		MODRES	CR		58.20	27M0F8W			P	1
ALB	ALB29600	-7.00	22	19.80	41.30	0.68	0.60	146.00	R13TSS		48.34		MODRES	CL		58.84	27M0F8W			P	
AUS	AUS00600	152.00	22	136.60	-30.90	2.41	1.52	161.00	R13TSS		38.80		MODRES	CL		58.40	27M0F8W			P	
AUS	AUS00800	164.00	22	145.90	-21.70	3.62	1.63	136.00	R13TSS		36.73		MODRES	CL		58.83	27M0F8W			P	
BDI	BDI27000	11.00	22	29.90	-3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	CL		58.35	27M0F8W			P	
BGD	BGD22000	74.00	22	90.30	23.60	1.46	0.84	135.00	R13TSS		43.56		MODRES	CR		58.76	27M0F8W			P	
CBG	CBG29900	68.00	22	105.00	12.70	1.01	0.90	110.00	R13TSS		44.86		MODRES	CR		59.26	27M0F8W			P	
CHN	CHN15900	79.80	22	109.40	27.30	2.14	1.72	107.00	R13TSS		38.79		MODRES	CL		59.59	27M0F8W			P	
CHN	CHN16800	92.00	22	124.80	48.10	2.68	0.92	157.00	R13TSS		40.53		MODRES	CL		60.43	27M0F8W			P	
CHN	CHN18300	62.00	22	104.80	39.00	1.48	0.60	142.00	R13TSS		44.96		MODRES	CR		58.76	27M0F8W			P	
COG	COG23500	13.00	22	14.60	-0.70	2.02	1.18	59.00	R13TSS		40.67		MODRES	CL		58.77	27M0F8W			P	
CTI	CTI23700	-30.00	22	-5.60	7.50	1.60	1.22	108.00	R13TSS		41.54		MODRES	CL		58.74	27M0F8W			P	7
ETH	ETH09200	23.00	22	39.55	8.58	2.48	1.92	128.32	R13TSS		37.67		MODRES	CL		58.87	27M0F8W			P	
F	REU09700	29.00	22	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		58.89	27M0F8W		5	P	
F	REU09701	29.00	22	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		58.89	27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	22	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	22	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	22	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	22	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	22	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	22	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	22	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FIN	FIN10400	5.00	22	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	CL		62.74	27M0F8W			P	
G	G UKDBS	-33.50	22	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.20		MODRES	CR		60.10	27M0F8W	UKDBS-3		A	5, 7
GEO	GEO06400	23.00	22	43.35	42.27	1.11	0.60	161.21	R13TSS		46.23		MODRES	CR		58.93	27M0F8W			P	5
HNG	HNG10600	-1.00	22	19.50	47.20	0.92	0.60	176.00	R13TSS		47.03		MODRES	CR		59.03	27M0F8W			P	
IND	IND04101	56.00	22	78.40	16.00	2.08	1.38	35.00	R13TSS		39.87		MODRES	CL		58.77	27M0F8W			P	
IND	IND04200	68.00	22	79.30	27.70	2.14	1.16	147.00	R13TSS		40.50		MODRES	CL		58.80	27M0F8W			P	
INS	INS03000	80.20	22	112.30	-8.10	3.14	1.46	169.00	R13TSS		37.83		MODRES	CR		59.23	27M0F8W			P	
KGZ	KGZ07000	44.00	22	73.88	41.32	1.34	0.64	3.53	R13TSS		45.12		MODRES	CL		58.92	27M0F8W			P	
KRE	KRE28600	110.00	22	127.00	39.10	1.30	1.10	31.00	R13TSS		42.89		MODRES	CL		59.09	27M0F8W			P	
KWT	KWT11300	17.00	22	47.60	29.20	0.68	0.60	145.00	R13TSS		48.34		MODRES	CL		58.14	27M0F8W			P	
MLA	MLA22700	86.00	22	102.10	4.10	1.62	0.82	135.00	R13TSS		43.21		MODRES	CR		58.31	27M0F8W			P	
MTN	MTN22300	-37.00	22	-12.20	18.50	2.62	1.87	150.00	R13TSS		37.55		MODRES	CR		57.85	27M0F8W			P	
NIG	NIG11900	-19.00	22	7.80	9.40	2.16	2.02	45.00	R13TSS		38.05		MODRES	CR		58.95	27M0F8W			P	
PAK	PAK28100	38.00	22	65.20	27.90	1.52	1.42	28.00	R13TSS		41.11		MODRES	CR		58.11	27M0F8W			P	
PHL	PHL28500	98.00	22	121.30	11.10	3.46	1.76	99.00	R13TSS		36.60		MODRES	CL		58.70	27M0F8W			P	
SDN	SDN23100	-7.00	22	28.90	12.70	2.26	1.96	159.00	R13TSS		37.98		MODRES	CR		58.48	27M0F8W			P	
SUI	SUI14000	-19.00	22	8.20	46.60	0.98	0.70	171.00	R13TSS		46.08		MODRES	CL		59.08	27M0F8W			P	
SYR	SYR22900	11.00	22	38.30	34.90	1.04	0.90	7.00	R13TSS		44.73		MODRES	CR		58.23	27M0F8W			P	
TUN	TUN15000	-25.00	22	9.50	33.50	1.88	0.72	135.00	R13TSS		43.13		MODRES	CR		58.83	27M0F8W			P	
ZWE	ZWE13500	-1.00	22	29.60	-18.80	1.46	1.36	37.00	R13TSS		41.47		MODRES	CL		59.17	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.	Space Antenna Character. Major	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
AGL	AGL29500	-13.00	23	16.50	-12.00	3.09	2.26	84.00	R13TSS		36.01		MODRES	CR		59.11	27M0F8W			P	
ARS	ARS34000	17.00	23	52.30	24.80	2.68	0.70	143.00	R13TSS		41.71		MODRES	CR		58.21	27M0F8W		71	P	
ARS	ARS34001	17.00	23	52.30	24.80	2.68	0.70	143.00	R13TSS		41.71		MODRES	CR		58.21	27M0F8W		71	P	
AUS	AUS00400	152.00	23	123.00	-24.20	3.06	2.17	102.00	R13TSS		36.22		MODRES	CR		58.22	27M0F8W		76	P	
AUS	AUS0040A	152.00	23	96.83	-12.19	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS0040B	152.00	23	105.69	-10.45	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS0040C	152.00	23	110.52	-66.28	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		76	P	
AUS	AUS00700	164.00	23	145.20	-38.10	2.12	1.02	147.00	R13TSS		41.09		MODRES	CR		58.49	27M0F8W		77	P	
AUS	AUS0070A	164.00	23	158.94	-54.50	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.88	27M0F8W		77	P	7
BHR	BHR2550A	17.00	23	50.50	26.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		55.78	27M0F8W		71	P	5
BRM	BRM29800	74.00	23	97.10	19.10	3.58	1.48	104.00	R13TSS		37.21		MODRES	CL		59.01	27M0F8W			P	
CHN	CHN15800	79.80	23	111.80	38.00	2.60	1.74	124.00	R13TSS		37.89		MODRES	CR		59.99	27M0F8W			P	
CVA	CVA08500	-37.00	23	10.80	41.50	2.00	0.60	138.00	R13TSS		43.66		MODRES	CR		58.56	27M0F8W			P	
CZE	CZE14400	17.00	23	15.50	49.79	0.92	0.60	174.55	R13TSS		47.02		MODRES	CL		58.92	27M0F8W			P	5
E	CNR13000	-30.00	23	-15.70	28.40	1.54	0.60	5.00	R13TSS		44.79		MODRES	CL		57.79	27M0F8W		17	P	
E	E 12900	-30.00	23	-3.10	39.90	2.10	1.14	154.00	R13TSS		40.66		MODRES	CL		58.86	27M0F8W		17	P	
E	HISPASA4	-30.00	23	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	23	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
ERI	ERI09200	23.00	23	39.41	14.98	1.67	0.95	145.48	R13TSS		42.44		MODRES	CR		58.94	27M0F8W			P	5
F /EUT	E2WA7DA1	29.00	23	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	23	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	23	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	23	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	23	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	23	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	23	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GHA	GHA10800	-25.00	23	-1.20	7.90	1.48	1.06	102.00	R13TSS		42.49		MODRES	CR		58.59	27M0F8W			P	
GNE	GNE30300	-19.00	23	10.30	1.50	0.68	0.60	10.00	R13TSS		48.34		MODRES	CL		58.84	27M0F8W			P	
HOL	HOL21300	-19.00	23	5.40	52.00	0.76	0.60	171.00	R13TSS		47.86		MODRES	CR		59.36	27M0F8W			P	
IND	IND03801	56.00	23	75.90	33.40	1.52	1.08	33.00	R13TSS		42.29		MODRES	CR		59.39	27M0F8W			P	
IND	IND04600	68.00	23	84.70	20.50	1.60	0.86	30.00	R13TSS		43.06		MODRES	CR		58.66	27M0F8W			P	
INS	INS03200	80.20	23	112.30	-0.30	2.66	2.32	109.00	R13TSS		36.54		MODRES	CL		59.14	27M0F8W			P	
ISL	ISL05000	5.00	23	-19.50	61.00	2.20	0.80	4.00	R13TSS		41.99		MODRES	CR		61.29	27M0F8W			P	2
JOR	JOR22400	11.00	23	35.80	31.40	0.84	0.78	114.00	R13TSS		46.28		MODRES	CL		58.08	27M0F8W			P	
KIR	KIR00002	176.00	23	-157.78	-0.33	2.40	0.64	110.62	R13TSS		42.60		MODRES	CL		58.90	27M0F8W			P	5
NOR	BIFROS21	-0.80	23	17.00	61.50					NO9	32.00	6.00	MODRES	CL		54.50	27M0FXF	BIFROSTXX2		A	
NPL	NPL1220A	50.00	23	83.70	28.30	1.72	0.60	163.00	R13TSS		44.31		MODRES	CL		59.61	27M0F8W			P	5
NZL	NIU05400	158.00	23	-169.80	-19.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		59.08	27M0F8W		2	P	
NZL	NIU05401	158.00	23	-169.80	-19.00	0.60	0.60	0.00	R13TSS		48.88		MODRES	CL		59.08	27M0F8W		2	P	
SDN	SDN23000	-7.00	23	29.20	7.50	2.34	1.12	148.00	R13TSS		40.26		MODRES	CL		59.36	27M0F8W			P	
SRL	SRL25900	-33.50	23	-11.80	8.60	0.78	0.68	114.00	R13TSS		47.20		MODRES	CR		58.40	27M0F8W			P	7
TKM	TKM06800	44.00	23	59.18	38.84	2.25	0.99	164.51	R13TSS		40.94		MODRES	CR		58.94	27M0F8W			P	5
TZA	TZA22500	11.00	23	34.60	-6.20	2.41	1.72	129.00	R13TSS		38.27		MODRES	CR		58.67	27M0F8W			P	
YUG	YUG14800	-7.00	23	20.50	43.98	0.91	0.60	145.16	R13TSS		47.07		MODRES	CR		58.87	27M0F8W			P	
ARM	ARM06400	23.00	24	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	CR		58.92	27M0F8W			P	5
AUS	AUS00500	152.00	24	133.90	-18.40	2.82	1.74	105.00	R13TSS		37.53		MODRES	CL		59.43	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
BGD	BGD22000	74.00	24	90.30	23.60	1.46	0.84	135.00	R13TSS		43.56		MODRES	CR		58.76	27M0F8W			P	
CAF	CAF25800	-13.00	24	21.00	6.30	2.25	1.68	31.00	R13TSS		38.67		MODRES	CL		59.27	27M0F8W			P	
CBG	CBG29900	68.00	24	105.00	12.70	1.01	0.90	110.00	R13TSS		44.86		MODRES	CR		59.26	27M0F8W			P	
CHN	CHN16600	92.00	24	121.10	41.70	1.52	0.78	154.00	R13TSS		43.71		MODRES	CL		59.51	27M0F8W			P	
CHN	CHN17700	79.80	24	111.80	30.80	1.42	0.82	160.00	R13TSS		43.79		MODRES	CL		59.69	27M0F8W			P	
CHN	CHN18800	62.00	24	101.50	25.10	1.86	1.08	132.00	R13TSS		41.42		MODRES	CL		60.02	27M0F8W			P	
CPV	CPV30100	-30.00	24	-24.00	16.00	0.86	0.70	144.00	R13TSS		46.65		MODRES	CL		57.15	27M0F8W			P	5, 7
DNK	DNK09000	5.00	24	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	CL		62.54	27M0F8W			P	
F	F2_A2788	-7.00	24	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	24	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	24	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2728	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3328	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.50	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.50	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.00	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	24	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.00	33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	24	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.38	27M0F8W		7	P	
F	MYT09801	29.00	24	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.38	27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	24	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	24	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	24	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	24	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	24	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	24	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	24	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
I	I 08200	-19.00	24	12.30	41.30	2.38	0.98	137.00	R13TSS		40.77		MODRES	CL		59.07	27M0F8W			P	
IND	IND04100	56.00	24	78.40	16.00	2.08	1.38	35.00	R13TSS		39.87		MODRES	CL		58.87	27M0F8W			P	
IND	IND04201	68.00	24	79.30	27.70	2.14	1.16	147.00	R13TSS		40.50		MODRES	CL		58.90	27M0F8W			P	
INS	INS03000	80.20	24	112.30	-8.10	3.14	1.46	169.00	R13TSS		37.83		MODRES	CR		59.33	27M0F8W			P	
IRQ	IRQ25600	11.00	24	43.60	32.80	1.88	0.96	143.00	R13TSS		41.88		MODRES	CR		58.28	27M0F8W			P	1
KAZ	KAZ06600	44.00	24	64.72	46.40	4.31	1.70	172.22	R13TSS		35.79		MODRES	CL		58.89	27M0F8W			P	
LSO	LSO30500	5.00	24	27.80	-29.80	0.66	0.60	36.00	R13TSS		48.47		MODRES	CR		59.17	27M0F8W			P	
MLA	MLA22700	86.00	24	102.10	4.10	1.62	0.82	135.00	R13TSS		43.21		MODRES	CR		58.41	27M0F8W			P	
MTN	MTN28800	-37.00	24	-7.80	23.40	1.63	1.10	141.00	R13TSS		41.91		MODRES	CR		58.01	27M0F8W			P	
MWI	MWI30800	-1.00	24	34.10	-13.00	1.54	0.60	87.00	R13TSS		44.79		MODRES	CL		59.19	27M0F8W			P	
NGR	NGR11500	-25.00	24	8.30	16.80	2.54	2.08	44.00	R13TSS		37.22		MODRES	CL		59.52	27M0F8W			P	
NOR	BIFROS22	-0.80	24	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
NZL	TKL05800	158.00	24	-171.80	-8.90	0.70	0.60	35.00	R13TSS		48.21		MODRES	CR		58.91	27M0F8W		1	P	
NZL	TKL05801	158.00	24	-171.80	-8.90	0.70	0.60	35.00	R13TSS		48.21		MODRES	CR		58.91	27M0F8W		1	P	
OMA	OMA12300	17.00	24	55.60	21.00	1.88	1.02	100.00	R13TSS		41.62		MODRES	CL		58.32	27M0F8W			P	
PAK	PAK28200	38.00	24	68.50	25.80	1.32	0.62	133.00	R13TSS		45.32		MODRES	CR		58.42	27M0F8W			P	
PHL	PHL28500	98.00	24	121.30	11.10	3.46	1.76	99.00	R13TSS		36.60		MODRES	CL		58.80	27M0F8W			P	
SDN	SDN23200	-7.00	24	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.25	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Chan nel	Boresight Long.	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.	Space Antenna	Shap Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ	Polarization Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re marks
AFS	AFS02100	5.00	25	24.50	-28.00	3.13	1.68	27.00	R13TSS		37.24		MODRES	CL		59.14	27M0F8W			P	
BEL	BEL01800	-19.00	25	4.60	50.60	0.82	0.60	167.00	R13TSS		47.53		MODRES	CR		59.13	27M0F8W			P	
BFA	BFA10700	-30.00	25	-1.50	12.20	1.45	1.14	29.00	R13TSS		42.26		MODRES	CR		58.96	27M0F8W			P	7
CYP	CYP08600	5.00	25	33.30	35.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W			P	
D	D2-21600	-1.00	25	12.60	52.10	0.83	0.63	172.00	R13TSS		47.26		MODRES	CL		59.26	27M0F8W			P	
DJI	DJI09900	23.00	25	42.50	11.60	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	
F /EUT	E2WA7DA1	29.00	25	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	25	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	25	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	25	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	25	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	25	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	25	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
ISL	ISL04900	-33.50	25	-19.00	64.90	1.00	0.60	177.00	R13TSS		46.67		MODRES	CL		60.87	27M0F8W			P	7
ISR	ISR11000	-13.00	25	34.90	31.40	0.94	0.60	117.00	R13TSS		46.93		MODRES	CL		58.83	27M0F8W			P	
KEN	KEN24900	11.00	25	37.90	1.10	2.29	1.56	94.00	R13TSS		38.92		MODRES	CR		58.82	27M0F8W			P	
LVA	LVA06100	23.00	25	24.53	56.20	0.83	0.60	0.05	R13TSS		47.50		MODRES	CL		58.90	27M0F8W			P	5
MCO	MCO11600	-37.00	25	7.40	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	
MNG	MNG24800	74.00	25	102.20	46.60	3.60	1.13	169.00	R13TSS		38.35		MODRES	CR		59.05	27M0F8W			P	
MRC	MRC20900	-25.00	25	-9.00	29.20	2.72	1.47	43.00	R13TSS		38.43		MODRES	CL		58.33	27M0F8W			P	
NMB	NMB02500	-19.00	25	17.50	-21.60	2.66	1.90	48.00	R13TSS		37.41		MODRES	CL		59.71	27M0F8W			P	
POR	AZR13400	-30.00	25	-23.40	36.10	2.56	0.70	158.00	R13TSS		41.91		MODRES	CL		58.11	27M0F8W		21	P	7
POR	POR13300	-30.00	25	-8.00	39.60	0.92	0.60	112.00	R13TSS		47.03		MODRES	CL		58.43	27M0F8W		21	P	5, 7
RUS	RSTRSA11	36.00	25	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	25	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	25	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	25	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	25	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	25	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	25	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	25	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	25	127.76	57.81	3.59	1.65	165.75	R13TSS		36.73		MODRES	CL		58.93	27M0F8W	RUS-4		P	5, 7
SEN	SEN22201	-37.00	25	-14.40	13.80	1.46	1.04	139.00	R13TSS		42.63		MODRES	CL		58.73	27M0F8W			P	
UAE	UAE27400	17.00	25	53.60	24.20	0.98	0.80	162.00	R13TSS		45.50		MODRES	CR		58.20	27M0F8W			P	
ALB	ALB29600	-7.00	26	19.80	41.30	0.68	0.60	146.00	R13TSS		48.34		MODRES	CL		58.84	27M0F8W			P	
BDI	BDI27000	11.00	26	29.90	-3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	CL		58.35	27M0F8W			P	
COG	COG23500	-13.00	26	14.60	-0.70	2.02	1.18	59.00	R13TSS		40.67		MODRES	CL		58.77	27M0F8W			P	
CTI	CTI23700	-30.00	26	-5.60	7.50	1.60	1.22	108.00	R13TSS		41.54		MODRES	CL		58.74	27M0F8W			P	
ETH	ETH09200	23.00	26	39.55	8.58	2.48	1.92	128.32	R13TSS		37.67		MODRES	CL		58.87	27M0F8W			P	
F	REU09700	29.00	26	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		58.99	27M0F8W		5	P	
F	REU09701	29.00	26	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		58.99	27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	26	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	26	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	26	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	26	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	26	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Channel	Boresight Long.	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F /EUT	E2WA7DF2	29.00	26	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	26	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
FIN	FIN10400	5.00	26	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	CL		62.54	27M0F8W			P	
G	G UKDBS	-33.50	26	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.20		MODRES	CR		60.10	27M0F8W	UKDBS-3		A	5, 7
GEO	GEO06400	23.00	26	43.35	42.27	1.11	0.60	161.21	R13TSS		46.23		MODRES	CR		58.93	27M0F8W			P	5, 7
HNG	HNG10600	-1.00	26	19.50	47.20	0.92	0.60	176.00	R13TSS		47.03		MODRES	CR		59.03	27M0F8W			P	
KGZ	KGZ07000	44.00	26	73.88	41.32	1.34	0.64	3.53	R13TSS		45.12		MODRES	CL		58.92	27M0F8W			P	5, 7
KWT	KWT11300	17.00	26	47.60	29.20	0.68	0.60	145.00	R13TSS		48.34		MODRES	CL		58.14	27M0F8W			P	
MTN	MTN22300	-37.00	26	-12.20	18.50	2.62	1.87	150.00	R13TSS		37.55		MODRES	CR		57.95	27M0F8W			P	
NIG	NIG11900	-19.00	26	7.80	9.40	2.16	2.02	45.00	R13TSS		38.05		MODRES	CR		58.95	27M0F8W			P	
RUS	RSTRSA12	36.00	26	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	26	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	26	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	26	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	26	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	26	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	26	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	26	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
SDN	SDN23100	-7.00	26	28.90	12.70	2.26	1.96	159.00	R13TSS		37.98		MODRES	CR		58.48	27M0F8W			P	
SUI	SUI14000	-19.00	26	8.20	46.60	0.98	0.70	171.00	R13TSS		46.08		MODRES	CL		59.08	27M0F8W			P	
SYR	SYR22900	11.00	26	38.30	34.90	1.04	0.90	7.00	R13TSS		44.73		MODRES	CR		58.33	27M0F8W			P	
TUN	TUN15000	-25.00	26	9.50	33.50	1.88	0.72	135.00	R13TSS		43.13		MODRES	CR		58.93	27M0F8W			P	
ZWE	ZWE13500	-1.00	26	29.60	-18.80	1.46	1.36	37.00	R13TSS		41.47		MODRES	CL		59.17	27M0F8W			P	
AGL	AGL29500	-13.00	27	16.50	-12.00	3.09	2.26	84.00	R13TSS		36.01		MODRES	CR		59.21	27M0F8W			P	
BHR	BHR25500	17.00	27	50.50	26.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		55.78	27M0F8W			P	
CVA	CVA08300	-37.00	27	12.40	41.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		60.18	27M0F8W			P	
CZE	CZE14400	17.00	27	15.50	49.79	0.92	0.60	174.55	R13TSS		47.02		MODRES	CL		58.92	27M0F8W			P	5
DNK	DNK09100	5.00	27	-19.50	61.00	2.20	0.80	4.00	R13TSS		41.99		MODRES	CR		61.19	27M0F8W			P	2
E	CNR13000	30.00	27	-15.70	28.40	1.54	0.60	5.00	R13TSS		44.79		MODRES	CL		57.79	27M0F8W		17	P	
E	E 12900	-30.00	27	-3.10	39.90	2.10	1.14	154.00	R13TSS		40.66		MODRES	CL		58.96	27M0F8W		17	P	
E	HISPASA4	-30.00	27	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	27	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
ERI	ERI09200	23.00	27	39.41	14.98	1.67	0.95	145.48	R13TSS		42.44		MODRES	CR		58.94	27M0F8W			P	5
F /EUT	E2WA7DA1	29.00	27	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	27	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	27	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	27	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	27	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	27	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	27	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GHA	GHA10800	-25.00	27	-1.20	7.90	1.48	1.06	102.00	R13TSS		42.49		MODRES	CR		58.69	27M0F8W			P	
GNE	GNE30300	-19.00	27	10.30	1.50	0.68	0.60	10.00	R13TSS		48.34		MODRES	CL		58.84	27M0F8W			P	
HOL	HOL21300	-19.00	27	5.40	52.00	0.76	0.60	171.00	R13TSS		47.86		MODRES	CR		59.46	27M0F8W			P	
JOR	JOR22400	11.00	27	35.80	31.40	0.84	0.78	114.00	R13TSS		46.28		MODRES	CL		58.08	27M0F8W			P	
NOR	BIFROS21	-0.80	27	17.00	61.50					NO9	32.00	6.00	MODRES	CL		54.50	27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	27	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Chan nel	Boresight Long.°	Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
RUS	RSTRSA21	56.00	27	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	27	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	27	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	27	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	27	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	27	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	27	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	27	127.76	57.81	3.59	1.65	165.75	R13TSS		36.73		MODRES	CL		58.93	27M0F8W	RUS-4		P	5, 7
SDN	SDN23000	-7.00	27	29.20	7.50	2.34	1.12	148.00	R13TSS		40.26		MODRES	CL		59.46	27M0F8W			P	
SRL	SRL25900	-33.50	27	-11.80	8.60	0.78	0.68	114.00	R13TSS		47.20		MODRES	CR		58.50	27M0F8W			P	6
TKM	TKM06800	44.00	27	59.18	38.84	2.25	0.99	164.51	R13TSS		40.94		MODRES	CR		58.94	27M0F8W			P	5
TZA	TZA22500	11.00	27	34.60	-6.20	2.41	1.72	129.00	R13TSS		38.27		MODRES	CR		58.77	27M0F8W			P	
YUG	YUG14800	-7.00	27	20.50	43.98	0.91	0.60	145.16	R13TSS		47.07		MODRES	CR		58.87	27M0F8W			P	
ARM	ARM06400	23.00	28	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	CR		58.92	27M0F8W			P	5, 7
CAF	CAF25800	-13.00	28	21.00	6.30	2.25	1.68	31.00	R13TSS		38.67		MODRES	CL		59.27	27M0F8W			P	
CPV	CPV30100	-30.00	28	-24.00	16.00	0.86	0.70	144.00	R13TSS		46.65		MODRES	CL		57.15	27M0F8W			P	
F	F2_A2788	-7.00	28	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	28	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	28	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2728	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3328	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.40	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.40	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	54.80	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	28	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	54.80	33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	28	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.48	27M0F8W		7	P	
F	MYT09801	29.00	28	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.48	27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	28	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	28	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	28	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	28	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	28	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	28	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	28	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
I	I 08200	-19.00	28	12.30	41.30	2.38	0.98	137.00	R13TSS		40.77		MODRES	CL		59.17	27M0F8W			P	
IRQ	IRQ25600	11.00	28	43.60	32.80	1.88	0.96	143.00	R13TSS		41.88		MODRES	CR		58.38	27M0F8W			P	
KAZ	KAZ06600	44.00	28	64.72	46.40	4.31	1.70	172.22	R13TSS		35.79		MODRES	CL		58.89	27M0F8W			P	7
LSO	LSO30500	5.00	28	27.80	-29.80	0.66	0.60	36.00	R13TSS		48.47		MODRES	CR		59.17	27M0F8W			P	
MTN	MTN28800	-37.00	28	-7.80	23.40	1.63	1.10	141.00	R13TSS		41.91		MODRES	CR		58.01	27M0F8W			P	
MWI	MWI30800	-1.00	28	34.10	-13.00	1.54	0.60	87.00	R13TSS		44.79		MODRES	CL		59.29	27M0F8W			P	
NGR	NGR11500	-25.00	28	8.30	16.80	2.54	2.08	44.00	R13TSS		37.22		MODRES	CL		59.52	27M0F8W			P	
NOR	BIFROS22	-0.80	28	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
NOR	NOR12101	5.00	28	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	CL		61.84	27M0F8W			P	
OMA	OMA12300	17.00	28	55.60	21.00	1.88	1.02	100.00	R13TSS		41.62		MODRES	CL		58.32	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm	Beam	Orbital	Chan	Boresight		Space Antenna Character.			Space	Shap.	Space Ant. Gain		Earth	Polarization		EIRP	Designation	Satellite	Group	Status	Re-
Symb	Identification	Position	nel	Long.	Lat.	Major	Minor	Orient.°	Antenna	Beam	Co-pol.	X-pol.	Antenna	Typ.	Angle°	dBW	of Emission	Identification	Code		marks
RUS	RSTRSA12	36.00	28	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	28	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	28	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	28	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	28	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	28	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	28	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	28	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
SDN	SDN23200	-7.00	28	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.25	27M0F8W			P	
AFS	AFS02100	5.00	29	24.50	-28.00	3.13	1.68	27.00	R13TSS		37.24		MODRES	CL		59.24	27M0F8W			P	
BEL	BEL01800	-19.00	29	4.60	50.60	0.82	0.60	167.00	R13TSS		47.53		MODRES	CR		58.53	27M0F8W			P	
BFA	BFA10700	-30.00	29	-1.50	12.20	1.45	1.14	29.00	R13TSS		42.26		MODRES	CR		59.06	27M0F8W			P	
CYP	CYP08600	5.00	29	33.30	35.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.68	27M0F8W			P	
D	D2-21600	1.00	29	12.60	52.10	0.83	0.63	172.00	R13TSS		47.26		MODRES	CL		59.26	27M0F8W			P	
DJI	DJI09900	23.00	29	42.50	11.60	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	
F /EUT	E2WA7DA1	29.00	29	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	29	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	29	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	29	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	29	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	29	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	29	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
ISL	ISL04900	-33.50	29	-19.00	64.90	1.00	0.60	177.00	R13TSS		46.67		MODRES	CL		60.87	27M0F8W			P	5, 6
ISR	ISR11000	-13.00	29	34.90	31.40	0.94	0.60	117.00	R13TSS		46.93		MODRES	CL		58.93	27M0F8W			P	
KEN	KEN24900	11.00	29	37.90	1.10	2.29	1.56	94.00	R13TSS		38.92		MODRES	CR		58.82	27M0F8W			P	
LVA	LVA06100	23.00	29	24.53	56.20	0.83	0.60	0.05	R13TSS		47.50		MODRES	CL		58.90	27M0F8W			P	5
MCO	MCO11600	-37.00	29	7.40	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.48	27M0F8W			P	
MNG	MNG24800	74.00	29	102.20	46.60	3.60	1.13	169.00	R13TSS		38.35		MODRES	CR		59.15	27M0F8W			P	
MRC	MRC20900	-25.00	29	-9.00	29.20	2.72	1.47	43.00	R13TSS		38.43		MODRES	CL		58.43	27M0F8W			P	
NMB	NMB02500	19.00	29	17.50	-21.60	2.66	1.90	48.00	R13TSS		37.41		MODRES	CL		59.81	27M0F8W			P	
POR	AZR13400	-30.00	29	-23.40	36.10	2.56	0.70	158.00	R13TSS		41.91		MODRES	CL		58.11	27M0F8W		21	P	
POR	POR13300	-30.00	29	-8.00	39.60	0.92	0.60	112.00	R13TSS		47.03		MODRES	CL		58.53	27M0F8W		21	P	5
RUS	RSTRSA11	36.00	29	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	29	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	29	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	29	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	29	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	29	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	29	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	29	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
SEN	SEN22200	-37.00	29	-14.40	13.80	1.46	1.04	139.00	R13TSS		42.63		MODRES	CL		58.73	27M0F8W			P	
UAE	UAE27400	17.00	29	53.60	24.20	0.98	0.80	162.00	R13TSS		45.50		MODRES	CR		58.30	27M0F8W			P	
ALB	ALB29600	-7.00	30	19.80	41.30	0.68	0.60	146.00	R13TSS		48.34		MODRES	CL		58.94	27M0F8W			P	
BDI	BDI27000	11.00	30	29.90	-3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	CL		58.45	27M0F8W			P	
COG	COG23500	-13.00	30	14.60	-0.70	2.02	1.18	59.00	R13TSS		40.67		MODRES	CL		58.87	27M0F8W			P	
CTI	CTI23700	-30.00	30	-5.60	7.50	1.60	1.22	108.00	R13TSS		41.54		MODRES	CL		58.84	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
ETH	ETH09200	23.00	30	39.55	8.58	2.48	1.92	128.32	R13TSS		37.67		MODRES	CL		58.87	27M0F8W			P	
F	REU09700	29.00	30	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		59.09	27M0F8W		5	P	
F	REU09701	29.00	30	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		59.09	27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	30	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	30	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	30	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	30	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	30	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	30	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	30	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G UKDBS	-33.50	30	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.20		MODRES	CR		60.10	27M0F8W	UKDBS-3		A	5, 6
GEO	GEO06400	23.00	30	43.35	42.27	1.11	0.60	161.21	R13TSS		46.23		MODRES	CR		58.93	27M0F8W			P	5, 7
HNG	HNG10600	-1.00	30	19.50	47.20	0.92	0.60	176.00	R13TSS		47.03		MODRES	CR		59.13	27M0F8W			P	
KGZ	KGZ07000	44.00	30	73.88	41.32	1.34	0.64	3.53	R13TSS		45.12		MODRES	CL		58.92	27M0F8W			P	5, 7
KWT	KWT11300	17.00	30	47.60	29.20	0.68	0.60	145.00	R13TSS		48.34		MODRES	CL		58.24	27M0F8W			P	
MTN	MTN22300	-37.00	30	-12.20	18.50	2.62	1.87	150.00	R13TSS		37.55		MODRES	CR		57.95	27M0F8W			P	
NIG	NIG11900	-19.00	30	7.80	9.40	2.16	2.02	45.00	R13TSS		38.05		MODRES	CR		59.05	27M0F8W			P	
RUS	RSTRSA12	36.00	30	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	30	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	30	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	30	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	30	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	30	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	30	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	30	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
S	S 13900	5.00	30	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	CL		62.14	27M0F8W			P	
SDN	SDN23100	-7.00	30	28.90	12.70	2.26	1.96	159.00	R13TSS		37.98		MODRES	CR		58.58	27M0F8W			P	
SUI	SUI14000	-19.00	30	8.20	46.60	0.98	0.70	171.00	R13TSS		46.08		MODRES	CL		59.18	27M0F8W			P	
SYR	SYR22900	11.00	30	38.30	34.90	1.04	0.90	7.00	R13TSS		44.73		MODRES	CR		58.33	27M0F8W			P	
TUN	TUN15000	-25.00	30	9.50	33.50	1.88	0.72	135.00	R13TSS		43.13		MODRES	CR		58.93	27M0F8W			P	
ZWE	ZWE13500	-1.00	30	29.60	-18.80	1.46	1.36	37.00	R13TSS		41.47		MODRES	CL		59.27	27M0F8W			P	
AGL	AGL29500	-13.00	31	16.50	-12.00	3.09	2.26	84.00	R13TSS		36.01		MODRES	CR		59.21	27M0F8W			P	
BHR	BHR25500	17.00	31	50.50	26.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		55.88	27M0F8W			P	
CVA	CVA08300	-37.00	31	12.40	41.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		60.28	27M0F8W			P	
CZE	CZE14400	17.00	31	15.50	49.79	0.92	0.60	174.55	R13TSS		47.02		MODRES	CL		58.92	27M0F8W			P	5
E	CNR13000	-30.00	31	-15.70	28.40	1.54	0.60	5.00	R13TSS		44.79		MODRES	CL		57.89	27M0F8W		17	P	
E	E 12900	-30.00	31	-3.10	39.90	2.10	1.14	154.00	R13TSS		40.66		MODRES	CL		58.96	27M0F8W		17	P	
E	HISPASA4	-30.00	31	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	31	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
ERI	ERI09200	23.00	31	39.41	14.98	1.67	0.95	145.48	R13TSS		42.44		MODRES	CR		58.94	27M0F8W			P	5
F /EUT	E2WA7DA1	29.00	31	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	31	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	31	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	31	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	31	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	31	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.	Boresight Lat.°	Space Antenna Character. Major°	Minor	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F /EUT	E2WA7DG1	29.00	31	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GHA	GHA10800	-25.00	31	-1.20	7.90	1.48	1.06	102.00	R13TSS		42.49		MODRES	CR		58.69	27M0F8W			P	
GNE	GNE30300	-19.00	31	10.30	1.50	0.68	0.60	10.00	R13TSS		48.34		MODRES	CL		58.94	27M0F8W			P	
HOL	HOL21300	-19.00	31	5.40	52.00	0.76	0.60	171.00	R13TSS		47.86		MODRES	CR		59.56	27M0F8W			P	
ISL	ISL05000	5.00	31	-19.50	61.00	2.20	0.80	4.00	R13TSS		41.99		MODRES	CR		61.39	27M0F8W			P	2
JOR	JOR22400	11.00	31	35.80	31.40	0.84	0.78	114.00	R13TSS		46.28		MODRES	CL		58.18	27M0F8W			P	
NOR	BIFROS21	-0.80	31	17.00	61.50					NO9	32.00	6.00	MODRES	CL		54.50	27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	31	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	31	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	31	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	31	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	31	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	31	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	31	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	31	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	31	127.76	57.81	3.59	1.65	165.75	R13TSS		36.73		MODRES	CL		58.93	27M0F8W	RUS-4		P	5, 7
SDN	SDN23000	-7.00	31	29.20	7.50	2.34	1.12	148.00	R13TSS		40.26		MODRES	CL		59.46	27M0F8W			P	
SRL	SRL25900	-33.50	31	-11.80	8.60	0.78	0.68	114.00	R13TSS		47.20		MODRES	CR		58.60	27M0F8W			P	6
TKM	TKM06800	44.00	31	59.18	38.84	2.25	0.99	164.51	R13TSS		40.94		MODRES	CR		58.94	27M0F8W			P	5
TZA	TZA22500	11.00	31	34.60	-6.20	2.41	1.72	129.00	R13TSS		38.27		MODRES	CR		58.77	27M0F8W			P	
YUG	YUG14800	-7.00	31	20.50	43.98	0.91	0.60	145.16	R13TSS		47.07		MODRES	CR		58.87	27M0F8W			P	
ARM	ARM06400	23.00	32	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	CR		58.92	27M0F8W			P	5, 7
CAF	CAF25800	-13.00	32	21.00	6.30	2.25	1.68	31.00	R13TSS		38.67		MODRES	CL		59.37	27M0F8W			P	
CPV	CPV30100	-30.00	32	-24.00	16.00	0.86	0.70	144.00	R13TSS		46.65		MODRES	CL		57.25	27M0F8W			P	
F	F2_A2788	-7.00	32	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	32	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	32	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2728	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3328	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.30	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.30	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	54.80	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	32	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	54.80	33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	32	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.48	27M0F8W		7	P	
F	MYT09801	29.00	32	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.48	27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	32	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	32	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	32	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	32	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	32	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	32	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	32	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
I	I 08200	-19.00	32	12.30	41.30	2.38	0.98	137.00	R13TSS		40.77		MODRES	CL		59.17	27M0F8W			P	
IRQ	IRQ25600	11.00	32	43.60	32.80	1.88	0.96	143.00	R13TSS		41.88		MODRES	CR		58.38	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position	Chan nel	Boresight		Space Antenna Character.			Space Antenna	Shap. Beam	Space Ant. Gain		Earth Antenna	Polarization		EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re- marks
				Long.	Lat.	Major°	Minor°	Orient.°			Co-pol.	X-pol.		Typ.	Angle°						
KAZ	KAZ06600	44.00	32	64.72	46.40	4.31	1.70	172.22	R13TSS		35.79		MODRES	CL		58.89	27M0F8W			P	7
LSO	LSO30500	5.00	32	27.80	-29.80	0.66	0.60	36.00	R13TSS		48.47		MODRES	CR		59.27	27M0F8W			P	
MTN	MTN28800	-37.00	32	-7.80	23.40	1.63	1.10	141.00	R13TSS		41.91		MODRES	CR		58.11	27M0F8W			P	
MWI	MWI30800	-1.00	32	34.10	-13.00	1.54	0.60	87.00	R13TSS		44.79		MODRES	CL		59.39	27M0F8W			P	
NGR	NGR11500	-25.00	32	8.30	16.80	2.54	2.08	44.00	R13TSS		37.22		MODRES	CL		59.62	27M0F8W			P	
NOR	BIFROS22	-0.80	32	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
NOR	NOR12102	5.00	32	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		R13RES	CL		66.94	27M0F8W			PE	
OMA	OMA12300	17.00	32	55.60	21.00	1.88	1.02	100.00	R13TSS		41.62		MODRES	CL		58.42	27M0F8W			P	
RUS	RSTRSA12	36.00	32	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	32	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	32	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	32	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	32	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	32	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	32	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	32	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
SDN	SDN23200	-7.00	32	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.35	27M0F8W			P	
AFS	AFS02100	5.00	33	24.50	-28.00	3.13	1.68	27.00	R13TSS		37.24		MODRES	CL		59.24	27M0F8W			P	
BEL	BEL01800	-19.00	33	4.60	50.60	0.82	0.60	167.00	R13TSS		47.53		MODRES	CR		58.93	27M0F8W			P	
BFA	BFA10700	-30.00	33	-1.50	12.20	1.45	1.14	29.00	R13TSS		42.26		MODRES	CR		59.06	27M0F8W			P	
CYP	CYP08600	5.00	33	33.30	35.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.68	27M0F8W			P	
D	D2-21600	-1.00	33	12.60	52.10	0.83	0.63	172.00	R13TSS		47.26		MODRES	CL		59.36	27M0F8W			P	
DJI	DJI09900	23.00	33	42.50	11.60	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.68	27M0F8W			P	
F /EUT	E2WA7DA1	29.00	33	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	33	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	33	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	33	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	33	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	33	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	33	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
ISL	ISL04900	-33.50	33	-19.00	64.90	1.00	0.60	177.00	R13TSS		46.67		MODRES	CL		60.97	27M0F8W			P	5, 6
ISR	ISR11000	-13.00	33	34.90	31.40	0.94	0.60	117.00	R13TSS		46.93		MODRES	CL		58.93	27M0F8W			P	
KEN	KEN24900	11.00	33	37.90	1.10	2.29	1.56	94.00	R13TSS		38.92		MODRES	CR		58.92	27M0F8W			P	
LVA	LVA06100	23.00	33	24.53	56.20	0.83	0.60	0.05	R13TSS		47.50		MODRES	CL		58.90	27M0F8W			P	5
MCO	MCO11600	-37.00	33	7.40	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	
MNG	MNG24800	74.00	33	102.20	46.60	3.60	1.13	169.00	R13TSS		38.35		MODRES	CR		59.15	27M0F8W			P	
MRC	MRC20900	-25.00	33	-9.00	29.20	2.72	1.47	43.00	R13TSS		38.43		MODRES	CL		58.43	27M0F8W			P	
NMB	NMB02500	-19.00	33	17.50	-21.60	2.66	1.90	48.00	R13TSS		37.41		MODRES	CL		59.81	27M0F8W			P	
POR	AZR13400	-30.00	33	-23.40	36.10	2.56	0.70	158.00	R13TSS		41.91		MODRES	CL		58.21	27M0F8W		21	P	5
POR	POR13300	-30.00	33	-8.00	39.60	0.92	0.60	112.00	R13TSS		47.03		MODRES	CL		58.63	27M0F8W		21	P	5
RUS	RSTRSA11	36.00	33	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	33	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	33	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	33	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	33	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	33	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
RUS	RSTRSD31	86.00	33	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	33	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
SEN	SEN22200	-37.00	33	-14.40	13.80	1.46	1.04	139.00	R13TSS		42.63		MODRES	CL		58.83	27M0F8W			P	
UAE	UAE27400	17.00	33	53.60	24.20	0.98	0.80	162.00	R13TSS		45.50		MODRES	CR		58.30	27M0F8W			P	
ALB	ALB29600	-7.00	34	19.80	41.30	0.68	0.60	146.00	R13TSS		48.34		MODRES	CL		58.94	27M0F8W			P	
BDI	BDI27000	11.00	34	29.90	-3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	CL		58.45	27M0F8W			P	
COG	COG23500	-13.00	34	14.60	-0.70	2.02	1.18	59.00	R13TSS		40.67		MODRES	CL		58.87	27M0F8W			P	
CTI	CTI23700	-30.00	34	-5.60	7.50	1.60	1.22	108.00	R13TSS		41.54		MODRES	CL		58.94	27M0F8W			P	
ETH	ETH09200	23.00	34	39.55	8.58	2.48	1.92	128.32	R13TSS		37.67		MODRES	CL		58.87	27M0F8W			P	
F	REU09700	29.00	34	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		59.09	27M0F8W		5	P	
F	REU09701	29.00	34	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		59.09	27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	34	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	34	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	34	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	34	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	34	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	34	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	34	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G UKDBS	-33.50	34	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.20		MODRES	CR		60.10	27M0F8W	UKDBS-3		A	5, 6
GEO	GEO06400	23.00	34	43.35	42.27	1.11	0.60	161.21	R13TSS		46.23		MODRES	CR		58.93	27M0F8W			P	5, 7
HNG	HNG10600	-1.00	34	19.50	47.20	0.92	0.60	176.00	R13TSS		47.03		MODRES	CR		59.13	27M0F8W			P	
KGZ	KGZ07000	44.00	34	73.88	41.32	1.34	0.64	3.53	R13TSS		45.12		MODRES	CL		58.92	27M0F8W			P	5, 7
KWT	KWT11300	17.00	34	47.60	29.20	0.68	0.60	145.00	R13TSS		48.34		MODRES	CL		58.24	27M0F8W			P	
MTN	MTN22300	-37.00	34	-12.20	18.50	2.62	1.87	150.00	R13TSS		37.55		MODRES	CR		58.05	27M0F8W			P	
NIG	NIG11900	-19.00	34	7.80	9.40	2.16	2.02	45.00	R13TSS		38.05		MODRES	CR		59.15	27M0F8W			P	
RUS	RSTRSA12	36.00	34	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	34	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	34	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	34	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	34	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	34	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	34	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	34	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
S	S 13800	5.00	34	16.20	61.00	1.04	0.98	14.00	R13TSS		44.36		MODRES	CL		62.36	27M0F8W		27	P	
SDN	SDN23100	-7.00	34	28.90	12.70	2.26	1.96	159.00	R13TSS		37.98		MODRES	CR		58.58	27M0F8W			P	
SUI	SUI14000	-19.00	34	8.20	46.60	0.98	0.70	171.00	R13TSS		46.08		MODRES	CL		59.28	27M0F8W			P	
SYR	SYR22900	11.00	34	38.30	34.90	1.04	0.90	7.00	R13TSS		44.73		MODRES	CR		58.43	27M0F8W			P	
TUN	TUN15000	-25.00	34	9.50	33.50	1.88	0.72	135.00	R13TSS		43.13		MODRES	CR		59.03	27M0F8W			P	
ZWE	ZWE13500	-1.00	34	29.60	18.80	1.46	1.36	37.00	R13TSS		41.47		MODRES	CL		59.27	27M0F8W			P	
AGL	AGL29500	-13.00	35	16.50	-12.00	3.09	2.26	84.00	R13TSS		36.01		MODRES	CR		59.31	27M0F8W			P	
BHR	BHR25500	17.00	35	50.50	26.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		55.98	27M0F8W			P	
CVA	CVA08300	-37.00	35	12.40	41.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		60.28	27M0F8W			P	
CZE	CZE14400	17.00	35	15.50	49.79	0.92	0.60	174.55	R13TSS		47.02		MODRES	CL		58.92	27M0F8W			P	5
DNK	DNK09100	5.00	35	-19.50	61.00	2.20	0.80	4.00	R13TSS		41.99		MODRES	CR		61.29	27M0F8W			P	2
E	CNR13000	-30.00	35	-15.70	28.40	1.54	0.60	5.00	R13TSS		44.79		MODRES	CL		57.99	27M0F8W		17	P	
E	E 12900	-30.00	35	-3.10	39.90	2.10	1.14	154.00	R13TSS		40.66		MODRES	CL		59.06	27M0F8W		17	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
E	HISPASA4	-30.00	35	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	35	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
ERI	ERI09200	23.00	35	39.41	14.98	1.67	0.95	145.48	R13TSS		42.44		MODRES	CR		58.94	27M0F8W			P	5
F /EUT	E2WA7DA1	29.00	35	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	35	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	35	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	35	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	35	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	35	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	35	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GHA	GHA10800	-25.00	35	-1.20	7.90	1.48	1.06	102.00	R13TSS		42.49		MODRES	CR		58.79	27M0F8W			P	
GNE	GNE30300	-19.00	35	10.30	1.50	0.68	0.60	10.00	R13TSS		48.34		MODRES	CL		58.94	27M0F8W			P	
HOL	HOL21300	-19.00	35	5.40	52.00	0.76	0.60	171.00	R13TSS		47.86		MODRES	CR		59.56	27M0F8W			P	
JOR	JOR22400	11.00	35	35.80	31.40	0.84	0.78	114.00	R13TSS		46.28		MODRES	CL		58.18	27M0F8W			P	
NOR	BIFROS21	-0.80	35	17.00	61.50					NO9	32.00	6.00	MODRES	CL		54.50	27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	35	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	35	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	35	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	35	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	35	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	35	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	35	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	35	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	35	127.76	57.81	3.59	1.65	165.75	R13TSS		36.73		MODRES	CL		58.93	27M0F8W	RUS-4		P	5, 7
SDN	SDN23000	-7.00	35	29.20	7.50	2.34	1.12	148.00	R13TSS		40.26		MODRES	CL		59.56	27M0F8W			P	
SRL	SRL25900	-33.50	35	-11.80	8.60	0.78	0.68	114.00	R13TSS		47.20		MODRES	CR		58.60	27M0F8W			P	6
TKM	TKM06800	44.00	35	59.18	38.84	2.25	0.99	164.51	R13TSS		40.94		MODRES	CR		58.94	27M0F8W			P	5
TZA	TZA22500	11.00	35	34.60	-6.20	2.41	1.72	129.00	R13TSS		38.27		MODRES	CR		58.87	27M0F8W			P	
YUG	YUG14800	-7.00	35	20.50	43.98	0.91	0.60	145.16	R13TSS		47.07		MODRES	CR		58.87	27M0F8W			P	
ARM	ARM06400	23.00	36	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	CR		58.92	27M0F8W			P	5, 7
CAF	CAF25800	-13.00	36	21.00	6.30	2.25	1.68	31.00	R13TSS		38.67		MODRES	CL		59.37	27M0F8W			P	
CPV	CPV30100	-30.00	36	-24.00	16.00	0.86	0.70	144.00	R13TSS		46.65		MODRES	CL		57.35	27M0F8W			P	
DNK	DNK09000	5.00	36	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		MODRES	CL		63.24	27M0F8W			P	
F	F2_A2788	-7.00	36	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	36	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	36	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2728	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A3328	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.40	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	55.40	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	54.90	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	36	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	54.90	33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	36	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		7	P	
F	MYT09801	29.00	36	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		7	P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F /EUT	E2WA7DA2	29.00	36	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	36	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	36	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	36	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	36	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	36	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	36	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
I	I 08200	-19.00	36	12.30	41.30	2.38	0.98	137.00	R13TSS		40.77		MODRES	CL		59.27	27M0F8W			P	
IRQ	IRQ25600	11.00	36	43.60	32.80	1.88	0.96	143.00	R13TSS		41.88		MODRES	CR		58.48	27M0F8W			P	
KAZ	KAZ06600	44.00	36	64.72	46.40	4.31	1.70	172.22	R13TSS		35.79		MODRES	CL		58.89	27M0F8W			P	7
LSO	LSO30500	5.00	36	27.80	-29.80	0.66	0.60	36.00	R13TSS		48.47		MODRES	CR		59.27	27M0F8W			P	
MTN	MTN28800	-37.00	36	-7.80	23.40	1.63	1.10	141.00	R13TSS		41.91		MODRES	CR		58.11	27M0F8W			P	
MWI	MWI30800	-1.00	36	34.10	-13.00	1.54	0.60	87.00	R13TSS		44.79		MODRES	CL		59.39	27M0F8W			P	
NGR	NGR11500	-25.00	36	8.30	16.80	2.54	2.08	44.00	R13TSS		37.22		MODRES	CL		59.72	27M0F8W			P	
NOR	BIFROS22	-0.80	36	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
OMA	OMA12300	17.00	36	55.60	21.00	1.88	1.02	100.00	R13TSS		41.62		MODRES	CL		58.42	27M0F8W			P	
RUS	RSTRSA12	36.00	36	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	36	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	36	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	36	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	36	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	36	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	36	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	36	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
SDN	SDN23200	-7.00	36	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.35	27M0F8W			P	
AFS	AFS02100	5.00	37	24.50	-28.00	3.13	1.68	27.00	R13TSS		37.24		MODRES	CL		59.34	27M0F8W			P	
BEL	BEL01800	-19.00	37	4.60	50.60	0.82	0.60	167.00	R13TSS		47.53		MODRES	CR		59.43	27M0F8W			P	
BFA	BFA10700	-30.00	37	-1.50	12.20	1.45	1.14	29.00	R13TSS		42.26		MODRES	CR		59.16	27M0F8W			P	
CYP	CYP08600	5.00	37	33.30	35.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.78	27M0F8W			P	
D	D2-21600	-1.00	37	12.60	52.10	0.83	0.63	172.00	R13TSS		47.26		MODRES	CL		59.36	27M0F8W			P	
DJI	DJI09900	23.00	37	42.50	11.60	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.68	27M0F8W			P	
F /EUT	E2WA7DA1	29.00	37	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	37	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	37	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	37	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	37	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	37	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	37	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
ISL	ISL04900	-33.50	37	-19.00	64.90	1.00	0.60	177.00	R13TSS		46.67		MODRES	CL		60.97	27M0F8W			P	5, 6
ISR	ISR11000	-13.00	37	34.90	31.40	0.94	0.60	117.00	R13TSS		46.93		MODRES	CL		59.03	27M0F8W			P	
KEN	KEN24900	11.00	37	37.90	1.10	2.29	1.56	94.00	R13TSS		38.92		MODRES	CR		58.92	27M0F8W			P	
LVA	LVA06100	23.00	37	24.53	56.20	0.83	0.60	0.05	R13TSS		47.50		MODRES	CL		58.90	27M0F8W			P	5
MCO	MCO11600	-37.00	37	7.40	43.70	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		57.58	27M0F8W			P	
MNG	MNG24800	74.00	37	102.20	46.60	3.60	1.13	169.00	R13TSS		38.35		MODRES	CR		59.25	27M0F8W			P	
MRC	MRC20900	-25.00	37	-9.00	29.20	2.72	1.47	43.00	R13TSS		38.43		MODRES	CL		58.53	27M0F8W			P	
NMB	NMB02500	-19.00	37	17.50	-21.60	2.66	1.90	48.00	R13TSS		37.41		MODRES	CL		59.91	27M0F8W			P	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm Symb	Beam Identification	Orbital Position°	Chan nel	Boresight Long.°	Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Ship Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
POR	AZR13400	-30.00	37	-23.40	36.10	2.56	0.70	158.00	R13TSS		41.91		MODRES	CL		58.21	27M0F8W		21	P	5
POR	POR13300	-30.00	37	-8.00	39.60	0.92	0.60	112.00	R13TSS		47.03		MODRES	CL		58.63	27M0F8W		21	P	5
RUS	RSTRSA11	36.00	37	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	37	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	37	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	37	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	37	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	37	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	37	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	37	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
SEN	SEN22200	-37.00	37	-14.40	13.80	1.46	1.04	139.00	R13TSS		42.63		MODRES	CL		58.93	27M0F8W			P	
UAE	UAE27400	17.00	37	53.60	24.20	0.98	0.80	162.00	R13TSS		45.50		MODRES	CR		58.40	27M0F8W			P	
ALB	ALB29600	-7.00	38	19.80	41.30	0.68	0.60	146.00	R13TSS		48.34		MODRES	CL		59.04	27M0F8W			P	
BDI	BDI27000	11.00	38	29.90	-3.10	0.71	0.60	80.00	R13TSS		48.15		MODRES	CL		58.55	27M0F8W			P	
COG	COG23500	-13.00	38	14.60	-0.70	2.02	1.18	59.00	R13TSS		40.67		MODRES	CL		58.97	27M0F8W			P	
CTI	CTI23700	-30.00	38	-5.60	7.50	1.60	1.22	108.00	R13TSS		41.54		MODRES	CL		58.94	27M0F8W			P	
ETH	ETH09200	23.00	38	39.55	8.58	2.48	1.92	128.32	R13TSS		37.67		MODRES	CL		58.87	27M0F8W			P	
F	REU09700	29.00	38	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		59.19	27M0F8W		5	P	
F	REU09701	29.00	38	55.60	-19.20	1.56	0.78	96.00	R13TSS		43.59		MODRES	CR		59.19	27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	38	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	38	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	38	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	38	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	38	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	38	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	38	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
G	G UKDBS	-33.50	38	-3.50	53.80	1.84	0.72	142.00	R13TSS		43.20		MODRES	CR		60.10	27M0F8W	UKDBS-3		A	5, 6
GEO	GEO06400	23.00	38	43.35	42.27	1.11	0.60	161.21	R13TSS		46.23		MODRES	CR		58.93	27M0F8W			P	5, 7
HNG	HNG10600	-1.00	38	19.50	47.20	0.92	0.60	176.00	R13TSS		47.03		MODRES	CR		59.23	27M0F8W			P	
KGZ	KGZ07000	44.00	38	73.88	41.32	1.34	0.64	3.53	R13TSS		45.12		MODRES	CL		58.92	27M0F8W			P	5, 7
KWT	KWT11300	17.00	38	47.60	29.20	0.68	0.60	145.00	R13TSS		48.34		MODRES	CL		58.34	27M0F8W			P	
MTN	MTN22300	-37.00	38	-12.20	18.50	2.62	1.87	150.00	R13TSS		37.55		MODRES	CR		58.05	27M0F8W			P	
NIG	NIG11900	-19.00	38	7.80	9.40	2.16	2.02	45.00	R13TSS		38.05		MODRES	CR		59.15	27M0F8W			P	
NOR	NOR12000	5.00	38	13.10	64.10	1.84	0.88	10.00	R13TSS		42.35		MODRES	CL		61.95	27M0F8W			P	
RUS	RSTRSA12	36.00	38	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	38	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	38	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	38	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	38	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	38	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	38	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	38	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
SDN	SDN23100	-7.00	38	28.90	12.70	2.26	1.96	159.00	R13TSS		37.98		MODRES	CR		58.68	27M0F8W			P	
SUI	SUI14000	-19.00	38	8.20	46.60	0.98	0.70	171.00	R13TSS		46.08		MODRES	CL		59.28	27M0F8W			P	
SYR	SYR33900	11.00	38	37.60	34.20	1.32	0.88	74.00	R13TSS		43.80		MODRES	CR		58.40	27M0F8W			P	1
TUN	TUN27200	-25.00	38	2.50	32.00	3.59	1.75	175.00	R13TSS		36.47		MODRES	CR		56.87	27M0F8W			P	4

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Chan nel	Boresight Long.	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
ZWE	ZWE13500	-1.00	38	29.60	-18.80	1.46	1.36	37.00	R13TSS		41.47		MODRES	CL		59.37	27M0F8W			P	
AGL	AGL29500	-13.00	39	16.50	-12.00	3.09	2.26	84.00	R13TSS		36.01		MODRES	CR		59.41	27M0F8W			P	
BHR	BHR25500	17.00	39	50.50	26.10	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		55.98	27M0F8W			P	
CVA	CVA08300	-37.00	39	12.40	41.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		60.38	27M0F8W			P	
CZE	CZE14400	17.00	39	15.50	49.79	0.92	0.60	174.55	R13TSS		47.02		MODRES	CL		58.92	27M0F8W			P	5
E	CNR13000	-30.00	39	-15.70	28.40	1.54	0.60	5.00	R13TSS		44.79		MODRES	CL		57.99	27M0F8W		17	P	
E	E 12900	-30.00	39	-3.10	39.90	2.10	1.14	154.00	R13TSS		40.66		MODRES	CL		59.16	27M0F8W		17	P	
E	HISPASA4	-30.00	39	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	39	-4.00	39.00					COP	39.80	5.50	R13RES	CL		57.60	27M0F8W	HISPASAT-1	17	AE	
ERI	ERI09200	23.00	39	39.41	14.98	1.67	0.95	145.48	R13TSS		42.44		MODRES	CR		58.94	27M0F8W			P	5
F /EUT	E2WA7DA1	29.00	39	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB1	29.00	39	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CR		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC1	29.00	39	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CR		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD1	29.00	39	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CR		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE1	29.00	39	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CR		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF1	29.00	39	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CR		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG1	29.00	39	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CR		51.30	27M0F9W	EUROPESAT-1	16	AE	8
GHA	GHA10800	-25.00	39	-1.20	7.90	1.48	1.06	102.00	R13TSS		42.49		MODRES	CR		58.79	27M0F8W			P	
GNE	GNE30300	-19.00	39	10.30	1.50	0.68	0.60	10.00	R13TSS		48.34		MODRES	CL		59.04	27M0F8W			P	
HOL	HOL21300	-19.00	39	5.40	52.00	0.76	0.60	171.00	R13TSS		47.86		MODRES	CR		59.66	27M0F8W			P	
ISL	ISL05000	5.00	39	-19.50	61.00	2.20	0.80	4.00	R13TSS		41.99		MODRES	CR		61.49	27M0F8W			P	2
JOR	JOR22400	11.00	39	35.80	31.40	0.84	0.78	114.00	R13TSS		46.28		MODRES	CL		58.28	27M0F8W			P	
MNG	MNG24800	74.00	39	102.20	46.60	3.60	1.13	169.00	R13TSS		38.35		MODRES	CR		59.25	27M0F8W			P	
NOR	BIFROS21	-0.80	39	17.00	61.50					NO9	32.00	6.00	MODRES	CL		54.50	27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	39	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	39	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	39	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	39	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	39	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	39	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CL		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	39	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	39	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CL		55.00	27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	39	127.76	57.81	3.59	1.65	165.75	R13TSS		36.73		MODRES	CL		58.93	27M0F8W	RUS-4		P	5, 7
SDN	SDN23000	-7.00	39	29.20	7.50	2.34	1.12	148.00	R13TSS		40.26		MODRES	CL		59.56	27M0F8W			P	
SRL	SRL25900	-33.50	39	-11.80	8.60	0.78	0.68	114.00	R13TSS		47.20		MODRES	CR		58.70	27M0F8W			P	6
TKM	TKM06800	44.00	39	59.18	38.84	2.25	0.99	164.51	R13TSS		40.94		MODRES	CR		58.94	27M0F8W			P	5
TZA	TZA22500	11.00	39	34.60	-6.20	2.41	1.72	129.00	R13TSS		38.27		MODRES	CR		58.87	27M0F8W			P	
YUG	YUG14800	-7.00	39	20.50	43.98	0.91	0.60	145.16	R13TSS		47.07		MODRES	CR		58.87	27M0F8W			P	
ARM	ARM06400	23.00	40	44.99	39.95	0.73	0.60	148.17	R13TSS		48.02		MODRES	CR		58.92	27M0F8W			P	5, 7
CAF	CAF25800	-13.00	40	21.00	6.30	2.25	1.68	31.00	R13TSS		38.67		MODRES	CL		59.47	27M0F8W			P	
CPV	CPV30100	-30.00	40	-24.00	16.00	0.86	0.70	144.00	R13TSS		46.65		MODRES	CL		57.35	27M0F8W			P	
F	F2_A2788	-7.00	40	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	40	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	40	2.60	45.90	2.50	0.98	160.00	R13TSS		41.60		MODRES	CL		58.00	27M0F9W	RADIOSAT-2	19	A	
F	F3_A2728	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5		6			7	8	9		10	11		12	13	14	15	16	17
Adm. Symb	Beam Identification	Orbital Position°	Channel	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle°	EIRP dBW	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F	F3_A3328	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0F9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	27M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	40	2.60	45.90	2.50	0.98	160.00	RAD_TSS		41.60		MODRES	LE	158.00	56.00	33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	40	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		7	P	
F	MYT09801	29.00	40	45.10	-12.80	0.60	0.60	0.00	R13TSS		48.88		MODRES	CR		58.58	27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	40	1.90	49.00	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		51.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DB2	29.00	40	12.70	44.50	1.82	1.82	0.00	R13TSS		40.40		R13RES	CL		52.00	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DC2	29.00	40	8.90	61.30	3.06	0.71	9.00	R13TSS		41.50		R13RES	CL		60.50	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DD2	29.00	40	17.50	40.40	2.54	1.07	168.00	R13TSS		40.70		R13RES	CL		53.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DE2	29.00	40	-12.50	35.50	3.75	1.27	25.00	R13TSS		38.30		R13RES	CL		57.30	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DF2	29.00	40	35.40	38.70	2.25	0.93	174.00	R13TSS		41.70		R13RES	CL		54.70	27M0F9W	EUROPESAT-1	16	AE	8
F /EUT	E2WA7DG2	29.00	40	8.00	49.70	2.84	1.45	26.00	R13TSS		39.30		R13RES	CL		51.30	27M0F9W	EUROPESAT-1	16	AE	8
I	I 08200	-19.00	40	12.30	41.30	2.38	0.98	137.00	R13TSS		40.77		MODRES	CL		59.27	27M0F8W			P	
IRQ	IRQ25600	11.00	40	43.60	32.80	1.88	0.96	143.00	R13TSS		41.88		MODRES	CR		58.48	27M0F8W			P	
KAZ	KAZ06600	44.00	40	64.72	46.40	4.31	1.70	172.22	R13TSS		35.79		MODRES	CL		58.89	27M0F8W			P	7
LSO	LSO30500	5.00	40	27.80	-29.80	0.66	0.60	36.00	R13TSS		48.47		MODRES	CR		59.37	27M0F8W			P	
MTN	MTN28800	-37.00	40	-7.80	23.40	1.63	1.10	141.00	R13TSS		41.91		MODRES	CR		58.21	27M0F8W			P	
MWI	MWI30800	-1.00	40	34.10	-13.00	1.54	0.60	87.00	R13TSS		44.79		MODRES	CL		59.49	27M0F8W			P	
NGR	NGR11500	-25.00	40	8.30	16.80	2.54	2.08	44.00	R13TSS		37.22		MODRES	CL		59.72	27M0F8W			P	
NOR	BIFROS22	-0.80	40	17.00	61.50					NO9	32.00	6.00	MODRES	CR		54.50	27M0FXF	BIFROSTXX2		A	
OMA	OMA12300	17.00	40	55.60	21.00	1.88	1.02	100.00	R13TSS		41.62		MODRES	CL		58.52	27M0F8W			P	
RUS	RSTRSA12	36.00	40	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	40	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	40	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	40	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	40	38.00	53.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		53.00	27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	40	65.00	63.00	2.20	2.20	0.00	R123FR		37.70		MODRES	CR		55.00	27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	40	97.00	62.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	40	158.00	56.00	2.20	2.20	0.00	R13TSS		37.70		MODRES	CR		55.00	27M0G7W	RST-5	42	P	
S	S 13902	5.00	40	17.00	61.50	2.00	1.00	10.00	R13TSS		41.44		R13RES	CL		68.24	27M0F8W			PE	
SDN	SDN23200	-7.00	40	30.40	19.00	2.44	1.52	176.00	R13TSS		38.75		MODRES	CR		58.45	27M0F8W			P	

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APPENDIX S30A

ARTICLE 9A

Plan for Feeder Links for the Broadcasting-Satellite Service in the Fixed-Satellite Service in the Frequency Bands 14.5 - 14.8 GHz and 17.3 - 18.1 GHz in Regions 1 and 3

9A.1 COLUMN HEADINGS OF THE PLAN

Col. 1. *Notifying administration symbol.*

Col. 2. *Beam identification* (Column 2, normally, contains the symbol designating the country or the geographical area taken from Table B1 of the Preface to the International Frequency List, followed by the symbol designating the service area).

Col. 3. *Nominal orbital position*, in degrees and hundredths of a degree from the Greenwich meridian (negative values indicate longitudes which are west of the Greenwich meridian; positive values indicate longitudes which are east of the Greenwich meridian).

Col. 4. *Channel number.*

Col. 5. *Assigned frequency*, in MHz.

Col. 6. *Nominal intersection of the beam axis with the Earth* (boresight or aim point in the case a non-elliptical beam), longitude and latitude, in degrees and hundredths of a degree.

Col. 7. *Space station receiving antenna characteristics* (elliptical beams). This column contains three numerical values corresponding to the major axis, the minor axis and the major axis orientation respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree. Orientation of the ellipse determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anticlockwise from a line parallel to the equatorial plane to the major axis of the ellipse, to the nearest degree.

Col. 8. *Space station receiving antenna pattern code.*

Col. 9. *Space station receiving antenna shaped (non-elliptical) beam identification.*

Col. 10. *Maximum space station receiving antenna co-polar and cross-polar (in the case of shaped beam) isotropic gain*, in dBi.

Col. 11. *Earth station transmitting antenna pattern code.*

Col. 12. *Polarization* (CL - circular left, CR - circular right, LE - linear referenced to the equatorial plane) and polarization angle in degrees and hundredths of a degree (in the case of linear polarization only).

Col. 13. *E.i.r.p.* in the direction of maximum radiation, in dBW.

Col. 14. *Permitted increase in earth station e.i.r.p.* in dB for the purpose of power control (see Section 3.11 of Annex 3 to this Appendix)[2] .

Col. 15. *Designation of emission.*

Col. 16. *Identity of the space station.*

Col. 17. *Group code* (An identification code which indicates that all assignments with the same group identification code will be treated as a group.)

Col. 18. *Assignment status.*

Col. 19. *Remarks.*

The codes used for the antenna pattern of the receiving space station (feeder link) antenna are defined as follows:

R13RSS	Figure B and Section 3.7.3 in Annex 3 of Appendix 30A
R123FR	Figure C and Section 3.7.3 in Annex 3 of Appendix 30A
MODRSS	Recommendation ITU-R BO.1296

In cases where the "Space station receiving antenna pattern" field is blank, the necessary antenna pattern data are provided by shaped beam data submitted by the administration. These data are stored in column 8. A particular shaped beam is identified by the combination of column 1, column 9 and column 16. In such cases the maximum cross-polar gain is given in the "Cross-polar gain" field.

[2] Because the applicable versions of ITU-R Recommendations relating to propagation loss due to rain and depolarization have not been defined, the power-control values will be calculated after the Conference.

The codes used for transmitting earth station (feeder link) antenna patterns are defined as follows:

R13TES	Figure A and Section 3.5.3 in Annex 3 of Appendix 30A
MODTES	Recommendation ITU-R BO.1295

The assignment status codes used for beams are defined as follows:

P	Assignment in the Plan for which § 4.2.5 (in terms of 8 years lapsing period) of this Appendix does not apply.
PE	Assignment in the Plan for which § 4.2.5 (in terms of 8 years lapsing period) of this Appendix does not apply. These assignments have been notified and brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, the parameters in force before WRC-97 are applied.
A	Assignment in the Plan for which § 4.2.5 (in terms of 8 years lapsing period) of this Appendix applies.
AE	Assignment in the Plan for which § 4.2.5 (in terms of 8 years lapsing period) of this Appendix applies. These assignments have been notified and brought into use and the date of bringing into use has been confirmed to the Bureau. For this category of assignments, parameters in force before WRC-97 are applied.

Group code: If an assignment is part of the group:

a) The equivalent protection margin to be used for the application of Article 4 of this Appendix shall be calculated on the following basis:

- for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; *and*
- for the calculation of interference from assignments belonging to a group of assignments that are not part of that same group, only the worst interference contribution from that group shall be used on a test point to test point basis.

b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the overall *C/I* ratio produced by all emissions from that group shall not exceed the *C/I* ratio calculated on the basis of *a)* above.

9A.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

1. India may also locate feeder-link earth stations near the point 29° N 77.3° E, on condition that this does not affect the equivalent protection margins of other administrations.

2. The Federal Republic of Germany and Switzerland have agreed that their feeder-link channels can be interchanged for a limited period of time ending in the year 2001, as follows:

2 with 22, 6 with 26, 10 with 30, 14 with 34, 18 with 38.

3. Before an administration notifies to the Bureau or brings into use this frequency assignment to a transmitting feeder-link earth station in the bands 17.7 - 18.1 GHz, it shall effect coordination of this assignment, using the method described in Annex 4 of Appendix 30A, in respect of a specific earth station in the fixed-satellite service (space-to-Earth) in the band 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or

b) for which a notice is received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receives a favourable finding based on the Plan as it existed on 27 October 1997.

4. Before an administration notifies to the Bureau or brings into use this frequency assignment to a transmitting feeder-link earth station in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz, it shall effect coordination of this assignment with each administration whose territory lies wholly or partly within the coordination area of the feeder-link earth station, using the method described in Appendix 28, in respect of stations of the fixed and mobile services in the bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz:

a) either recorded in the Master Register prior to 27 October 1997 with a favourable finding; or

b) for which a notice is received by the Bureau prior to 27 October 1997 for recording in the Master Register and which subsequently receives a favourable finding based on the Plan as it existed on 27 October 1997.

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5. This assignment shall be brought into use only when the limits given in paragraph 5 of Annex 1 are not exceeded, or with the agreement of administrations identified in Table 1A with respect to assignments which are in conformity with the Region 2 Plan on 27 October 1997.

These administrations shall be informed by the notifying administration of changes in characteristics before these beams are brought into use.

6. This assignment shall not claim protection from the assignments of the administration indicated in Table 1B which are in conformity with the Region 2 Plan on 27 October 1997.

7. This assignment shall not claim protection from the assignments of the administration indicated in Table 1B which are recorded in the Master Register with a favourable finding prior to 27 October 1997 to which **S5.487**/RR 838 and **S5.43**/RR 435 do not apply.

8. Provisional Beam*. This assignment has been included in the Plan by WRC-97. This assignment is for exclusive use by Palestine, subject to the Israeli-Palestinian Interim Agreement of 28 September 1995, Resolution 741 of the ITU Council notwithstanding.

9. Pending clarification of bringing into service of the satellite network.

TABLE 1A

Beam name	**Channels**	**Affected administrations**
G 02700	4, 8, 12	GUY JMC
IRL21100	2, 10	GUY JMC
	6	JMC
LBR24400	3	JMC
	7, 11	GUY JMC

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TABLE 1B

Beam name	Channels	Affected administrations
AZR13400	28, 36, 40	USA
BFA10700	29, 37	USA
CNR13000	27, 39	USA
CTI23700	26, 38	USA
D2-21600	21, 25, 29, 33, 37	USA/IT
G 02700	4, 8, 12	GUY JMC
HISPASA2	27, 29, 37, 39	USA
IRL21100	2, 10	GUY JMC
	6	JMC
KAZ06600	24, 32	F/EUT
	28, 36, 40	F/EUT USA
KGZ07000	22, 30, 34	F/EUT
	26, 38	F/EUT USA
LBR24400	3	JMC
	7, 11	GUY JMC
MDA06300	20	G PAK
MLT1470A	20	F/EUT USA
NPL1220A	23	IND
RUS00400	39	USA
TKM06800	23, 27, 31, 35	F/EUT
	39	F/EUT USA

TABLE 2A

Table showing correspondence between channel numbers and assigned frequencies for the feeder links in the frequency band 14.5 - 14.8 GHz

Channel No.	Assigned feeder-link frequency (MHz)
1	14 525.30
2	14 544.48
3	14 563.66
4	14 582.84
5	14 602.02
6	14 621.20
7	14 640.38
8	14 659.56
9	14 678.74
10	14 697.92
11	14 717.10
12	14 736.28
13	14 755.46
14	14 774.64

TABLE 2B

Table showing correspondence between channel numbers and assigned frequencies for the feeder links in the frequency band 17.3 GHz - 18.1 GHz

Channel No.	Assigned feeder-link frequency (MHz)	Channel No.	Assigned feeder-link frequency (MHz)
1	17327.48	21	17711.08
2	17346.66	22	17730.26
3	17365.84	23	17749.44
4	17385.02	24	17768.62
5	17404.20	25	17787.80
6	17423.38	26	17806.98
7	17442.56	27	17826.16
8	17461.74	28	17845.34
9	17480.92	29	17864.52
10	17500.10	30	17883.70
11	17519.28	31	17902.88
12	17538.46	32	17922.06
13	17557.64	33	17941.24
14	17576.82	34	17960.42
15	17596.00	35	17979.60
16	17615.18	36	17998.78
17	17634.36	37	18017.96
18	17653.54	38	18037.14
19	17672.72	39	18056.32
20	17691.90	40	18075.50

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
AFS	AFS02100	5.00	1	14525.30	24.50	-28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	CR		82.00		27M0F8W			P	
ARS	ARS34001	17.00	1	14525.30	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		82.00		27M0F8W			P	
IND	IND04301	56.00	1	14525.30	77.80	11.10	1.36	1.28	172.00	MODRSS		42.04		MODTES	CL		82.00		27M0F8W			P	1
IND	IND04401	68.00	1	14525.30	79.50	22.30	2.19	1.42	146.00	MODRSS		39.52		MODTES	CL		82.00		27M0F8W			P	1
ISR	ISR11000	-13.00	1	14525.30	34.90	31.40	0.94	0.60	117.00	MODRSS		46.93		MODTES	CL		82.00		27M0F8W			P	
MRC	MRC20900	-25.00	1	14525.30	-8.90	28.90	3.96	1.55	50.00	MODRSS		36.57		MODTES	CR		82.00		27M0F8W			P	
NMB	NMB02500	-19.00	1	14525.30	17.50	-21.60	2.66	1.90	48.00	MODRSS		37.41		MODTES	CR		82.00		27M0F8W			P	
YEM	YEM26700	11.00	1	14525.30	48.61	14.42	1.68	1.44	157.35	MODRSS		40.61		MODTES	CR		82.00		27M0F8W			P	4
CPV	CPV30100	-30.00	2	14544.48	-24.00	16.00	0.86	0.70	144.00	MODRSS		46.65		MODTES	CR		82.00		27M0F8W			P	4
ETH	ETH09200	23.00	2	14544.48	40.35	9.19	2.66	2.23	166.11	MODRSS		36.72		MODTES	CR		82.00		27M0F8W			P	4
IND	IND04501	56.00	2	14544.48	76.20	19.50	1.58	1.58	21.00	MODRSS		40.47		MODTES	CR		82.00		27M0F8W			P	1
IND	IND04801	68.00	2	14544.48	86.20	25.00	1.56	0.90	120.00	MODRSS		42.97		MODTES	CR		82.00		27M0F8W			P	1
KOR	KO11201D	116.00	2	14544.48	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0G7W	KOREASAT-1	20	AE	4
KOR	KOR11201	116.00	2	14544.48	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0F8W	KOREASAT-1	20	AE	4
MOZ	MOZ30700	-1.00	2	14544.48	34.00	-18.00	3.57	1.38	55.00	MODRSS		37.52		MODTES	CR		82.00		27M0F8W			P	
NIG	NIG11900	-19.00	2	14544.48	7.80	9.40	2.16	2.02	45.00	MODRSS		38.05		MODTES	CL		82.00		27M0F8W			P	
PAK	PAK12701	38.00	2	14544.48	69.60	29.50	2.30	2.16	14.00	MODRSS		37.49		MODTES	CL		82.00		27M0F8W			P	
PNG	PNG13100	110.00	2	14544.48	147.70	-6.30	2.50	2.18	169.00	MODRSS		37.08		MODTES	CL		89.00		27M0F8W			P	
SNG	SNG15100	74.00	2	14544.48	103.80	1.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
STP	STP24100	-13.00	2	14544.48	7.00	0.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
TGO	TGO22600	-25.00	2	14544.48	0.80	8.60	1.52	0.60	105.00	MODRSS		44.85		MODTES	CR		82.00		27M0F8W			P	
UGA	UGA05100	11.00	2	14544.48	32.30	1.20	1.46	1.12	60.00	MODRSS		42.31		MODTES	CL		82.00		27M0F8W			P	
IND	IND03801	56.00	3	14563.66	75.90	33.40	1.52	1.08	33.00	MODRSS		42.29		MODTES	CL		82.00		27M0F8W			P	1
IND	IND04701	68.00	3	14563.66	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	CL		82.00		27M0F8W			P	1
IRN	IRN10901	34.00	3	14563.66	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		82.00		27M0F8W			P	
YEM	YEM26700	11.00	3	14563.66	48.61	14.42	1.68	1.44	157.35	MODRSS		40.61		MODTES	CR		82.00		27M0F8W			P	4
ZMB	ZMB31400	-1.00	3	14563.66	27.50	-13.10	2.38	1.48	39.00	MODRSS		38.98		MODTES	CL		82.00		27M0F8W			P	
ARS	ARS00301	17.00	4	14582.84	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CL		82.00		27M0F8W			P	
CPV	CPV30100	-30.00	4	14582.84	-24.00	16.00	0.86	0.70	144.00	MODRSS		46.65		MODTES	CR		82.00		27M0F8W			P	4
IND	IND04001	56.00	4	14582.84	73.00	25.00	1.82	1.48	58.00	MODRSS		40.14		MODTES	CR		82.00		27M0F8W			P	1
IND	IND04201	68.00	4	14582.84	79.30	27.70	2.14	1.16	147.00	MODRSS		40.50		MODTES	CR		82.00		27M0F8W			P	1
KOR	KO11201D	116.00	4	14582.84	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0G7W	KOREASAT-1	20	AE	4
KOR	KOR11201	116.00	4	14582.84	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0F8W	KOREASAT-1	20	AE	4
MOZ	MOZ30700	-1.00	4	14582.84	34.00	-18.00	3.57	1.38	55.00	MODRSS		37.52		MODTES	CR		82.00		27M0F8W			P	
NIG	NIG11900	-19.00	4	14582.84	7.80	9.40	2.16	2.02	45.00	MODRSS		38.05		MODTES	CL		82.00		27M0F8W			P	
PAK	PAK28301	38.00	4	14582.84	74.70	33.90	1.34	1.13	160.00	MODRSS		42.65		MODTES	CL		82.00		27M0F8W			P	
PNG	PNG27100	128.00	4	14582.84	148.00	-6.70	2.80	2.05	155.00	MODRSS		36.86		MODTES	CL		89.00		27M0F8W			P	
STP	STP24100	-13.00	4	14582.84	7.00	0.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
TGO	TGO22600	-25.00	4	14582.84	0.80	8.60	1.52	0.60	105.00	MODRSS		44.85		MODTES	CR		82.00		27M0F8W			P	
UGA	UGA05100	11.00	4	14582.84	32.30	1.20	1.46	1.12	60.00	MODRSS		42.31		MODTES	CL		82.00		27M0F8W			P	
AFS	AFS02100	5.00	5	14602.02	24.50	-28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	CR		82.00		27M0F8W			P	
IND	IND03901	56.00	5	14602.02	72.70	11.20	1.26	0.60	107.00	MODRSS		45.66		MODTES	CL		82.00		27M0F8W			P	1
IND	IND04601	68.00	5	14602.02	84.70	20.50	1.60	0.86	30.00	MODRSS		43.06		MODTES	CL		82.00		27M0F8W			P	1
ISR	ISR11000	-13.00	5	14602.02	34.90	31.40	0.94	0.60	117.00	MODRSS		46.93		MODTES	CL		82.00		27M0F8W			P	
MRC	MRC20900	-25.00	5	14602.02	-8.90	28.90	3.96	1.55	50.00	MODRSS		36.57		MODTES	CR		82.00		27M0F8W			P	
NMB	NMB02500	-19.00	5	14602.02	17.50	-21.60	2.66	1.90	48.00	MODRSS		37.41		MODTES	CR		82.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
YEM	YEM26700	11.00	5	14602.02	48.61	14.42	1.68	1.44	157.35	MODRSS		40.61		MODTES	CR		82.00		27M0F8W			P	4
ZMB	ZMB31400	-1.00	5	14602.02	27.50	-13.10	2.38	1.48	39.00	MODRSS		38.98		MODTES	CL		82.00		27M0F8W			P	
CPV	CPV30100	-30.00	6	14621.20	-24.00	16.00	0.86	0.70	144.00	MODRSS		46.65		MODTES	CR		82.00		27M0F8W			P	4
ETH	ETH09200	23.00	6	14621.20	40.35	9.19	2.66	2.23	166.11	MODRSS		36.72		MODTES	CR		82.00		27M0F8W			P	4
IND	IND03701	68.00	6	14621.20	93.00	25.50	1.46	1.13	40.00	MODRSS		42.27		MODTES	CR		82.00		27M0F8W			P	1
IND	IND04101	56.00	6	14621.20	78.40	16.00	2.08	1.38	35.00	MODRSS		39.87		MODTES	CR		82.00		27M0F8W			P	1
KOR	KO11201D	116.00	6	14621.20	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0G7W	KOREASAT-1	20	AE	4
KOR	KOR11201	116.00	6	14621.20	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0F8W	KOREASAT-1	20	AE	4
MOZ	MOZ30700	-1.00	6	14621.20	34.00	-18.00	3.57	1.38	55.00	MODRSS		37.52		MODTES	CR		82.00		27M0F8W			P	
NIG	NIG11900	-19.00	6	14621.20	7.80	9.40	2.16	2.02	45.00	MODRSS		38.05		MODTES	CL		82.00		27M0F8W			P	
PAK	PAK12701	38.00	6	14621.20	69.60	29.50	2.30	2.16	14.00	MODRSS		37.49		MODTES	CL		82.00		27M0F8W			P	
PNG	PNG13100	110.00	6	14621.20	147.70	-6.30	2.50	2.18	169.00	MODRSS		37.08		MODTES	CL		89.00		27M0F8W			P	
SNG	SNG15100	74.00	6	14621.20	103.80	1.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
STP	STP24100	-13.00	6	14621.20	7.00	0.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
TGO	TGO22600	-25.00	6	14621.20	0.80	8.60	1.52	0.60	105.00	MODRSS		44.85		MODTES	CR		82.00		27M0F8W			P	
UGA	UGA05100	11.00	6	14621.20	32.30	1.20	1.46	1.12	60.00	MODRSS		42.31		MODTES	CL		82.00		27M0F8W			P	
AFS	AFS02100	5.00	7	14640.38	24.50	-28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	CR		82.00		27M0F8W			P	
IND	IND04301	56.00	7	14640.38	77.80	11.10	1.36	1.28	172.00	MODRSS		42.04		MODTES	CL		82.00		27M0F8W			P	1
IND	IND04601	68.00	7	14640.38	84.70	20.50	1.60	0.86	30.00	MODRSS		43.06		MODTES	CL		82.00		27M0F8W			P	1
IRN	IRN10901	34.00	7	14640.38	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		82.00		27M0F8W			P	
ISR	ISR1100A	-13.00	7	14640.38	34.90	31.40	0.94	0.60	117.00	MODRSS		46.93		MODTES	CL		82.00		27M0F8W			P	4
MRC	MRC20900	-25.00	7	14640.38	-8.90	28.90	3.96	1.55	50.00	MODRSS		36.57		MODTES	CR		82.00		27M0F8W			P	
SEN	SEN22201	-37.00	7	14640.38	-14.40	13.80	1.46	1.04	139.00	MODRSS		42.63		MODTES	CR		82.00		27M0F8W			P	
YEM	YEM26700	11.00	7	14640.38	48.61	14.42	1.68	1.44	157.35	MODRSS		40.61		MODTES	CR		82.00		27M0F8W			P	4
ZMB	ZMB31400	-1.00	7	14640.38	27.50	-13.10	2.38	1.48	39.00	MODRSS		38.98		MODTES	CL		82.00		27M0F8W			P	
CPV	CPV30100	-30.00	8	14659.56	-24.00	16.00	0.86	0.70	144.00	MODRSS		46.65		MODTES	CR		82.00		27M0F8W			P	4
ETH	ETH09200	23.00	8	14659.56	40.35	9.19	2.66	2.23	166.11	MODRSS		36.72		MODTES	CR		82.00		27M0F8W			P	4
IND	IND04101	56.00	8	14659.56	78.40	16.00	2.08	1.38	35.00	MODRSS		39.87		MODTES	CR		82.00		27M0F8W			P	1
IND	IND04801	68.00	8	14659.56	86.20	25.00	1.56	0.90	120.00	MODRSS		42.97		MODTES	CR		82.00		27M0F8W			P	1
KOR	KO11201D	116.00	8	14659.56	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0G7W	KOREASAT-1	20	AE	4
KOR	KOR11201	116.00	8	14659.56	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0F8W	KOREASAT-1	20	AE	4
MOZ	MOZ30700	-1.00	8	14659.56	34.00	-18.00	3.57	1.38	55.00	MODRSS		37.52		MODTES	CR		82.00		27M0F8W			P	
NIG	NIG11900	-19.00	8	14659.56	7.80	9.40	2.16	2.02	45.00	MODRSS		38.05		MODTES	CL		82.00		27M0F8W			P	
PAK	PAK28301	38.00	8	14659.56	74.70	33.90	1.34	1.13	160.00	MODRSS		42.65		MODTES	CL		82.00		27M0F8W			P	
PNG	PNG27100	128.00	8	14659.56	148.00	-6.70	2.80	2.05	155.00	MODRSS		36.86		MODTES	CL		89.00		27M0F8W			P	
STP	STP24100	-13.00	8	14659.56	7.00	0.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
UGA	UGA05100	11.00	8	14659.56	32.30	1.20	1.46	1.12	60.00	MODRSS		42.31		MODTES	CL		82.00		27M0F8W			P	
AFS	AFS02100	5.00	9	14678.74	24.50	-28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	CR		82.00		27M0F8W			P	
IND	IND03801	56.00	9	14678.74	75.90	33.40	1.52	1.08	33.00	MODRSS		42.29		MODTES	CL		82.00		27M0F8W			P	1
IND	IND04401	68.00	9	14678.74	79.50	22.30	2.19	1.42	146.00	MODRSS		39.52		MODTES	CL		82.00		27M0F8W			P	1
ISR	ISR11000	-13.00	9	14678.74	34.90	31.40	0.94	0.60	117.00	MODRSS		46.93		MODTES	CL		82.00		27M0F8W			P	
MRC	MRC20900	-25.00	9	14678.74	-8.90	28.90	3.96	1.55	50.00	MODRSS		36.57		MODTES	CR		82.00		27M0F8W			P	
NMB	NMB02500	-19.00	9	14678.74	17.50	-21.60	2.66	1.90	48.00	MODRSS		37.41		MODTES	CR		82.00		27M0F8W			P	
YEM	YEM26700	11.00	9	14678.74	48.61	14.42	1.68	1.44	157.35	MODRSS		40.61		MODTES	CR		82.00		27M0F8W			P	4
ZMB	ZMB31400	-1.00	9	14678.74	27.50	-13.10	2.38	1.48	39.00	MODRSS		38.98		MODTES	CL		82.00		27M0F8W			P	
ETH	ETH09200	23.00	10	14697.92	40.35	9.19	2.66	2.23	166.11	MODRSS		36.72		MODTES	CR		82.00		27M0F8W			P	4

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
IND	IND04201	68.00	10	14697.92	79.30	27.70	2.14	1.16	147.00	MODRSS		40.50		MODTES	CR		82.00		27M0F8W			P	1
IND	IND04501	56.00	10	14697.92	76.20	19.50	1.58	1.58	21.00	MODRSS		40.47		MODTES	CR		82.00		27M0F8W			P	1
KOR	KO11201D	116.00	10	14697.92	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0G7W	KOREASAT-1	20	AE	4
KOR	KOR11201	116.00	10	14697.92	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0F8W	KOREASAT-1	20	AE	4
NIG	NIG11900	-19.00	10	14697.92	7.80	9.40	2.16	2.02	45.00	MODRSS		38.05		MODTES	CL		82.00		27M0F8W			P	
PNG	PNG13100	110.00	10	14697.92	147.70	-6.30	2.50	2.18	169.00	MODRSS		37.08		MODTES	CL		89.00		27M0F8W			P	
SNG	SNG15100	74.00	10	14697.92	103.80	1.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
TGO	TGO22600	-25.00	10	14697.92	0.80	8.60	1.52	0.60	105.00	MODRSS		44.85		MODTES	CR		82.00		27M0F8W			P	
UGA	UGA05100	11.00	10	14697.92	32.30	1.20	1.46	1.12	60.00	MODRSS		42.31		MODTES	CL		82.00		27M0F8W			P	
AFS	AFS02100	5.00	11	14717.10	24.50	-28.00	3.13	1.68	27.00	MODRSS		37.24		MODTES	CR		82.00		27M0F8W			P	
IND	IND04701	68.00	11	14717.10	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	CL		82.00		27M0F8W			P	1
IRN	IRN10901	34.00	11	14717.10	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		82.00		27M0F8W			P	
ISR	ISR11000	-13.00	11	14717.10	34.90	31.40	0.94	0.60	117.00	MODRSS		46.93		MODTES	CL		82.00		27M0F8W			P	
MRC	MRC20900	-25.00	11	14717.10	-8.90	28.90	3.96	1.55	50.00	MODRSS		36.57		MODTES	CR		82.00		27M0F8W			P	
NMB	NMB0250A	-19.00	11	14717.10	17.50	-21.60	2.66	1.90	48.00	MODRSS		37.41		MODTES	CR		82.00		27M0F8W			P	4
SEN	SEN22201	-37.00	11	14717.10	-14.40	13.80	1.46	1.04	139.00	MODRSS		42.63		MODTES	CR		82.00		27M0F8W			P	
ZMB	ZMB31400	-1.00	11	14717.10	27.50	-13.10	2.38	1.48	39.00	MODRSS		38.98		MODTES	CL		82.00		27M0F8W			P	
CPV	CPV30100	-30.00	12	14736.28	-24.00	16.00	0.86	0.70	144.00	MODRSS		46.65		MODTES	CR		82.00		27M0F8W			P	4
ETH	ETH09200	23.00	12	14736.28	40.35	9.19	2.66	2.23	166.11	MODRSS		36.72		MODTES	CR		82.00		27M0F8W			P	4
IND	IND04001	56.00	12	14736.28	73.00	25.00	1.82	1.48	58.00	MODRSS		40.14		MODTES	CR		82.00		27M0F8W			P	1
KOR	KO11201D	116.00	12	14736.28	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0G7W	KOREASAT-1	20	AE	4
KOR	KOR11201	116.00	12	14736.28	127.50	36.00	1.24	1.02	168.00	R13RSS		43.40		R13TES	CL		82.00		27M0F8W	KOREASAT-1	20	AE	4
MOZ	MOZ30700	-1.00	12	14736.28	34.00	-18.00	3.57	1.38	55.00	MODRSS		37.52		MODTES	CR		82.00		27M0F8W			P	
PAK	PAK21001	38.00	12	14736.28	72.10	30.80	1.16	0.72	90.00	MODRSS		45.23		MODTES	CL		82.00		27M0F8W			P	
PNG	PNG27100	128.00	12	14736.28	148.00	-6.70	2.80	2.05	155.00	MODRSS		36.86		MODTES	CL		89.00		27M0F8W			P	
STP	STP24100	-13.00	12	14736.28	7.00	0.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
IND	IND03901	56.00	13	14755.46	72.70	11.20	1.26	0.60	107.00	MODRSS		45.66		MODTES	CL		82.00		27M0F8W			P	1
NMB	NMB02500	-19.00	13	14755.46	17.50	-21.60	2.66	1.90	48.00	MODRSS		37.41		MODTES	CR		82.00		27M0F8W			P	
IND	IND03701	68.00	14	14774.64	93.00	25.50	1.46	1.13	40.00	MODRSS		42.27		MODTES	CR		82.00		27M0F8W			P	1
PNG	PNG13100	110.00	14	14774.64	147.70	-6.30	2.50	2.18	169.00	MODRSS		37.08		MODTES	CL		89.00		27M0F8W			P	
SNG	SNG15100	74.00	14	14774.64	103.80	1.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		82.00		27M0F8W			P	
TGO	TGO22600	-25.00	14	14774.64	0.80	8.60	1.52	0.60	105.00	MODRSS		44.85		MODTES	CR		82.00		27M0F8W			P	
AFG	AFG24600	50.00	1	17327.48	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
BLR	BLR06200	38.00	1	17327.48	28.04	53.18	1.17	0.60	9.68	MODRSS		45.96		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN15500	62.00	1	17327.48	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16200	92.00	1	17327.48	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16300	79.80	1	17327.48	116.00	39.20	1.20	0.80	132.00	MODRSS		44.62		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN19000	122.00	1	17327.48	114.17	23.32	0.91	0.60	2.88	MODRSS		47.08		MODTES	CL		84.00		27M0F8W			P	
CME	CME30000	-13.00	1	17327.48	12.70	6.20	2.54	1.68	87.00	MODRSS		38.15		MODTES	CL		84.00		27M0F8W			P	
E	E 12900	-30.00	1	17327.48	-3.10	39.90	2.10	1.14	154.00	MODRSS		40.66		MODTES	CR		84.00		27M0F8W		17	P	
E	HISPASA4	-30.00	1	17327.48	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		82.50		27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	1	17327.48	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		83.50		27M0F8W	HISPASAT-1	17	AE	
EST	EST06100	23.00	1	17327.48	25.36	59.31	0.68	0.60	2.17	MODRSS		48.37		MODTES	CR		84.00		27M0F8W			P	
F	F 09300	-19.00	1	17327.48	2.60	45.90	2.50	0.98	160.00	R13RSS		40.56		R13TES	CL		84.00		27M0F8W		19	PE	
F /EUT	E2WA7DA1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F /EUT	E2WA7DC1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	1	17327.48	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FJI	FJI19300	152.00	1	17327.48	179.40	-17.90	1.04	0.98	67.00	MODRSS		44.36		MODTES	CL		84.00		27M0F8W			P	
GUI	GUI19200	-37.00	1	17327.48	-11.00	10.20	1.58	1.04	147.00	MODRSS		42.29		MODTES	CR		85.00		27M0F8W			P	
HRV	HRV14800	34.00	1	17327.48	16.74	44.54	0.88	0.69	5.30	MODRSS		46.57		MODTES	CR		84.00		27M0F8W			P	
IND	IND03900	56.00	1	17327.48	72.70	11.20	1.26	0.60	107.00	MODRSS		45.66		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03500	104.00	1	17327.48	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
J	000BS-3N	109.85	1	17327.48	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	1	17327.48	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
LBY	LBY28000	-25.00	1	17327.48	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
MDG	MDG23600	29.00	1	17327.48	46.20	-18.60	2.57	0.80	67.00	MODRSS		41.32		MODTES	CR		84.00		27M0F8W			P	
NZL	NZL05500	158.00	1	17327.48	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CL		84.00		27M0F8W			P	
POL	POL13200	-1.00	1	17327.48	17.20	51.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		87.00		27M0F8W			P	
QAT	QAT24700	17.00	1	17327.48	51.10	25.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SLM	SLM00000	146.00	1	17327.48	159.32	-8.40	1.50	1.18	140.48	MODRSS		41.98		MODTES	CR		84.00		27M0F8W			P	
SMR	SMR31100	-37.00	1	17327.48	12.50	43.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
SWZ	SWZ31300	-1.00	1	17327.48	31.50	26.50	0.62	0.60	66.00	MODRSS		48.74		MODTES	CL		82.00		27M0F8W			P	
THA	THA14200	74.00	1	17327.48	100.70	13.20	2.82	1.54	106.00	MODRSS		38.07		MODTES	CL		84.00		27M0F8W			P	
TJK	TJK06900	44.00	1	17327.48	71.14	38.37	1.25	0.76	159.15	MODRSS		44.65		MODTES	CR		84.00		27M0F8W			P	
TUR	TUR14500	5.00	1	17327.48	34.30	39.00	3.13	1.38	168.00	MODRSS		38.09		MODTES	CL		84.00		27M0F8W			P	
TZA	TZA22500	11.00	1	17327.48	34.60	-6.20	2.41	1.72	129.00	MODRSS		38.27		MODTES	CL		84.00		27M0F8W			P	
USA	PLM33700	170.00	1	17327.48	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CL		87.00		27M0F8W		9	P	
USA	PLM33701	170.00	1	17327.48	-124.80	39.10	4.43	0.73	132.00	MODRSS		39.35		MODTES	CL		87.00		27M0F8W		9	P	
USA	WAK33400	140.00	1	17327.48	152.50	11.70	7.89	3.52	0.00	MODRSS		30.01		MODTES	CR		87.00		27M0F8W		11	P	
USA	WAK33401	140.00	1	17327.48	-157.50	21.00	1.63	0.67	131.00	MODRSS		44.06		MODTES	CL		87.00		27M0F8W		11	P	
YUG	YUG14800	-7.00	1	17327.48	20.50	43.98	0.91	0.60	145.16	MODRSS		47.07		MODTES	CL		84.00		27M0F8W			P	
	YYY00001	11.00	1	17327.48	34.99	31.86	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	8
ALG	ALG25100	-25.00	2	17346.66	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
ARS	ARS27500	17.00	2	17346.66	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00800	164.00	2	17346.66	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CL		87.00		27M0F8W			P	
BIH	BIH14800	34.00	2	17346.66	17.77	44.32	0.62	0.60	166.84	MODRSS		48.71		MODTES	CL		84.00		27M0F8W			P	
BOT	BOT29700	-1.00	2	17346.66	23.30	-22.20	2.13	1.50	36.00	MODRSS		39.40		MODTES	CR		85.00		27M0F8W			P	
CHN	CHN15400	62.00	2	17346.66	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN16100	92.00	2	17346.66	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CL		84.00		27M0F8W			P	
CLN	CLN21900	50.00	2	17346.66	80.60	7.70	1.18	0.60	106.00	MODRSS		45.95		MODTES	CL		84.00		27M0F8W			P	
D	D 08700	-19.00	2	17346.66	9.60	49.90	1.62	0.72	147.00	MODRSS		43.78		MODTES	CR		84.00		27M0F8W			P	2
F	F2 A2722	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3 A2722	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3 A2728	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3 A3322	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3 A3328	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F	F3_D2722	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	2	17346.66	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	2	17346.66	166.00	-21.00	1.14	0.72	146.00	MODRSS		45.30		MODTES	CL		84.00		27M0F8W		6	P	
F	NCL10001	140.00	2	17346.66	-177.10	-13.60	1.22	0.60	46.00	MODRSS		45.80		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10200	140.00	2	17346.66	-176.80	-14.00	0.74	0.60	29.00	MODRSS		47.97		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10201	140.00	2	17346.66	166.10	-21.30	1.31	0.82	133.00	MODRSS		44.16		MODTES	CL		84.00		27M0F8W		6	P	
F /EUT	E2WA7DA2	29.00	2	17346.66	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	2	17346.66	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	2	17346.66	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	2	17346.66	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	2	17346.66	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	2	17346.66	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	2	17346.66	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FIN	FIN10300	5.00	2	17346.66	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
GNB	GNB30400	-30.00	2	17346.66	-15.00	12.00	0.90	0.60	172.00	MODRSS		47.12		MODTES	CR		84.00		27M0F8W			P	
IND	IND03700	68.00	2	17346.66	93.00	25.50	1.46	1.13	40.00	MODRSS		42.27		MODTES	CR		84.00		27M0F8W			P	1
INS	INS02800	80.20	2	17346.66	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
IRI	IRI21100	-33.50	2	17346.66	-8.20	53.20	0.84	0.60	162.00	MODRSS		47.42		MODTES	CL		84.00		27M0F8W			P	5, 6
KOR	KOR11200	110.00	2	17346.66	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	CL		89.00		27M0F8W			P	
LAO	LAO28400	74.00	2	17346.66	103.70	18.10	2.16	0.78	133.00	MODRSS		42.18		MODTES	CR		84.00		27M0F8W			P	
MAU	MAU24200	29.00	2	17346.66	59.80	-18.90	1.62	1.24	55.00	MODRSS		41.42		MODTES	CL		84.00		27M0F8W			P	
MHL	MHL00000	146.00	2	17346.66	167.64	9.83	2.07	0.90	157.42	MODRSS		41.75		MODTES	CL		84.00		27M0F8W			P	
MKD	MKD14800	23.00	2	17346.66	21.53	41.50	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA22800	86.00	2	17346.66	114.10	3.90	2.34	1.12	45.00	MODRSS		40.26		MODTES	CL		84.00		27M0F8W			P	
MLI	MLI32700	-37.00	2	17346.66	-2.00	19.00	2.66	1.26	127.00	MODRSS		39.19		MODTES	CL		87.00		27M0F8W			P	
NOR	BIFROS22	-0.80	2	17346.66	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NZL	CKH05200	158.00	2	17346.66	-161.00	-19.80	1.02	0.64	132.00	MODRSS		46.30		MODTES	CR		84.00		27M0F8W		3	P	
NZL	CKH05201	158.00	2	17346.66	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		3	P	
PAK	PAK12700	38.00	2	17346.66	69.60	29.50	2.30	2.16	14.00	MODRSS		37.49		MODTES	CL		84.00		27M0F8W			P	
SOM	SOM31200	23.00	2	17346.66	45.00	6.40	3.26	1.54	71.00	MODRSS		37.44		MODTES	CL		84.00		27M0F8W			P	
TCD	TCD14300	-13.00	2	17346.66	18.10	15.50	3.40	1.72	107.00	MODRSS		36.78		MODTES	CR		84.00		27M0F8W			P	
TUV	TUV00000	176.00	2	17346.66	177.61	-7.11	0.94	0.60	137.58	MODRSS		46.93		MODTES	CR		84.00		27M0F8W			P	
YEM	YEM26600	11.00	2	17346.66	44.36	15.70	0.77	0.60	104.23	MODRSS		47.78		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32300	-19.00	2	17346.66	21.30	-6.80	2.80	1.52	149.00	MODRSS		38.16		MODTES	CL		84.00		27M0F8W			P	
AFG	AFG24500	50.00	3	17365.84	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00400	152.00	3	17365.84	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040A	152.00	3	17365.84	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040B	152.00	3	17365.84	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040C	152.00	3	17365.84	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS00700	164.00	3	17365.84	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		77	P	
AUS	AUS0070A	164.00	3	17365.84	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		77	P	
BEN	BEN23300	-19.00	3	17365.84	2.20	9.50	1.44	0.68	97.00	MODRSS		44.54		MODTES	CR		84.00		27M0F8W			P	
BRU	BRU3300A	74.00	3	17365.84	114.70	4.40	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15700	62.00	3	17365.84	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CR		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
CHN	CHN16000	92.00	3	17365.84	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CR		84.00		27M0F8W			P	
COM	COM20700	29.00	3	17365.84	44.10	-12.10	0.76	0.60	149.00	MODRSS		47.86		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2733	-7.00	3	17365.84	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		84.00		27M0F9W	RADIOSAT-2	19	A	
F /EUT	E2WA7DA1	29.00	3	17365.84	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	3	17365.84	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	3	17365.84	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	3	17365.84	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	3	17365.84	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	3	17365.84	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	3	17365.84	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FSM	FSM00000	146.00	3	17365.84	151.67	5.42	5.34	1.51	166.52	MODRSS		35.37		MODTES	CR		84.00		27M0F8W			P	
GAB	GAB26000	-13.00	3	17365.84	11.80	-0.60	1.43	1.12	64.00	MODRSS		42.40		MODTES	CL		84.00		27M0F8W			P	
GMB	GMB30200	-37.00	3	17365.84	-15.10	13.40	0.79	0.60	4.00	MODRSS		47.69		MODTES	CR		83.00		27M0F8W			P	
GRC	GRC10500	5.00	3	17365.84	24.50	38.00	2.03	1.29	159.00	MODRSS		40.27		MODTES	CL		84.00		27M0F8W			P	
IND	IND04300	56.00	3	17365.84	77.80	11.10	1.36	1.28	172.00	MODRSS		42.04		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03600	104.00	3	17365.84	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
IRN	IRN10900	34.00	3	17365.84	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		84.00		27M0F8W			P	
J	000BS-3N	109.85	3	17365.84	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	3	17365.84	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
KIR	KIR00001	176.00	3	17365.84	177.16	-0.79	4.47	1.27	163.00	MODRSS		36.91		MODTES	CL		84.00		27M0F8W			P	
LBN	LBN27900	11.00	3	17365.84	35.90	33.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
LBR	LBR24400	-33.50	3	17365.84	-9.30	6.60	1.22	0.70	133.00	MODRSS		45.13		MODTES	CL		84.00		27M0F8W			P	5, 6
LBY	LBY32100	-25.00	3	17365.84	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
LIE	LIE25300	-37.00	3	17365.84	9.50	47.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
LTU	LTU06100	23.00	3	17365.84	24.02	55.46	0.72	0.60	173.90	MODRSS		48.11		MODTES	CR		84.00		27M0F8W			P	
LUX	LUX11400	-19.00	3	17365.84	6.00	49.80	0.68	0.68	0.00	MODRSS		47.80		MODTES	CL		84.00		27M0F8W			P	
NRU	NRU30900	134.00	3	17365.84	167.00	-0.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
POR	POR13300	-30.00	3	17365.84	-8.00	39.60	0.92	0.60	112.00	MODRSS		47.03		MODTES	CR		84.00		27M0F8W			P	
ROU	ROU13600	-1.00	3	17365.84	25.00	45.70	1.38	0.66	155.00	MODRSS		44.85		MODTES	CR		86.00		27M0F8W			P	
SMO	SMO05700	158.00	3	17365.84	-172.30	-13.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SVK	SVK14400	17.00	3	17365.84	19.65	48.69	0.82	0.60	5.20	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
UKR	UKR06300	38.00	3	17365.84	31.82	48.19	2.32	0.95	177.32	MODRSS		41.01		MODTES	CR		84.00		27M0F8W			P	
USA	MRA33200	122.00	3	17365.84	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CL		87.00		27M0F8W		14	P	
USA	MRA33201	122.00	3	17365.84	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CL		87.00		27M0F8W		14	P	
USA	SMA33500	170.00	3	17365.84	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CR		87.00		27M0F8W		13	P	
USA	SMA33501	170.00	3	17365.84	-124.80	39.20	4.43	0.73	132.00	MODRSS		39.35		MODTES	CR		87.00		27M0F8W		13	P	
UZB	UZB07100	44.00	3	17365.84	64.01	41.21	2.67	0.96	163.32	MODRSS		40.37		MODTES	CR		84.00		27M0F8W			P	
VTN	VTN32500	86.00	3	17365.84	108.00	14.80	3.80	1.90	126.00	MODRSS		35.86		MODTES	CR		84.00		27M0F8W			P	
VUT	VUT12800	140.00	3	17365.84	168.00	-16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	CR		84.00		27M0F8W			P	
ALG	ALG25200	-25.00	4	17385.02	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
AND	AND34100	-37.00	4	17385.02	1.60	42.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
ARS	ARS00300	17.00	4	17385.02	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00500	152.00	4	17385.02	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
AUT	AUT01600	-19.00	4	17385.02	12.20	47.50	1.14	0.63	166.00	MODRSS		45.88		MODTES	CR		84.00		27M0F8W			P	
AZE	AZE06400	23.00	4	17385.02	47.47	40.14	0.93	0.60	158.14	MODRSS		46.98		MODTES	CL		84.00		27M0F8W			P	
BUL	BUL02000	-1.00	4	17385.02	25.00	43.00	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
CHN	CHN15600	62.00	4	17385.02	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN16100	92.00	4	17385.02	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CL		84.00		27M0F8W			P	
EGY	EGY02600	-7.00	4	17385.02	29.70	26.80	2.33	1.72	136.00	MODRSS		38.42		MODTES	CR		86.00		27M0F8W			P	
F	F2_A2744	-7.00	4	17385.02	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	OCE10100	-160.00	4	17385.02	-145.00	-16.30	4.34	3.54	4.00	MODRSS		32.58		MODTES	CR		84.00		27M0F8W			P	
F /EUT	E2WA7DA2	29.00	4	17385.02	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	4	17385.02	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	4	17385.02	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	4	17385.02	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	4	17385.02	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	4	17385.02	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	4	17385.02	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G 02700	-33.50	4	17385.02	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.23		MODTES	CL		84.00		27M0F8W			P	5, 6
IND	IND04800	68.00	4	17385.02	86.20	25.00	1.56	0.90	120.00	MODRSS		42.97		MODTES	CR		86.00		27M0F8W			P	1
INS	INS02800	80.20	4	17385.02	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
KOR	KOR11200	110.00	4	17385.02	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	CL		89.00		27M0F8W			P	
LAO	LAO28400	74.00	4	17385.02	103.70	18.10	2.16	0.78	133.00	MODRSS		42.18		MODTES	CR		84.00		27M0F8W			P	
MAU	MAU24300	29.00	4	17385.02	56.80	-13.90	1.56	1.38	65.00	MODRSS		41.12		MODTES	CL		84.00		27M0F8W			P	
MDA	MDA06300	38.00	4	17385.02	28.41	46.99	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA22800	86.00	4	17385.02	114.10	3.90	2.34	1.12	45.00	MODRSS		40.26		MODTES	CL		84.00		27M0F8W			P	
MLD	MLD3060A	44.00	4	17385.02	73.10	6.00	0.96	0.60	90.00	MODRSS		46.84		MODTES	CR		84.00		27M0F8W			P	
MLI	MLI32800	-37.00	4	17385.02	-7.60	13.20	1.74	1.24	171.00	MODRSS		41.11		MODTES	CL		87.00		27M0F8W			P	
MLT	MLT14700	-13.00	4	17385.02	14.30	35.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
NZL	CKH05300	158.00	4	17385.02	-161.00	-19.80	1.00	0.60	132.00	MODRSS		46.67		MODTES	CR		84.00		27M0F8W		4	P	
NZL	CKH05301	158.00	4	17385.02	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		4	P	
PAK	PAK28300	38.00	4	17385.02	74.70	33.90	1.34	1.13	160.00	MODRSS		42.65		MODTES	CL		84.00		27M0F8W			P	
PLW	PLW00000	146.00	4	17385.02	132.99	5.52	1.29	0.60	55.84	MODRSS		45.55		MODTES	CL		84.00		27M0F8W			P	
RRW	RRW31000	11.00	4	17385.02	30.00	-2.10	0.66	0.60	42.00	MODRSS		48.47		MODTES	CR		84.00		27M0F8W			P	
S	S 13800	5.00	4	17385.02	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W		27	P	
S	SIRIUS01	5.20	4	17385.02	14.00	63.00	1.30	0.70	142.00	R13RSS		43.00		R13TES	CL		84.00		27M0F8W	SIRIUS	27	AE	
SVN	SVN14800	34.00	4	17385.02	15.01	46.18	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32200	-19.00	4	17385.02	22.40	0.00	2.16	1.88	48.00	MODRSS		38.36		MODTES	CL		84.00		27M0F8W			P	
AFG	AFG24600	50.00	5	17404.20	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
BLR	BLR06200	38.00	5	17404.20	28.04	53.18	1.17	0.60	9.68	MODRSS		45.96		MODTES	CR		84.00		27M0F8W			P	
BTN	BTN03100	86.00	5	17404.20	90.44	27.05	0.72	0.60	175.47	MODRSS		48.11		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15500	62.00	5	17404.20	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16200	92.00	5	17404.20	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16400	79.80	5	17404.20	112.20	37.40	1.06	0.76	111.00	MODRSS		45.39		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN19000	122.00	5	17404.20	114.17	23.32	0.91	0.60	2.88	MODRSS		47.08		MODTES	CL		84.00		27M0F8W			P	
CME	CME30000	-13.00	5	17404.20	12.70	6.20	2.54	1.68	87.00	MODRSS		38.15		MODTES	CL		84.00		27M0F8W			P	
E	E 12900	-30.00	5	17404.20	-3.10	39.90	2.10	1.14	154.00	MODRSS		40.66		MODTES	CR		84.00		27M0F8W		17	P	
E	HISPASA4	-30.00	5	17404.20	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		82.50		27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	5	17404.20	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		83.50		27M0F8W	HISPASAT-1	17	AE	
EST	EST06100	23.00	5	17404.20	25.36	59.31	0.68	0.60	2.17	MODRSS		48.37		MODTES	CR		84.00		27M0F8W			P	
F	F 09300	-19.00	5	17404.20	2.60	45.90	2.50	0.98	160.00	R13RSS		40.56		R13TES	CL		84.00		27M0F8W		19	PE	
F /EUT	E2WA7DA1	29.00	5	17404.20	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F /EUT	E2WA7DB1	29.00	5	17404.20	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	5	17404.20	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	5	17404.20	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	5	17404.20	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	5	17404.20	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	5	17404.20	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FJI	FJI19300	152.00	5	17404.20	179.40	-17.90	1.04	0.98	67.00	MODRSS		44.36		MODTES	CL		84.00		27M0F8W			P	
GUI	GUI19200	-37.00	5	17404.20	-11.00	10.20	1.58	1.04	147.00	MODRSS		42.29		MODTES	CR		85.00		27M0F8W			P	
HRV	HRV14800	34.00	5	17404.20	16.74	44.54	0.88	0.69	5.30	MODRSS		46.57		MODTES	CR		84.00		27M0F8W			P	
IND	IND04400	68.00	5	17404.20	79.50	22.30	2.19	1.42	146.00	MODRSS		39.52		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03500	104.00	5	17404.20	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
J	000BS-3N	109.85	5	17404.20	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	5	17404.20	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
LBY	LBY28000	-25.00	5	17404.20	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
MDG	MDG23600	29.00	5	17404.20	46.20	-18.60	2.57	0.80	67.00	MODRSS		41.32		MODTES	CR		84.00		27M0F8W			P	
NZL	NZL05500	158.00	5	17404.20	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CL		84.00		27M0F8W			P	
POL	POL13200	-1.00	5	17404.20	17.20	51.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		87.00		27M0F8W			P	
QAT	QAT24700	17.00	5	17404.20	51.10	25.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SLM	SLM00000	146.00	5	17404.20	159.32	-8.40	1.50	1.18	140.48	MODRSS		41.98		MODTES	CR		84.00		27M0F8W			P	
SMR	SMR31100	-37.00	5	17404.20	12.50	43.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
SWZ	SWZ31300	-1.00	5	17404.20	31.50	-26.50	0.62	0.60	66.00	MODRSS		48.74		MODTES	CL		82.00		27M0F8W			P	
THA	THA14200	74.00	5	17404.20	100.70	13.20	2.82	1.54	106.00	MODRSS		38.07		MODTES	CL		84.00		27M0F8W			P	
TJK	TJK06900	44.00	5	17404.20	71.14	38.37	1.25	0.76	159.15	MODRSS		44.65		MODTES	CR		84.00		27M0F8W			P	
TUR	TUR14500	5.00	5	17404.20	34.30	39.00	3.13	1.38	168.00	MODRSS		38.09		MODTES	CL		84.00		27M0F8W			P	
TZA	TZA22500	11.00	5	17404.20	34.60	-6.20	2.41	1.72	129.00	MODRSS		38.27		MODTES	CL		84.00		27M0F8W			P	
USA	PLM33700	170.00	5	17404.20	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CL		87.00		27M0F8W		9	P	
USA	PLM33701	170.00	5	17404.20	-124.80	39.10	4.43	0.73	132.00	MODRSS		39.35		MODTES	CL		87.00		27M0F8W		9	P	
USA	WAK33400	140.00	5	17404.20	152.50	11.70	7.89	3.52	0.00	MODRSS		30.01		MODTES	CR		87.00		27M0F8W		11	P	
USA	WAK33401	140.00	5	17404.20	-157.50	21.00	1.63	0.67	131.00	MODRSS		44.06		MODTES	CL		87.00		27M0F8W		11	P	
YUG	YUG14800	-7.00	5	17404.20	20.50	43.98	0.91	0.60	145.16	MODRSS		47.07		MODTES	CL		84.00		27M0F8W			P	
	YYY00001	11.00	5	17404.20	34.99	31.86	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	8
ALG	ALG25100	-25.00	6	17423.38	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
ARS	ARS27500	17.00	6	17423.38	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00800	164.00	6	17423.38	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CL		87.00		27M0F8W			P	
BIH	BIH14800	34.00	6	17423.38	17.77	44.32	0.62	0.60	166.84	MODRSS		48.71		MODTES	CL		84.00		27M0F8W			P	
BOT	BOT29700	-1.00	6	17423.38	23.30	-22.20	2.13	1.50	36.00	MODRSS		39.40		MODTES	CR		85.00		27M0F8W			P	
CHN	CHN15400	62.00	6	17423.38	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN16100	92.00	6	17423.38	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CL		84.00		27M0F8W			P	
CLN	CLN21900	50.00	6	17423.38	80.60	7.70	1.18	0.60	106.00	MODRSS		45.95		MODTES	CL		84.00		27M0F8W			P	
D	D 08700	-19.00	6	17423.38	9.60	49.90	1.62	0.72	147.00	MODRSS		43.78		MODTES	CR		84.00		27M0F8W			P	2
F	F2_A2722	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2728	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position[1]	Channel	Centre Frequency	Boresight Long.[°]	Lat.	Space Antenna Character. Major[°]	Minor[°]	Orient.[°]	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F	F3_A3328	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	6	17423.38	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	6	17423.38	166.00	-21.00	1.14	0.72	146.00	MODRSS		45.30		MODTES	CL		84.00		27M0F8W		6	P	
F	NCL10001	140.00	6	17423.38	-177.10	-13.60	1.22	0.60	46.00	MODRSS		45.80		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10200	140.00	6	17423.38	-176.80	-14.00	0.74	0.60	29.00	MODRSS		47.97		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10201	140.00	6	17423.38	166.10	-21.30	1.31	0.82	133.00	MODRSS		44.16		MODTES	CL		84.00		27M0F8W		6	P	
F /EUT	E2WA7DA2	29.00	6	17423.38	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	6	17423.38	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	6	17423.38	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	6	17423.38	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	6	17423.38	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	6	17423.38	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	6	17423.38	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FIN	FIN10300	5.00	6	17423.38	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
GNB	GNB30400	-30.00	6	17423.38	-15.00	12.00	0.90	0.60	172.00	MODRSS		47.12		MODTES	CR		84.00		27M0F8W			P	
IND	IND04500	56.00	6	17423.38	76.20	19.50	1.58	1.58	21.00	MODRSS		40.47		MODTES	CR		84.00		27M0F8W			P	1
INS	INS02800	80.20	6	17423.38	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
IRL	IRL21100	-33.50	6	17423.38	-8.20	53.20	0.84	0.60	162.00	MODRSS		47.42		MODTES	CL		84.00		27M0F8W			P	5, 6
KOR	KOR11200	110.00	6	17423.38	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	CL		89.00		27M0F8W			P	
LAO	LAO28400	74.00	6	17423.38	103.70	18.10	2.16	0.78	133.00	MODRSS		42.18		MODTES	CR		84.00		27M0F8W			P	
MAU	MAU24200	29.00	6	17423.38	59.80	-18.90	1.62	1.24	55.00	MODRSS		41.42		MODTES	CL		84.00		27M0F8W			P	
MHL	MHL00000	146.00	6	17423.38	167.64	9.83	2.07	0.90	157.42	MODRSS		41.75		MODTES	CL		84.00		27M0F8W			P	
MKD	MKD14800	23.00	6	17423.38	21.53	41.50	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA22800	86.00	6	17423.38	114.10	3.90	2.34	1.12	45.00	MODRSS		40.26		MODTES	CL		84.00		27M0F8W			P	
MLI	MLI32700	-37.00	6	17423.38	-2.00	19.00	2.66	1.26	127.00	MODRSS		39.19		MODTES	CL		87.00		27M0F8W			P	
NOR	BIFROS22	-0.80	6	17423.38	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NZL	CKH05200	158.00	6	17423.38	-161.00	-19.80	1.02	0.64	132.00	MODRSS		46.30		MODTES	CR		84.00		27M0F8W		3	P	
NZL	CKH05201	158.00	6	17423.38	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		3	P	
PAK	PAK12700	38.00	6	17423.38	69.60	29.50	2.30	2.16	14.00	MODRSS		37.49		MODTES	CL		84.00		27M0F8W			P	
SOM	SOM31200	23.00	6	17423.38	45.00	6.40	3.26	1.54	71.00	MODRSS		37.44		MODTES	CL		84.00		27M0F8W			P	
TCD	TCD14300	-13.00	6	17423.38	18.10	15.50	3.40	1.72	107.00	MODRSS		36.78		MODTES	CR		84.00		27M0F8W			P	
TUV	TUV00000	176.00	6	17423.38	177.61	-7.11	0.94	0.60	137.58	MODRSS		46.93		MODTES	CR		84.00		27M0F8W			P	
YEM	YEM26600	11.00	6	17423.38	44.36	15.70	0.77	0.60	104.23	MODRSS		47.78		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32300	-19.00	6	17423.38	21.30	-6.80	2.80	1.52	149.00	MODRSS		38.16		MODTES	CL		84.00		27M0F8W			P	
AFG	AFG24500	50.00	7	17442.56	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00400	152.00	7	17442.56	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040A	152.00	7	17442.56	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040B	152.00	7	17442.56	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040C	152.00	7	17442.56	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS00700	164.00	7	17442.56	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		77	P	
AUS	AUS0070A	164.00	7	17442.56	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		77	P	
BEN	BEN23300	-19.00	7	17442.56	2.20	9.50	1.44	0.68	97.00	MODRSS		44.54		MODTES	CR		84.00		27M0F8W			P	
BRU	BRU3300A	74.00	7	17442.56	114.70	4.40	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
CHN	CHN15700	62.00	7	17442.56	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16000	92.00	7	17442.56	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CR		84.00		27M0F8W			P	
COM	COM20700	29.00	7	17442.56	44.10	-12.10	0.76	0.60	149.00	MODRSS		47.86		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2733	-7.00	7	17442.56	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		84.00		27M0F9W	RADIOSAT-2	19	A	
F /EUT	E2WA7DA1	29.00	7	17442.56	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	7	17442.56	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	7	17442.56	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	7	17442.56	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	7	17442.56	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	7	17442.56	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	7	17442.56	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FSM	FSM00000	146.00	7	17442.56	151.67	5.42	5.34	1.51	166.52	MODRSS		35.37		MODTES	CR		84.00		27M0F8W			P	
GAB	GAB26000	-13.00	7	17442.56	11.80	-0.60	1.43	1.12	64.00	MODRSS		42.40		MODTES	CL		84.00		27M0F8W			P	
GMB	GMB30200	-37.00	7	17442.56	-15.10	13.40	0.79	0.60	4.00	MODRSS		47.69		MODTES	CR		83.00		27M0F8W			P	
GRC	GRC10500	5.00	7	17442.56	24.50	38.00	2.03	1.29	159.00	MODRSS		40.27		MODTES	CL		84.00		27M0F8W			P	
IND	IND04700	68.00	7	17442.56	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03600	104.00	7	17442.56	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
IRN	IRN10900	34.00	7	17442.56	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		84.00		27M0F8W			P	
J	000BS-3N	109.85	7	17442.56	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	7	17442.56	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
KIR	KIR00001	176.00	7	17442.56	177.16	-0.79	4.47	1.27	163.00	MODRSS		36.91		MODTES	CL		84.00		27M0F8W			P	
LBN	LBN27900	11.00	7	17442.56	35.90	33.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
LBR	LBR24400	-33.50	7	17442.56	-9.30	6.60	1.22	0.70	133.00	MODRSS		45.13		MODTES	CL		84.00		27M0F8W			P	5, 6
LBY	LBY32100	-25.00	7	17442.56	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
LIE	LIE25300	-37.00	7	17442.56	9.50	47.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
LTU	LTU06100	23.00	7	17442.56	24.02	55.46	0.72	0.60	173.90	MODRSS		48.11		MODTES	CR		84.00		27M0F8W			P	
LUX	LUX11400	-19.00	7	17442.56	6.00	49.80	0.68	0.68	0.00	MODRSS		47.80		MODTES	CL		84.00		27M0F8W			P	
NRU	NRU30900	134.00	7	17442.56	167.00	-0.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
POR	POR13300	-30.00	7	17442.56	-8.00	39.60	0.92	0.60	112.00	MODRSS		47.03		MODTES	CR		84.00		27M0F8W			P	
ROU	ROU13600	-1.00	7	17442.56	25.00	45.70	1.38	0.66	155.00	MODRSS		44.85		MODTES	CR		86.00		27M0F8W			P	
SMO	SMO05700	158.00	7	17442.56	-172.30	-13.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SVK	SVK14400	17.00	7	17442.56	19.65	48.69	0.82	0.60	5.20	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
UKR	UKR06300	38.00	7	17442.56	31.82	48.19	2.32	0.95	177.32	MODRSS		41.01		MODTES	CR		84.00		27M0F8W			P	
USA	MRA33200	122.00	7	17442.56	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CL		87.00		27M0F8W		14	P	
USA	MRA33201	122.00	7	17442.56	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CL		87.00		27M0F8W		14	P	
USA	SMA33500	170.00	7	17442.56	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CR		87.00		27M0F8W		13	P	
USA	SMA33501	170.00	7	17442.56	-124.80	39.20	4.43	0.73	132.00	MODRSS		39.35		MODTES	CR		87.00		27M0F8W		13	P	
UZB	UZB07100	44.00	7	17442.56	64.01	41.21	2.67	0.96	163.32	MODRSS		40.37		MODTES	CR		84.00		27M0F8W			P	
VTN	VTN32500	86.00	7	17442.56	108.00	14.80	3.80	1.90	126.00	MODRSS		35.86		MODTES	CR		84.00		27M0F8W			P	
VUT	VUT12800	140.00	7	17442.56	168.00	-16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	CR		84.00		27M0F8W			P	
ALG	ALG25200	-25.00	8	17461.74	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
AND	AND34100	-37.00	8	17461.74	1.60	42.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
ARS	ARS00300	17.00	8	17461.74	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00500	152.00	8	17461.74	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
AUT	AUT01600	-19.00	8	17461.74	12.20	47.50	1.14	0.63	166.00	MODRSS		45.88		MODTES	CR		84.00		27M0F8W			P	
AZE	AZE06400	23.00	8	17461.74	47.47	40.14	0.93	0.60	158.14	MODRSS		46.98		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major	Space Antenna Character. Minor°	Space Antenna Character. Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	Space Ant. Gain X-pol.	Earth Antenna	Polarization Typ.	Polarization Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
BUL	BUL02000	-1.00	8	17461.74	25.00	43.00	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15600	62.00	8	17461.74	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17300	92.00	8	17461.74	115.70	27.40	1.14	0.94	99.00	MODRSS		44.15		MODTES	CL		84.00		27M0F8W			P	
EGY	EGY02600	-7.00	8	17461.74	29.70	26.80	2.33	1.72	136.00	MODRSS		38.42		MODTES	CR		86.00		27M0F8W			P	
F	F2_A2744	-7.00	8	17461.74	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	OCE10100	-160.00	8	17461.74	-145.00	-16.30	4.34	3.54	4.00	MODRSS		32.58		MODTES	CR		84.00		27M0F8W			P	
F /EUT	E2WA7DA2	29.00	8	17461.74	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	8	17461.74	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	8	17461.74	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	8	17461.74	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	8	17461.74	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	8	17461.74	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	8	17461.74	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G 02700	-33.50	8	17461.74	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.23		MODTES	CL		84.00		27M0F8W			P	5, 6
IND	IND04000	56.00	8	17461.74	73.00	25.00	1.82	1.48	58.00	MODRSS		40.14		MODTES	CR		84.00		27M0F8W			P	1
INS	INS02800	80.20	8	17461.74	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
KOR	KOR11200	110.00	8	17461.74	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	CL		89.00		27M0F8W			P	
LAO	LAO28400	74.00	8	17461.74	103.70	18.10	2.16	0.78	133.00	MODRSS		42.18		MODTES	CR		84.00		27M0F8W			P	
MAU	MAU24300	29.00	8	17461.74	56.80	-13.90	1.56	1.38	65.00	MODRSS		41.12		MODTES	CL		84.00		27M0F8W			P	
MDA	MDA06300	38.00	8	17461.74	28.41	46.99	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA22800	86.00	8	17461.74	114.10	3.90	2.34	1.12	45.00	MODRSS		40.26		MODTES	CL		84.00		27M0F8W			P	
MLD	MLD3060A	44.00	8	17461.74	73.10	6.00	0.96	0.60	90.00	MODRSS		46.84		MODTES	CR		84.00		27M0F8W			P	
MLI	MLI32800	-37.00	8	17461.74	-7.60	13.20	1.74	1.24	171.00	MODRSS		41.11		MODTES	CL		87.00		27M0F8W			P	
MLT	MLT14700	-13.00	8	17461.74	14.30	35.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
NZL	CKH05300	158.00	8	17461.74	-161.00	-19.80	1.00	0.60	132.00	MODRSS		46.67		MODTES	CR		84.00		27M0F8W		4	P	
NZL	CKH05301	158.00	8	17461.74	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		4	P	
PAK	PAK28300	38.00	8	17461.74	74.70	33.90	1.34	1.13	160.00	MODRSS		42.65		MODTES	CL		84.00		27M0F8W			P	
PLW	PLW00000	146.00	8	17461.74	132.99	5.52	1.29	0.60	55.84	MODRSS		45.55		MODTES	CL		84.00		27M0F8W			P	
RRW	RRW31000	11.00	8	17461.74	30.00	-2.10	0.66	0.60	42.00	MODRSS		48.47		MODTES	CR		84.00		27M0F8W			P	
S	S 13800	5.00	8	17461.74	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W		27	P	
S	SIRIUS01	5.20	8	17461.74	14.00	63.00	1.30	0.70	142.00	R13RSS		43.00		R13TES	CL		84.00		27M0F8W	SIRIUS	27	AE	
SVN	SVN14800	34.00	8	17461.74	15.01	46.18	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32200	-19.00	8	17461.74	22.40	0.00	2.16	1.88	48.00	MODRSS		38.36		MODTES	CL		84.00		27M0F8W			P	
AFG	AFG24600	50.00	9	17480.92	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
BLR	BLR06200	38.00	9	17480.92	28.04	53.18	1.17	0.60	9.68	MODRSS		45.96		MODTES	CR		84.00		27M0F8W			P	
BTN	BTN03100	86.00	9	17480.92	90.44	27.05	0.72	0.60	175.47	MODRSS		48.11		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15500	62.00	9	17480.92	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16200	92.00	9	17480.92	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16500	79.80	9	17480.92	111.40	41.80	1.58	1.20	15.00	MODRSS		41.67		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN19000	122.00	9	17480.92	114.17	23.32	0.91	0.60	2.88	MODRSS		47.08		MODTES	CL		84.00		27M0F8W			P	
CME	CME30000	-13.00	9	17480.92	12.70	6.20	2.54	1.68	87.00	MODRSS		38.15		MODTES	CL		84.00		27M0F8W			P	
E	E 12900	-30.00	9	17480.92	-3.10	39.90	2.10	1.14	154.00	MODRSS		40.66		MODTES	CR		84.00		27M0F8W		17	P	
E	HISPASA4	-30.00	9	17480.92	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		82.50		27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	9	17480.92	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		83.50		27M0F8W	HISPASAT-1	17	AE	
EST	EST06100	23.00	9	17480.92	25.36	59.31	0.68	0.60	2.17	MODRSS		48.37		MODTES	CR		84.00		27M0F8W			P	
F	F 09300	-19.00	9	17480.92	2.60	45.90	2.50	0.98	160.00	R13RSS		40.56		R13TES	CL		84.00		27M0F8W		19	PE	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F /EUT	E2WA7DA1	29.00	9	17480.92	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	9	17480.92	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	9	17480.92	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	9	17480.92	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	9	17480.92	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	9	17480.92	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	9	17480.92	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FJI	FJI19300	152.00	9	17480.92	179.40	-17.90	1.04	0.98	67.00	MODRSS		44.36		MODTES	CL		84.00		27M0F8W			P	
GUI	GUI19200	-37.00	9	17480.92	-11.00	10.20	1.58	1.04	147.00	MODRSS		42.29		MODTES	CR		85.00		27M0F8W			P	
HRV	HRV14800	34.00	9	17480.92	16.74	44.54	0.88	0.69	5.30	MODRSS		46.57		MODTES	CR		84.00		27M0F8W			P	
IND	IND03900	56.00	9	17480.92	72.70	11.20	1.26	0.60	107.00	MODRSS		45.66		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03500	104.00	9	17480.92	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
J	000BS-3N	109.85	9	17480.92	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	9	17480.92	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
LBY	LBY28000	-25.00	9	17480.92	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
MDG	MDG23600	29.00	9	17480.92	46.20	-18.60	2.57	0.80	67.00	MODRSS		41.32		MODTES	CR		84.00		27M0F8W			P	
NZL	NZL05500	158.00	9	17480.92	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CL		84.00		27M0F8W			P	
POL	POL13200	-1.00	9	17480.92	17.20	51.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		87.00		27M0F8W			P	
QAT	QAT24700	17.00	9	17480.92	51.10	25.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SLM	SLM00000	146.00	9	17480.92	159.32	-8.40	1.50	1.18	140.48	MODRSS		41.98		MODTES	CR		84.00		27M0F8W			P	
SMR	SMR31100	-37.00	9	17480.92	12.50	43.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
SWZ	SWZ31300	-1.00	9	17480.92	31.50	-26.50	0.62	0.60	66.00	MODRSS		48.74		MODTES	CL		82.00		27M0F8W			P	
THA	THA14200	74.00	9	17480.92	100.70	13.20	2.82	1.54	106.00	MODRSS		38.07		MODTES	CL		84.00		27M0F8W			P	
TJK	TJK06900	44.00	9	17480.92	71.14	38.37	1.25	0.76	159.15	MODRSS		44.65		MODTES	CR		84.00		27M0F8W			P	
TUR	TUR14500	5.00	9	17480.92	34.30	39.00	3.13	1.38	168.00	MODRSS		38.09		MODTES	CL		84.00		27M0F8W			P	
TZA	TZA22500	11.00	9	17480.92	34.60	-6.20	2.41	1.72	129.00	MODRSS		38.27		MODTES	CL		84.00		27M0F8W			P	
USA	PLM33700	170.00	9	17480.92	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CL		87.00		27M0F8W		9	P	
USA	PLM33701	170.00	9	17480.92	-124.80	39.10	4.43	0.73	132.00	MODRSS		39.35		MODTES	CL		87.00		27M0F8W		9	P	
USA	WAK33400	140.00	9	17480.92	152.50	11.70	7.89	3.52	0.00	MODRSS		30.01		MODTES	CR		87.00		27M0F8W		11	P	
USA	WAK33401	140.00	9	17480.92	-157.50	21.00	1.63	0.67	131.00	MODRSS		44.06		MODTES	CL		87.00		27M0F8W		11	P	
YUG	YUG14800	-7.00	9	17480.92	20.50	43.98	0.91	0.60	145.16	MODRSS		47.07		MODTES	CL		84.00		27M0F8W			P	
	YYY00001	11.00	9	17480.92	34.99	31.86	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	8
ALG	ALG25100	-25.00	10	17500.10	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
ARS	ARS27500	17.00	10	17500.10	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00800	164.00	10	17500.10	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CL		87.00		27M0F8W			P	
BIH	BIH14800	34.00	10	17500.10	17.77	44.32	0.62	0.60	166.84	MODRSS		48.71		MODTES	CL		84.00		27M0F8W			P	
BOT	BOT29700	-1.00	10	17500.10	23.30	-22.20	2.13	1.50	36.00	MODRSS		39.40		MODTES	CR		85.00		27M0F8W			P	
CHN	CHN15400	62.00	10	17500.10	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17100	92.00	10	17500.10	117.20	32.00	1.20	0.74	126.00	MODRSS		44.96		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN18700	79.80	10	17500.10	106.60	26.70	1.14	0.94	179.00	MODRSS		44.15		MODTES	CR		84.00		27M0F8W			P	
CLN	CLN21900	50.00	10	17500.10	80.60	7.70	1.18	0.60	106.00	MODRSS		45.95		MODTES	CL		84.00		27M0F8W			P	
D	D 08700	-19.00	10	17500.10	9.60	49.90	1.62	0.72	147.00	MODRSS		43.78		MODTES	CR		84.00		27M0F8W			P	2
F	F2_A2722	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position[1]	Channel	Centre Frequency	Boresight Long.[2]	Boresight Lat.[2]	Space Antenna Character. Major[2]	Minor[2]	Orient.[2]	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F	F3_A2728	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_A3328	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	10	17500.10	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	10	17500.10	166.00	-21.00	1.14	0.72	146.00	MODRSS		45.30		MODTES	CL		84.00		27M0F8W		6	P	
F	NCL10001	140.00	10	17500.10	-177.10	-13.60	1.22	0.60	46.00	MODRSS		45.80		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10200	140.00	10	17500.10	-176.80	-14.00	0.74	0.60	29.00	MODRSS		47.97		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10201	140.00	10	17500.10	166.10	-21.30	1.31	0.82	133.00	MODRSS		44.16		MODTES	CL		84.00		27M0F8W		6	P	
F /EUT	E2WA7DA2	29.00	10	17500.10	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	10	17500.10	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	10	17500.10	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	10	17500.10	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	10	17500.10	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	10	17500.10	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	10	17500.10	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FIN	FIN10300	5.00	10	17500.10	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
GNB	GNB30400	-30.00	10	17500.10	-15.00	12.00	0.90	0.60	172.00	MODRSS		47.12		MODTES	CR		84.00		27M0F8W			P	
IND	IND03700	68.00	10	17500.10	93.00	25.50	1.46	1.13	40.00	MODRSS		42.27		MODTES	CR		84.00		27M0F8W			P	1
IRL	IRL21100	-33.50	10	17500.10	-8.20	53.20	0.84	0.60	162.00	MODRSS		47.42		MODTES	CL		84.00		27M0F8W			P	5, 6
KOR	KOR11200	110.00	10	17500.10	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	CL		89.00		27M0F8W			P	
LAO	LAO28400	74.00	10	17500.10	103.70	18.10	2.16	0.78	133.00	MODRSS		42.18		MODTES	CR		84.00		27M0F8W			P	
MAU	MAU24200	29.00	10	17500.10	59.80	-18.90	1.62	1.24	55.00	MODRSS		41.42		MODTES	CL		84.00		27M0F8W			P	
MHL	MHL00000	146.00	10	17500.10	167.64	9.83	2.07	0.90	157.42	MODRSS		41.75		MODTES	CL		84.00		27M0F8W			P	
MKD	MKD14800	23.00	10	17500.10	21.53	41.50	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA2280A	86.00	10	17500.10	114.10	3.90	2.34	1.12	45.00	MODRSS		40.26		MODTES	CL		84.00		27M0F8W			P	
MLI	MLI32700	-37.00	10	17500.10	-2.00	19.00	2.66	1.26	127.00	MODRSS		39.19		MODTES	CL		87.00		27M0F8W			P	
NOR	BIFROS22	-0.80	10	17500.10	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NZL	CKH05200	158.00	10	17500.10	-161.00	-19.80	1.02	0.64	132.00	MODRSS		46.30		MODTES	CR		84.00		27M0F8W		3	P	
NZL	CKH05201	158.00	10	17500.10	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		3	P	
PAK	PAK12700	38.00	10	17500.10	69.60	29.50	2.30	2.16	14.00	MODRSS		37.49		MODTES	CL		84.00		27M0F8W			P	
SOM	SOM31200	23.00	10	17500.10	45.00	6.40	3.26	1.54	71.00	MODRSS		37.44		MODTES	CL		84.00		27M0F8W			P	
TCD	TCD14300	-13.00	10	17500.10	18.10	15.50	3.40	1.72	107.00	MODRSS		36.78		MODTES	CR		84.00		27M0F8W			P	
TUV	TUV00000	176.00	10	17500.10	177.61	-7.11	0.94	0.60	137.58	MODRSS		46.93		MODTES	CR		84.00		27M0F8W			P	
YEM	YEM26600	11.00	10	17500.10	44.36	15.70	0.77	0.60	104.23	MODRSS		47.78		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32300	-19.00	10	17500.10	21.30	-6.80	2.80	1.52	149.00	MODRSS		38.16		MODTES	CL		84.00		27M0F8W			P	
AFG	AFG24500	50.00	11	17519.28	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00400	152.00	11	17519.28	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040A	152.00	11	17519.28	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040B	152.00	11	17519.28	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040C	152.00	11	17519.28	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS00700	164.00	11	17519.28	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		77	P	
AUS	AUS0070A	164.00	11	17519.28	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		77	P	
BEN	BEN23300	-19.00	11	17519.28	2.20	9.50	1.44	0.68	97.00	MODRSS		44.54		MODTES	CR		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
BRU	BRU3300A	74.00	11	17519.28	114.70	4.40	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15700	62.00	11	17519.28	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16000	92.00	11	17519.28	108.10	33.70	5.00	4.00	148.00	MODRSS		31.44		MODTES	CR		84.00		27M0F8W			P	
COM	COM20700	29.00	11	17519.28	44.10	-12.10	0.76	0.60	149.00	MODRSS		47.86		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2733	-7.00	11	17519.28	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		84.00		27M0F9W	RADIOSAT-2	19	A	
F /EUT	E2WA7DA1	29.00	11	17519.28	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	11	17519.28	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	11	17519.28	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	11	17519.28	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	11	17519.28	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	11	17519.28	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	11	17519.28	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FSM	FSM00000	146.00	11	17519.28	151.67	5.42	5.34	1.51	166.52	MODRSS		35.37		MODTES	CR		84.00		27M0F8W			P	
GAB	GAB26000	-13.00	11	17519.28	11.80	-0.60	1.43	1.12	64.00	MODRSS		42.40		MODTES	CL		84.00		27M0F8W			P	
GMB	GMB30200	-37.00	11	17519.28	-15.10	13.40	0.79	0.60	4.00	MODRSS		47.69		MODTES	CR		83.00		27M0F8W			P	
GRC	GRC10500	5.00	11	17519.28	24.50	38.00	2.03	1.29	159.00	MODRSS		40.27		MODTES	CL		84.00		27M0F8W			P	
IND	IND04300	56.00	11	17519.28	77.80	11.10	1.36	1.28	172.00	MODRSS		42.04		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03600	104.00	11	17519.28	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
IRN	IRN10900	34.00	11	17519.28	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		84.00		27M0F8W			P	
J	000BS-3N	109.85	11	17519.28	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	11	17519.28	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
KIR	KIR00001	176.00	11	17519.28	177.16	-0.79	4.47	1.27	163.00	MODRSS		36.91		MODTES	CL		84.00		27M0F8W			P	
LBN	LBN27900	11.00	11	17519.28	35.90	33.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
LBR	LBR24400	-33.50	11	17519.28	-9.30	6.60	1.22	0.70	133.00	MODRSS		45.13		MODTES	CL		84.00		27M0F8W			P	5, 6
LBY	LBY32100	-25.00	11	17519.28	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
LIE	LIE25300	-37.00	11	17519.28	9.50	47.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
LTU	LTU06100	23.00	11	17519.28	24.02	55.46	0.72	0.60	173.90	MODRSS		48.11		MODTES	CR		84.00		27M0F8W			P	
LUX	LUX11400	-19.00	11	17519.28	6.00	49.80	0.68	0.68	0.00	MODRSS		47.80		MODTES	CL		84.00		27M0F8W			P	
NRU	NRU30900	134.00	11	17519.28	167.00	-0.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
POR	POR13300	-30.00	11	17519.28	-8.00	39.60	0.92	0.60	112.00	MODRSS		47.03		MODTES	CR		84.00		27M0F8W			P	
ROU	ROU13600	-1.00	11	17519.28	25.00	45.70	1.38	0.66	155.00	MODRSS		44.85		MODTES	CR		86.00		27M0F8W			P	
SMO	SMO05700	158.00	11	17519.28	-172.30	-13.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SVK	SVK14400	17.00	11	17519.28	19.65	48.69	0.82	0.60	5.20	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
UKR	UKR06300	38.00	11	17519.28	31.82	48.19	2.32	0.95	177.32	MODRSS		41.01		MODTES	CR		84.00		27M0F8W			P	
USA	MRA33200	122.00	11	17519.28	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CL		87.00		27M0F8W		14	P	
USA	MRA33201	122.00	11	17519.28	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CL		87.00		27M0F8W		14	P	
USA	SMA33500	170.00	11	17519.28	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CR		87.00		27M0F8W		13	P	
USA	SMA33501	170.00	11	17519.28	-124.80	39.20	4.43	0.73	132.00	MODRSS		39.35		MODTES	CR		87.00		27M0F8W		13	P	
UZB	UZB07100	44.00	11	17519.28	64.01	41.21	2.67	0.96	163.32	MODRSS		40.37		MODTES	CR		84.00		27M0F8W			P	
VTN	VTN32500	86.00	11	17519.28	108.00	14.80	3.80	1.90	126.00	MODRSS		35.86		MODTES	CR		84.00		27M0F8W			P	
VUT	VUT12800	140.00	11	17519.28	168.00	-16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	CR		84.00		27M0F8W			P	
ALG	ALG25200	-25.00	12	17538.46	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
AND	AND34100	-37.00	12	17538.46	1.60	42.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
ARS	ARS00300	17.00	12	17538.46	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00500	152.00	12	17538.46	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
AUT	AUT01600	-19.00	12	17538.46	12.20	47.50	1.14	0.63	166.00	MODRSS		45.88		MODTES	CR		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm	Beam	Orbital	Chan	Centre	Boresight		Space Antenna Character.			Space	Shap.	Space Ant. Gain		Earth	Polarization		EIRP	Power	Designation	Satellite	Group	Status	Re-
Symb	Identification	Position	nel	Frequency	Long.°	Lat.°	Major°	Minor°	Orient.°	Antenna	Beam	Co-pol.	X-pol.	Antenna	Typ.	Angle	dBW	Control	of Emission	Identification	Code		marks
AZE	AZE06400	23.00	12	17538.46	47.47	40.14	0.93	0.60	158.14	MODRSS		46.98		MODTES	CL		84.00		27M0F8W			P	
BGD	BGD22000	74.00	12	17538.46	90.30	23.60	1.46	0.84	135.00	MODRSS		43.56		MODTES	CR		84.00		27M0F8W			P	
BUL	BUL02000	-1.00	12	17538.46	25.00	43.00	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15600	62.00	12	17538.46	101.90	33.50	5.10	2.80	143.00	MODRSS		32.90		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17000	92.00	12	17538.46	119.50	33.00	1.34	0.64	155.00	MODRSS		45.11		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17800	79.80	12	17538.46	111.50	27.40	1.22	0.86	130.00	MODRSS		44.24		MODTES	CR		84.00		27M0F8W			P	
DNK	DNK08900	5.00	12	17538.46	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W		28	P	
EGY	EGY02600	-7.00	12	17538.46	29.70	26.80	2.33	1.72	136.00	MODRSS		38.42		MODTES	CR		86.00		27M0F8W			P	
F	F2_A2744	-7.00	12	17538.46	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	OCE10100	-160.00	12	17538.46	-145.00	-16.30	4.34	3.54	4.00	MODRSS		32.58		MODTES	CR		84.00		27M0F8W			P	
F /EUT	E2WA7DA2	29.00	12	17538.46	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	12	17538.46	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	12	17538.46	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	12	17538.46	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	12	17538.46	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	12	17538.46	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	12	17538.46	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G_02700	-33.50	12	17538.46	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.23		MODTES	CL		84.00		27M0F8W			P	5, 6
IND	IND04800	68.00	12	17538.46	86.20	25.00	1.56	0.90	120.00	MODRSS		42.97		MODTES	CR		86.00		27M0F8W			P	1
KOR	KOR11200	110.00	12	17538.46	127.50	36.00	1.24	1.02	168.00	MODRSS		43.43		MODTES	CL		89.00		27M0F8W			P	
MAU	MAU24300	29.00	12	17538.46	56.80	-13.90	1.56	1.38	65.00	MODRSS		41.12		MODTES	CL		84.00		27M0F8W			P	
MDA	MDA06300	38.00	12	17538.46	28.41	46.99	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLD	MLD30600	44.00	12	17538.46	73.10	6.00	0.96	0.60	90.00	MODRSS		46.84		MODTES	CR		84.00		27M0F8W			P	
MLI	MLI32800	-37.00	12	17538.46	-7.60	13.20	1.74	1.24	171.00	MODRSS		41.11		MODTES	CL		87.00		27M0F8W			P	
MLT	MLT14700	-13.00	12	17538.46	14.30	35.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
NZL	CKH05300	158.00	12	17538.46	-161.00	-19.80	1.00	0.60	132.00	MODRSS		46.67		MODTES	CR		84.00		27M0F8W		4	P	
NZL	CKH05301	158.00	12	17538.46	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		4	P	
PAK	PAK21000	38.00	12	17538.46	72.10	30.80	1.16	0.72	90.00	MODRSS		45.23		MODTES	CL		84.00		27M0F8W			P	
PLW	PLW00000	146.00	12	17538.46	132.99	5.52	1.29	0.60	55.84	MODRSS		45.55		MODTES	CL		84.00		27M0F8W			P	
RRW	RRW31000	11.00	12	17538.46	30.00	-2.10	0.66	0.60	42.00	MODRSS		48.47		MODTES	CR		84.00		27M0F8W			P	
S	SIRIUS02	5.20	12	17538.46	14.00	63.00	1.30	0.70	142.00	R13RSS		43.00		R13TES	CL		84.00		27M0F8W	SIRIUS	28	AE	
SVN	SVN14800	34.00	12	17538.46	15.01	46.18	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32200	-19.00	12	17538.46	22.40	0.00	2.16	1.88	48.00	MODRSS		38.36		MODTES	CL		84.00		27M0F8W			P	
AFG	AFG24600	50.00	13	17557.64	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
BLR	BLR06200	38.00	13	17557.64	28.04	53.18	1.17	0.60	9.68	MODRSS		45.96		MODTES	CR		84.00		27M0F8W			P	
BTN	BTN03100	86.00	13	17557.64	90.44	27.05	0.72	0.60	175.47	MODRSS		48.11		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15501	62.00	13	17557.64	88.30	31.50	3.38	1.45	162.00	MODRSS		37.54		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN18000	92.00	13	17557.64	113.10	23.10	4.70	3.50	96.00	MODRSS		32.29		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN19000	122.00	13	17557.64	114.17	23.32	0.91	0.60	2.88	MODRSS		47.08		MODTES	CL		84.00		27M0F8W			P	
CME	CME30000	-13.00	13	17557.64	12.70	6.20	2.54	1.68	87.00	MODRSS		38.15		MODTES	CL		84.00		27M0F8W			P	
E	E_12900	-30.00	13	17557.64	-3.10	39.90	2.10	1.14	154.00	MODRSS		40.66		MODTES	CR		84.00		27M0F8W		17	P	
E	HISPASA4	-30.00	13	17557.64	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		82.50		27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	13	17557.64	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		83.50		27M0F8W	HISPASAT-1	17	AE	
EST	EST06100	23.00	13	17557.64	25.36	59.31	0.68	0.60	2.17	MODRSS		48.37		MODTES	CR		84.00		27M0F8W			P	
F	F_09300	-19.00	13	17557.64	2.60	45.90	2.50	0.98	160.00	R13RSS		40.56		R13TES	CL		84.00		27M0F8W		19	PE	
F /EUT	E2WA7DA1	29.00	13	17557.64	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position°	Chan nel	Centre Frequency	Boresight Long.°	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F /EUT	E2WA7DB1	29.00	13	17557.64	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	13	17557.64	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	13	17557.64	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	13	17557.64	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	13	17557.64	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	13	17557.64	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FJI	FJI1930A	152.00	13	17557.64	179.40	-17.90	1.04	0.98	67.00	MODRSS		44.36		MODTES	CL		84.00		27M0F8W			P	
GUI	GUI19200	-37.00	13	17557.64	-11.00	10.20	1.58	1.04	147.00	MODRSS		42.29		MODTES	CR		85.00		27M0F8W			P	
HRV	HRV14800	34.00	13	17557.64	16.74	44.54	0.88	0.69	5.30	MODRSS		46.57		MODTES	CR		84.00		27M0F8W			P	
IND	IND04400	68.00	13	17557.64	79.50	22.30	2.19	1.42	146.00	MODRSS		39.52		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03500	104.00	13	17557.64	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
J	000BS-3N	109.85	13	17557.64	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	13	17557.64	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
LBY	LBY28000	-25.00	13	17557.64	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
MDG	MDG23600	29.00	13	17557.64	46.20	-18.60	2.57	0.80	67.00	MODRSS		41.32		MODTES	CR		84.00		27M0F8W			P	
NZL	NZL05500	158.00	13	17557.64	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CL		84.00		27M0F8W			P	
NZL	NZL28700	128.00	13	17557.64	173.00	-41.00	3.30	1.28	48.00	MODRSS		38.19		MODTES	CL		84.00		27M0F8W			P	
POL	POL13200	-1.00	13	17557.64	17.20	51.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		87.00		27M0F8W			P	
QAT	QAT24700	17.00	13	17557.64	51.10	25.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SLM	SLM00000	146.00	13	17557.64	159.32	-8.40	1.50	1.18	140.48	MODRSS		41.98		MODTES	CR		84.00		27M0F8W			P	
SMR	SMR31100	-37.00	13	17557.64	12.50	43.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
SWZ	SWZ31300	-1.00	13	17557.64	31.50	-26.50	0.62	0.60	66.00	MODRSS		48.74		MODTES	CL		82.00		27M0F8W			P	
THA	THA14200	74.00	13	17557.64	100.70	13.20	2.82	1.54	106.00	MODRSS		38.07		MODTES	CL		84.00		27M0F8W			P	
TJK	TJK06900	44.00	13	17557.64	71.14	38.37	1.25	0.76	159.15	MODRSS		44.65		MODTES	CR		84.00		27M0F8W			P	
TUR	TUR14500	5.00	13	17557.64	34.30	39.00	3.13	1.38	168.00	MODRSS		38.09		MODTES	CL		84.00		27M0F8W			P	
TZA	TZA22500	11.00	13	17557.64	34.60	-6.20	2.41	1.72	129.00	MODRSS		38.27		MODTES	CL		84.00		27M0F8W			P	
USA	PLM33700	170.00	13	17557.64	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CL		87.00		27M0F8W		9	P	
USA	PLM33701	170.00	13	17557.64	-124.80	39.10	4.43	0.73	132.00	MODRSS		39.35		MODTES	CL		87.00		27M0F8W		9	P	
USA	WAK33400	140.00	13	17557.64	152.50	11.70	7.89	3.52	0.00	MODRSS		30.01		MODTES	CR		87.00		27M0F8W		11	P	
USA	WAK33401	140.00	13	17557.64	-157.50	21.00	1.63	0.67	131.00	MODRSS		44.06		MODTES	CL		87.00		27M0F8W		11	P	
YUG	YUG14800	-7.00	13	17557.64	20.50	43.98	0.91	0.60	145.16	MODRSS		47.07		MODTES	CL		84.00		27M0F8W			P	
	YYY00001	11.00	13	17557.64	34.99	31.86	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	8
ALG	ALG25100	-25.00	14	17576.82	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
ARS	ARS27500	17.00	14	17576.82	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00800	164.00	14	17576.82	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CL		87.00		27M0F8W			P	
BGD	BGD22000	74.00	14	17576.82	90.30	23.60	1.46	0.84	135.00	MODRSS		43.56		MODTES	CR		84.00		27M0F8W			P	
BIH	BIH14800	34.00	14	17576.82	17.77	44.32	0.62	0.60	166.84	MODRSS		48.71		MODTES	CL		84.00		27M0F8W			P	
BOT	BOT29700	-1.00	14	17576.82	23.30	-22.20	2.13	1.50	36.00	MODRSS		39.40		MODTES	CR		85.00		27M0F8W			P	
CHN	CHN15401	62.00	14	17576.82	83.90	40.50	2.75	2.05	177.00	MODRSS		36.94		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17200	92.00	14	17576.82	120.40	29.10	0.96	0.84	123.00	MODRSS		45.38		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN18100	79.80	14	17576.82	108.50	23.80	1.41	1.08	153.00	MODRSS		42.62		MODTES	CR		84.00		27M0F8W			P	
CLN	CLN21900	50.00	14	17576.82	80.60	7.70	1.18	0.60	106.00	MODRSS		45.95		MODTES	CL		84.00		27M0F8W			P	
D	D 08700	-19.00	14	17576.82	9.60	49.90	1.62	0.72	147.00	MODRSS		43.78		MODTES	CR		84.00		27M0F8W			P	2
F	F2_A2722	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F	F3_A2722	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2728	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_A3328	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	14	17576.82	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	NCL10000	140.00	14	17576.82	166.00	-21.00	1.14	0.72	146.00	MODRSS		45.30		MODTES	CL		84.00		27M0F8W		6	P	
F	NCL10001	140.00	14	17576.82	-177.10	-13.60	1.22	0.60	46.00	MODRSS		45.80		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10200	140.00	14	17576.82	-176.80	-14.00	0.74	0.60	29.00	MODRSS		47.97		MODTES	CL		84.00		27M0F8W		6	P	
F	WAL10201	140.00	14	17576.82	166.10	-21.30	1.31	0.82	133.00	MODRSS		44.16		MODTES	CL		84.00		27M0F8W		6	P	
F /EUT	E2WA7DA2	29.00	14	17576.82	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	14	17576.82	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	14	17576.82	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	14	17576.82	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	14	17576.82	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	14	17576.82	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	14	17576.82	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
GNB	GNB30400	-30.00	14	17576.82	-15.00	12.00	0.90	0.60	172.00	MODRSS		47.12		MODTES	CR		84.00		27M0F8W			P	
IND	IND04500	56.00	14	17576.82	76.20	19.50	1.58	1.58	21.00	MODRSS		40.47		MODTES	CR		84.00		27M0F8W			P	1
IRL	IRL21100	-33.50	14	17576.82	-8.20	53.20	0.84	0.60	162.00	MODRSS		47.42		MODTES	CL		84.00		27M0F8W			P	
KRE	KRE28600	110.00	14	17576.82	127.00	39.10	1.30	1.10	31.00	MODRSS		42.89		MODTES	CL		87.00		27M0F8W			P	
MAU	MAU24200	29.00	14	17576.82	59.80	-18.90	1.62	1.24	55.00	MODRSS		41.42		MODTES	CL		84.00		27M0F8W			P	
MHL	MHL00000	146.00	14	17576.82	167.64	9.83	2.07	0.90	157.42	MODRSS		41.75		MODTES	CL		84.00		27M0F8W			P	
MKD	MKD14800	23.00	14	17576.82	21.53	41.50	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLI	MLI32700	-37.00	14	17576.82	-2.00	19.00	2.66	1.26	127.00	MODRSS		39.19		MODTES	CL		87.00		27M0F8W			P	
NOR	BIFROS22	-0.80	14	17576.82	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NOR	NOR12000	5.00	14	17576.82	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
NZL	CKH05200	158.00	14	17576.82	-161.00	-19.80	1.02	0.64	132.00	MODRSS		46.30		MODTES	CR		84.00		27M0F8W		3	P	
NZL	CKH05201	158.00	14	17576.82	172.30	39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		3	P	
PAK	PAK21000	38.00	14	17576.82	72.10	30.80	1.16	0.72	90.00	MODRSS		45.23		MODTES	CL		84.00		27M0F8W			P	
SOM	SOM31200	23.00	14	17576.82	45.00	6.40	3.26	1.54	71.00	MODRSS		37.44		MODTES	CL		84.00		27M0F8W			P	
TCD	TCD14300	-13.00	14	17576.82	18.10	15.50	3.40	1.72	107.00	MODRSS		36.78		MODTES	CR		84.00		27M0F8W			P	
TUV	TUV00000	176.00	14	17576.82	177.61	-7.11	0.94	0.60	137.58	MODRSS		46.93		MODTES	CR		84.00		27M0F8W			P	
YEM	YEM26600	11.00	14	17576.82	44.36	15.70	0.77	0.60	104.23	MODRSS		47.78		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32300	-19.00	14	17576.82	21.30	-6.80	2.80	1.52	149.00	MODRSS		38.16		MODTES	CL		84.00		27M0F8W			P	
AFG	AFG24500	50.00	15	17596.00	67.00	34.30	1.89	1.19	18.00	MODRSS		40.93		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00400	152.00	15	17596.00	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040A	152.00	15	17596.00	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040B	152.00	15	17596.00	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040C	152.00	15	17596.00	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS00700	164.00	15	17596.00	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		77	P	
AUS	AUS0070A	164.00	15	17596.00	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		77	P	
BEN	BEN23300	-19.00	15	17596.00	2.20	9.50	1.44	0.68	97.00	MODRSS		44.54		MODTES	CR		84.00		27M0F8W			P	
BRU	BRU3300A	74.00	15	17596.00	114.70	4.40	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Chan nel	Centre Frequency	Boresight Long.°	Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
CHN	CHN15800	79.80	15	17596.00	106.00	32.50	5.00	3.70	150.00	MODRSS		31.78		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17400	92.00	15	17596.00	118.10	25.90	1.02	0.84	82.00	MODRSS		45.12		MODTES	CR		84.00		27M0F8W			P	
COM	COM20700	29.00	15	17596.00	44.10	-12.10	0.76	0.60	149.00	MODRSS		47.86		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2733	-7.00	15	17596.00	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		84.00		27M0F9W	RADIOSAT-2	19	A	
F /EUT	E2WA7DA1	29.00	15	17596.00	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	15	17596.00	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	15	17596.00	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	15	17596.00	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	15	17596.00	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	15	17596.00	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	15	17596.00	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FSM	FSM00000	146.00	15	17596.00	151.67	5.42	5.34	1.51	166.52	MODRSS		35.37		MODTES	CR		84.00		27M0F8W			P	
GAB	GAB26000	-13.00	15	17596.00	11.80	-0.60	1.43	1.12	64.00	MODRSS		42.40		MODTES	CL		84.00		27M0F8W			P	
GMB	GMB30200	-37.00	15	17596.00	-15.10	13.40	0.79	0.60	4.00	MODRSS		47.69		MODTES	CR		83.00		27M0F8W			P	
GRC	GRC10500	5.00	15	17596.00	24.50	38.00	2.03	1.29	159.00	MODRSS		40.27		MODTES	CL		84.00		27M0F8W			P	
IND	IND04700	68.00	15	17596.00	93.30	11.10	1.92	0.60	96.00	MODRSS		43.83		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03600	104.00	15	17596.00	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
IRN	IRN10900	34.00	15	17596.00	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		84.00		27M0F8W			P	
J	000BS-3N	109.85	15	17596.00	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W	BS-3N	33	AE	
J	J 11100	110.00	15	17596.00	134.50	31.50	3.52	3.30	68.00	R13RSS		33.80		R13TES	CR		87.00		27M0F8W		33	PE	
KIR	KIR00002	176.00	15	17596.00	-157.78	-0.33	2.40	0.64	110.62	MODRSS		42.60		MODTES	CL		84.00		27M0F8W			P	
LBN	LBN27900	11.00	15	17596.00	35.90	33.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
LBR	LBR24400	-33.50	15	17596.00	-9.30	6.60	1.22	0.70	133.00	MODRSS		45.13		MODTES	CL		84.00		27M0F8W			P	
LBY	LBY32100	-25.00	15	17596.00	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
LIE	LIE25300	-37.00	15	17596.00	9.50	47.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
LTU	LTU06100	23.00	15	17596.00	24.02	55.46	0.72	0.60	173.90	MODRSS		48.11		MODTES	CR		84.00		27M0F8W			P	
LUX	LUX11400	-19.00	15	17596.00	6.00	49.80	0.68	0.68	0.00	MODRSS		47.80		MODTES	CL		84.00		27M0F8W			P	
NRU	NRU30900	134.00	15	17596.00	167.00	-0.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
POR	POR13300	-30.00	15	17596.00	-8.00	39.60	0.92	0.60	112.00	MODRSS		47.03		MODTES	CR		84.00		27M0F8W			P	
ROU	ROU13600	-1.00	15	17596.00	25.00	45.70	1.38	0.66	155.00	MODRSS		44.85		MODTES	CR		86.00		27M0F8W			P	
SMO	SMO05700	158.00	15	17596.00	-172.30	-13.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SVK	SVK14400	17.00	15	17596.00	19.65	48.69	0.82	0.60	5.20	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
UKR	UKR06300	38.00	15	17596.00	31.82	48.19	2.32	0.95	177.32	MODRSS		41.01		MODTES	CR		84.00		27M0F8W			P	
USA	MRA33200	122.00	15	17596.00	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CL		87.00		27M0F8W		14	P	
USA	MRA33201	122.00	15	17596.00	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CL		87.00		27M0F8W		14	P	
USA	SMA33500	170.00	15	17596.00	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CR		87.00		27M0F8W		13	P	
USA	SMA33501	170.00	15	17596.00	-124.80	39.20	4.43	0.73	132.00	MODRSS		39.35		MODTES	CR		87.00		27M0F8W		13	P	
UZB	UZB07100	44.00	15	17596.00	64.01	41.21	2.67	0.96	163.32	MODRSS		40.37		MODTES	CR		84.00		27M0F8W			P	
VTN	VTN32500	86.00	15	17596.00	108.00	14.80	3.80	1.90	126.00	MODRSS		35.86		MODTES	CR		84.00		27M0F8W			P	
VUT	VUT12800	140.00	15	17596.00	168.00	-16.40	1.52	0.68	87.00	MODRSS		44.30		MODTES	CR		84.00		27M0F8W			P	
ALG	ALG25200	-25.00	16	17615.18	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
AND	AND34100	-37.00	16	17615.18	1.60	42.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
ARS	ARS00300	17.00	16	17615.18	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00500	152.00	16	17615.18	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
AUT	AUT01600	-19.00	16	17615.18	12.20	47.50	1.14	0.63	166.00	MODRSS		45.88		MODTES	CR		84.00		27M0F8W			P	
AZE	AZE06400	23.00	16	17615.18	47.47	40.14	0.93	0.60	158.14	MODRSS		46.98		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character Major°	Minor°	Orient°	Space Antenna	Shap Beam	Space Ant. Gain Co-pol	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
BUL	BUL02000	-1.00	16	17615.18	25.00	43.00	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN16900	92.00	16	17615.18	118.50	36.40	1.16	0.76	11.00	MODRSS		44.99		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN18600	62.00	16	17615.18	102.50	30.20	1.91	1.23	147.00	MODRSS		40.74		MODTES	CR		84.00		27M0F8W			P	
DNK	DNK08900	5.00	16	17615.18	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W		28	P	
EGY	EGY02600	-7.00	16	17615.18	29.70	26.80	2.33	1.72	136.00	MODRSS		38.42		MODTES	CR		86.00		27M0F8W			P	
F	F2_A2744	-7.00	16	17615.18	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	OCE10100	-160.00	16	17615.18	-145.00	-16.30	4.34	3.54	4.00	MODRSS		32.58		MODTES	CR		84.00		27M0F8W			P	
F /EUT	E2WA7DA2	29.00	16	17615.18	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	16	17615.18	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	16	17615.18	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	16	17615.18	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	16	17615.18	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	16	17615.18	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	16	17615.18	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G_02700	-33.50	16	17615.18	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.23		MODTES	CL		84.00		27M0F8W			P	
IND	IND04000	56.00	16	17615.18	73.00	25.00	1.82	1.48	58.00	MODRSS		40.14		MODTES	CR		84.00		27M0F8W			P	1
KRE	KRE28600	110.00	16	17615.18	127.00	39.10	1.30	1.10	31.00	MODRSS		42.89		MODTES	CL		87.00		27M0F8W			P	
MAU	MAU24300	29.00	16	17615.18	56.80	-13.90	1.56	1.38	65.00	MODRSS		41.12		MODTES	CL		84.00		27M0F8W			P	
MDA	MDA06300	38.00	16	17615.18	28.41	46.99	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA22700	86.00	16	17615.18	102.10	4.10	1.62	0.82	135.00	MODRSS		43.21		MODTES	CL		84.00		27M0F8W			P	
MLD	MLD30600	44.00	16	17615.18	73.10	6.00	0.96	0.60	90.00	MODRSS		46.84		MODTES	CR		84.00		27M0F8W			P	
MLI	MLI32800	-37.00	16	17615.18	-7.60	13.20	1.74	1.24	171.00	MODRSS		41.11		MODTES	CL		87.00		27M0F8W			P	
MLT	MLT14700	-13.00	16	17615.18	14.30	35.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
NZL	CKH05300	158.00	16	17615.18	-161.00	-19.80	1.00	0.60	132.00	MODRSS		46.67		MODTES	CR		84.00		27M0F8W		4	P	
NZL	CKH05301	158.00	16	17615.18	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		4	P	
PHL	PHL28500	98.00	16	17615.18	121.30	11.10	3.46	1.76	99.00	MODRSS		36.60		MODTES	CL		84.00		27M0F8W			P	
PLW	PLW00000	146.00	16	17615.18	132.99	5.52	1.29	0.60	55.84	MODRSS		45.55		MODTES	CL		84.00		27M0F8W			P	
RRW	RRW31000	11.00	16	17615.18	30.00	-2.10	0.66	0.60	42.00	MODRSS		48.47		MODTES	CR		84.00		27M0F8W			P	
S	SIRIUS02	5.20	16	17615.18	14.00	63.00	1.30	0.70	142.00	R13RSS		43.00		R13TES	CL		84.00		27M0F8W	SIRIUS	28	AE	
SVN	SVN14800	34.00	16	17615.18	15.01	46.18	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32200	-19.00	16	17615.18	22.40	0.00	2.16	1.88	48.00	MODRSS		38.36		MODTES	CL		84.00		27M0F8W			P	
BLR	BLR06200	38.00	17	17634.36	28.04	53.18	1.17	0.60	9.68	MODRSS		45.96		MODTES	CR		84.00		27M0F8W			P	
BRM	BRM29800	74.00	17	17634.36	97.10	19.10	3.58	1.48	104.00	MODRSS		37.21		MODTES	CL		84.00		27M0F8W			P	
BTN	BTN03100	86.00	17	17634.36	90.44	27.05	0.72	0.60	175.47	MODRSS		48.11		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN16700	92.00	17	17634.36	124.30	43.70	1.98	0.72	156.00	MODRSS		42.91		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN18200	79.80	17	17634.36	108.70	35.10	1.42	0.88	109.00	MODRSS		43.48		MODTES	CL		84.00		27M0F8W			P	
CME	CME30000	-13.00	17	17634.36	12.70	6.20	2.54	1.68	87.00	MODRSS		38.15		MODTES	CL		84.00		27M0F8W			P	
E	E_12900	-30.00	17	17634.36	-3.10	39.90	2.10	1.14	154.00	MODRSS		40.66		MODTES	CR		84.00		27M0F8W		17	P	
E	HISPASA4	-30.00	17	17634.36	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		82.50		27M0F8W	HISPASAT-1	17	AE	
E	HISPASA6	-30.00	17	17634.36	-3.10	39.90					ECO	43.00	18.70	R13TES	CR		83.50		27M0F8W	HISPASAT-1	17	AE	
EST	EST06100	23.00	17	17634.36	25.36	59.31	0.68	0.60	2.17	MODRSS		48.37		MODTES	CR		84.00		27M0F8W			P	
F	F_09300	-19.00	17	17634.36	2.60	45.90	2.50	0.98	160.00	R13RSS		40.56		R13TES	CL		84.00		27M0F8W		19	PE	
F /EUT	E2WA7DA1	29.00	17	17634.36	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	17	17634.36	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	17	17634.36	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	17	17634.36	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F /EUT	E2WA7DE1	29.00	17	17634.36	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	17	17634.36	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	17	17634.36	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
GUI	GUI19200	-37.00	17	17634.36	-11.00	10.20	1.58	1.04	147.00	MODRSS		42.29		MODTES	CR		85.00		27M0F8W			P	
HRV	HRV14800	34.00	17	17634.36	16.74	44.54	0.88	0.69	5.30	MODRSS		46.57		MODTES	CR		84.00		27M0F8W			P	
IND	IND04600	68.00	17	17634.36	84.70	20.50	1.60	0.86	30.00	MODRSS		43.06		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03200	80.20	17	17634.36	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
LBY	LBY28000	-25.00	17	17634.36	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
MDG	MDG23600	29.00	17	17634.36	46.20	-18.60	2.57	0.80	67.00	MODRSS		41.32		MODTES	CR		84.00		27M0F8W			P	
NPL	NPL12200	50.00	17	17634.36	83.70	28.30	1.72	0.60	163.00	MODRSS		44.31		MODTES	CR		84.00		27M0F8W			P	
NZL	NZL28700	128.00	17	17634.36	173.00	-41.00	3.30	1.28	48.00	MODRSS		38.19		MODTES	CL		84.00		27M0F8W			P	
POL	POL13200	-1.00	17	17634.36	17.20	51.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		87.00		27M0F8W			P	
QAT	QAT24700	17.00	17	17634.36	51.10	25.30	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
SMR	SMR31100	-37.00	17	17634.36	12.50	43.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
SWZ	SWZ31300	-1.00	17	17634.36	31.50	-26.50	0.62	0.60	66.00	MODRSS		48.74		MODTES	CL		82.00		27M0F8W			P	
TJK	TJK06900	44.00	17	17634.36	71.14	38.37	1.25	0.76	159.15	MODRSS		44.65		MODTES	CR		84.00		27M0F8W			P	
TUR	TUR14500	5.00	17	17634.36	34.30	39.00	3.13	1.38	168.00	MODRSS		38.09		MODTES	CL		84.00		27M0F8W			P	
TZA	TZA22500	11.00	17	17634.36	34.60	-6.20	2.41	1.72	129.00	MODRSS		38.27		MODTES	CL		84.00		27M0F8W			P	
USA	PLM33700	170.00	17	17634.36	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CL		87.00		27M0F8W		9	P	
USA	PLM33701	170.00	17	17634.36	-124.80	39.10	4.43	0.73	132.00	MODRSS		39.35		MODTES	CL		87.00		27M0F8W		9	P	
USA	WAK33400	140.00	17	17634.36	152.50	11.70	7.89	3.52	0.00	MODRSS		30.01		MODTES	CR		87.00		27M0F8W		11	P	
USA	WAK33401	140.00	17	17634.36	-157.50	21.00	1.63	0.67	131.00	MODRSS		44.06		MODTES	CL		87.00		27M0F8W		11	P	
YUG	YUG14800	-7.00	17	17634.36	20.50	43.98	0.91	0.60	145.16	MODRSS		47.07		MODTES	CL		84.00		27M0F8W			P	
	YYY00001	11.00	17	17634.36	34.99	31.86	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	8
ALG	ALG25100	-25.00	18	17653.54	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
ARS	ARS27500	17.00	18	17653.54	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00800	164.00	18	17653.54	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CL		87.00		27M0F8W			P	
BGD	BGD22000	74.00	18	17653.54	90.30	23.60	1.46	0.84	135.00	MODRSS		43.56		MODTES	CR		84.00		27M0F8W			P	
BIH	BIH14800	34.00	18	17653.54	17.77	44.32	0.62	0.60	166.84	MODRSS		48.71		MODTES	CL		84.00		27M0F8W			P	
BOT	BOT29700	-1.00	18	17653.54	23.30	-22.20	2.13	1.50	36.00	MODRSS		39.40		MODTES	CR		85.00		27M0F8W			P	
CBG	CBG29900	68.00	18	17653.54	105.00	12.70	1.01	0.90	110.00	MODRSS		44.86		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15900	79.80	18	17653.54	106.00	32.50	5.00	3.70	150.00	MODRSS		31.78		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN18500	62.00	18	17653.54	95.70	35.40	2.10	1.14	156.00	MODRSS		40.66		MODTES	CL		84.00		27M0F8W			P	
D	D 08700	-19.00	18	17653.54	9.60	49.90	1.62	0.72	147.00	MODRSS		43.78		MODTES	CR		84.00		27M0F8W			P	2
F	F2_A2722	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2722	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2728	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2722	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2728	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3322	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_A3328	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2722	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2728	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3322	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3328	-7.00	18	17653.54	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA2	29.00	18	17653.54	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F /EUT	E2WA7DB2	29.00	18	17653.54	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	18	17653.54	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	18	17653.54	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	18	17653.54	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	18	17653.54	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	18	17653.54	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
GNB	GNB30400	-30.00	18	17653.54	-15.00	12.00	0.90	0.60	172.00	MODRSS		47.12		MODTES	CR		84.00		27M0F8W			P	
IND	IND04100	56.00	18	17653.54	78.40	16.00	2.08	1.38	35.00	MODRSS		39.87		MODTES	CR		84.00		27M0F8W			P	1
INS	INS03000	80.20	18	17653.54	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CL		84.00		27M0F8W			P	
IRL	IRL21100	-33.50	18	17653.54	-8.20	53.20	0.84	0.60	162.00	MODRSS		47.42		MODTES	CL		84.00		27M0F8W			P	
KRE	KRE28600	110.00	18	17653.54	127.00	39.10	1.30	1.10	31.00	MODRSS		42.89		MODTES	CL		87.00		27M0F8W			P	
MAU	MAU24200	29.00	18	17653.54	59.80	-18.90	1.62	1.24	55.00	MODRSS		41.42		MODTES	CL		84.00		27M0F8W			P	
MHL	MHL00000	146.00	18	17653.54	167.64	9.83	2.07	0.90	157.42	MODRSS		41.75		MODTES	CL		84.00		27M0F8W			P	
MKD	MKD14800	23.00	18	17653.54	21.53	41.50	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA22700	86.00	18	17653.54	102.10	4.10	1.62	0.82	135.00	MODRSS		43.21		MODTES	CL		84.00		27M0F8W			P	
MLI	MLI32700	-37.00	18	17653.54	-2.00	19.00	2.66	1.26	127.00	MODRSS		39.19		MODTES	CL		87.00		27M0F8W			P	
NOR	BIFROS22	-0.80	18	17653.54	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NOR	NOR12000	5.00	18	17653.54	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
PAK	PAK28100	38.00	18	17653.54	65.20	27.90	1.52	1.42	28.00	MODRSS		41.11		MODTES	CL		84.00		27M0F8W			P	
PHL	PHL28500	98.00	18	17653.54	121.30	11.10	3.46	1.76	99.00	MODRSS		36.60		MODTES	CL		84.00		27M0F8W			P	
SOM	SOM31200	23.00	18	17653.54	45.00	6.40	3.26	1.54	71.00	MODRSS		37.44		MODTES	CL		84.00		27M0F8W			P	
TCD	TCD14300	-13.00	18	17653.54	18.10	15.50	3.40	1.72	107.00	MODRSS		36.78		MODTES	CR		84.00		27M0F8W			P	
YEM	YEM26600	11.00	18	17653.54	44.36	15.70	0.77	0.60	104.23	MODRSS		47.78		MODTES	CL		84.00		27M0F8W			P	
ZAI	ZAI32300	-19.00	18	17653.54	21.30	-6.80	2.80	1.52	149.00	MODRSS		38.16		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00400	152.00	19	17672.72	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040A	152.00	19	17672.72	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040B	152.00	19	17672.72	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040C	152.00	19	17672.72	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS00700	164.00	19	17672.72	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		77	P	
AUS	AUS0070A	164.00	19	17672.72	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		77	P	
BEN	BEN23300	-19.00	19	17672.72	2.20	9.50	1.44	0.68	97.00	MODRSS		44.54		MODTES	CR		84.00		27M0F8W			P	
BRM	BRM29800	74.00	19	17672.72	97.10	19.10	3.58	1.48	104.00	MODRSS		37.21		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15800	79.80	19	17672.72	106.00	32.50	5.00	3.70	150.00	MODRSS		31.78		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17900	92.00	19	17672.72	112.20	21.90	1.84	1.22	37.00	MODRSS		40.94		MODTES	CR		84.00		27M0F8W			P	
COM	COM2070A	29.00	19	17672.72	44.10	-12.10	0.76	0.60	149.00	MODRSS		47.86		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2733	-7.00	19	17672.72	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		84.00		27M0F9W	RADIOSAT-2	19	A	
F /EUT	E2WA7DA1	29.00	19	17672.72	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	19	17672.72	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	19	17672.72	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	19	17672.72	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	19	17672.72	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	19	17672.72	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	19	17672.72	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FSM	FSM00000	146.00	19	17672.72	151.67	5.42	5.34	1.51	166.52	MODRSS		35.37		MODTES	CR		84.00		27M0F8W			P	
GAB	GAB26000	-13.00	19	17672.72	11.80	-0.60	1.43	1.12	64.00	MODRSS		42.40		MODTES	CL		84.00		27M0F8W			P	
GMB	GMB30200	-37.00	19	17672.72	-15.10	13.40	0.79	0.60	4.00	MODRSS		47.69		MODTES	CR		83.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Chan nel	Centre Frequency	Boresight Long.°	Lat.°	Space Antenna Character Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
GRC	GRC10500	5.00	19	17672.72	24.50	38.00	2.03	1.29	159.00	MODRSS		40.27		MODTES	CL		84.00		27M0F8W			P	
IND	IND03800	56.00	19	17672.72	75.90	33.40	1.52	1.08	33.00	MODRSS		42.29		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03200	80.20	19	17672.72	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
INS	INS03600	104.00	19	17672.72	115.20	-1.70	9.14	3.43	170.00	MODRSS		29.48		MODTES	CL		84.00		27M0F8W			P	
IRN	IRN10900	34.00	19	17672.72	54.20	32.40	3.82	1.82	149.00	MODRSS		36.03		MODTES	CR		84.00		27M0F8W			P	
KIR	KIR00002	176.00	19	17672.72	-157.78	-0.33	2.40	0.64	110.62	MODRSS		42.60		MODTES	CL		84.00		27M0F8W			P	
LBN	LBN27900	11.00	19	17672.72	35.90	33.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
LBR	LBR2440A	-31.00	19	17672.72	-9.30	6.60	1.22	0.70	133.00	MODRSS		45.13		MODTES	CL		84.00		27M0F8W			P	
LBY	LBY32100	-25.00	19	17672.72	17.50	26.30	3.68	1.84	130.00	MODRSS		36.14		MODTES	CR		84.00		27M0F8W			P	
LIE	LIE25300	-37.00	19	17672.72	9.50	47.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
LTU	LTU06100	23.00	19	17672.72	24.02	55.46	0.72	0.60	173.90	MODRSS		48.11		MODTES	CR		84.00		27M0F8W			P	
LUX	LUX11400	-19.00	19	17672.72	6.00	49.80	0.68	0.68	0.00	MODRSS		47.80		MODTES	CL		84.00		27M0F8W			P	
NPL	NPL12200	50.00	19	17672.72	83.70	28.30	1.72	0.60	163.00	MODRSS		44.31		MODTES	CR		84.00		27M0F8W			P	
NZL	NIU05400	158.00	19	17672.72	-169.80	-19.00	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W		2	P	
NZL	NIU05401	158.00	19	17672.72	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		2	P	
POR	POR13300	-30.00	19	17672.72	-8.00	39.60	0.92	0.60	112.00	MODRSS		47.03		MODTES	CR		84.00		27M0F8W			P	
ROU	ROU13600	-1.00	19	17672.72	25.00	45.70	1.38	0.66	155.00	MODRSS		44.85		MODTES	CR		86.00		27M0F8W			P	
SVK	SVK14400	17.00	19	17672.72	19.65	48.69	0.82	0.60	5.20	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
UKR	UKR06300	38.00	19	17672.72	31.82	48.19	2.32	0.95	177.32	MODRSS		41.01		MODTES	CR		84.00		27M0F8W			P	
USA	MRA33200	122.00	19	17672.72	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CL		87.00		27M0F8W		14	P	
USA	MRA33201	122.00	19	17672.72	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CL		87.00		27M0F8W		14	P	
USA	SMA33500	170.00	19	17672.72	-166.30	-0.20	7.97	1.04	72.00	MODRSS		35.26		MODTES	CR		87.00		27M0F8W		13	P	
USA	SMA33501	170.00	19	17672.72	-124.80	39.20	4.43	0.73	132.00	MODRSS		39.35		MODTES	CR		87.00		27M0F8W		13	P	
UZB	UZB07100	44.00	19	17672.72	64.01	41.21	2.67	0.96	163.32	MODRSS		40.37		MODTES	CR		84.00		27M0F8W			P	
ALG	ALG25200	-25.00	20	17691.90	1.50	27.60	3.65	2.94	135.00	MODRSS		34.14		MODTES	CL		84.00		27M0F8W			P	
AND	AND34100	-37.00	20	17691.90	1.60	42.50	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
ARS	ARS00300	17.00	20	17691.90	44.60	23.40	4.21	2.48	145.00	MODRSS		34.26		MODTES	CR		84.00		27M0F8W			P	
AUS	AUS00500	152.00	20	17691.90	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
AUT	AUT01600	-19.00	20	17691.90	12.20	47.50	1.14	0.63	166.00	MODRSS		45.88		MODTES	CR		84.00		27M0F8W			P	
AZE	AZE06400	23.00	20	17691.90	47.47	40.14	0.93	0.60	158.14	MODRSS		46.98		MODTES	CL		84.00		27M0F8W			P	4
BGD	BGD22000	74.00	20	17691.90	90.30	23.60	1.46	0.84	135.00	MODRSS		43.56		MODTES	CR		84.00		27M0F8W			P	
BUL	BUL02000	-1.00	20	17691.90	25.00	43.00	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
CBG	CBG29900	68.00	20	17691.90	105.00	12.70	1.01	0.90	110.00	MODRSS		44.86		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15900	79.80	20	17691.90	106.00	32.50	5.00	3.70	150.00	MODRSS		31.78		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN18400	62.00	20	17691.90	101.00	37.90	2.78	0.82	144.00	MODRSS		40.87		MODTES	CL		84.00		27M0F8W			P	
DNK	DNK08901	5.00	20	17691.90	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W		29	P	
EGY	EGY02600	-7.00	20	17691.90	29.70	26.80	2.33	1.72	136.00	MODRSS		38.42		MODTES	CR		86.00		27M0F8W			P	
F	F2_A2744	-7.00	20	17691.90	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F /EUT	E2WA7DA2	29.00	20	17691.90	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	20	17691.90	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	20	17691.90	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	20	17691.90	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	20	17691.90	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	20	17691.90	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	20	17691.90	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G_02700	-33.50	20	17691.90	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.23		MODTES	CL		84.00		27M0F8W			P	4

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position°	Chan nel	Centre Frequency	Boresight Long.°	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
IND	IND04200	68.00	20	17691.90	79.30	27.70	2.14	1.16	147.00	MODRSS		40.50		MODTES	CR		89.00		27M0F8W			P	1
INS	INS03000	80.20	20	17691.90	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CL		84.00		27M0F8W			P	
KRE	KRE28600	110.00	20	17691.90	127.00	39.10	1.30	1.10	31.00	MODRSS		42.89		MODTES	CL		87.00		27M0F8W			P	3, 4
MDA	MDA06300	38.00	20	17691.90	28.41	46.99	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	4, 7
MLA	MLA22700	86.00	20	17691.90	102.10	4.10	1.62	0.82	135.00	MODRSS		43.21		MODTES	CL		84.00		27M0F8W			P	
MLI	MLI32800	-37.00	20	17691.90	-7.60	13.20	1.74	1.24	171.00	MODRSS		41.11		MODTES	CL		87.00		27M0F8W			P	
MLT	MLT1470A	-13.00	20	17691.90	14.30	35.90	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	4, 7
NZL	TKL05800	158.00	20	17691.90	-171.80	-8.90	0.70	0.60	35.00	MODRSS		48.21		MODTES	CL		84.00		27M0F8W		1	P	
NZL	TKL05801	158.00	20	17691.90	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CL		84.00		27M0F8W		1	P	
PAK	PAK28200	38.00	20	17691.90	68.50	25.80	1.32	0.62	133.00	MODRSS		45.32		MODTES	CL		84.00		27M0F8W			P	
PHL	PHL28500	98.00	20	17691.90	121.30	11.10	3.46	1.76	99.00	MODRSS		36.60		MODTES	CL		84.00		27M0F8W			P	
PLW	PLW00000	146.00	20	17691.90	132.99	5.52	1.29	0.60	55.84	MODRSS		45.55		MODTES	CL		84.00		27M0F8W			P	4
RRW	RRW31000	11.00	20	17691.90	30.00	-2.10	0.66	0.60	42.00	MODRSS		48.47		MODTES	CR		84.00		27M0F8W			P	
S	SIRIUS03	5.20	20	17691.90	14.00	63.00	1.30	0.70	142.00	R13RSS		43.00		R13TES	CL		84.00		27M0F8W	SIRIUS	29	AE	
SVN	SVN14800	34.00	20	17691.90	15.01	46.18	0.60	0.60	90.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	4
ZAI	ZAI32200	-19.00	20	17691.90	22.40	0.00	2.16	1.88	48.00	MODRSS		38.36		MODTES	CL		84.00		27M0F8W			P	
ALB	ALB29600	-7.00	21	17711.08	20.10	41.00	1.17	0.65	128.00	MODRSS		45.64		MODTES	CL		84.00		27M0F8W			P	
BEL	BEL01800	-19.00	21	17711.08	4.60	50.60	0.82	0.60	167.00	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
BFA	BFA10700	-30.00	21	17711.08	-1.50	12.20	1.45	1.14	29.00	MODRSS		42.26		MODTES	CL		84.00		27M0F8W			P	4
BRM	BRM29800	74.00	21	17711.08	97.10	19.10	3.58	1.48	104.00	MODRSS		37.21		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN17500	92.00	21	17711.08	121.40	23.80	1.14	0.82	64.00	MODRSS		44.74		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN17600	79.80	21	17711.08	113.70	33.90	1.20	0.80	141.00	MODRSS		44.62		MODTES	CL		84.00		27M0F8W			P	
CYP	CYP08600	5.00	21	17711.08	33.30	35.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
D	D2-21600	-1.00	21	17711.08	12.60	52.10	0.83	0.63	172.00	MODRSS		47.26		MODTES	CR		84.00		27M0F8W			P	4, 7
DJI	DJI09900	23.00	21	17711.08	42.50	11.60	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
E	HISPASA2	-30.00	21	17711.08	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4
F	F 09306	-7.00	21	17711.08	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	21	17711.08	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	21	17711.08	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	21	17711.08	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		69.40		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	21	17711.08	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		69.40		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	21	17711.08	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	21	17711.08	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	21	17711.08	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	21	17711.08	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	21	17711.08	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	21	17711.08	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	21	17711.08	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
IND	IND03800	56.00	21	17711.08	75.90	33.40	1.52	1.08	33.00	MODRSS		42.29		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03200	80.20	21	17711.08	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
ISL	ISL04900	-33.50	21	17711.08	-19.00	64.90	1.00	0.60	177.00	MODRSS		46.67		MODTES	CR		82.00		27M0F8W			P	
KEN	KEN24900	11.00	21	17711.08	37.90	1.10	2.29	1.56	94.00	MODRSS		38.92		MODTES	CL		84.00		27M0F8W			P	
LVA	LVA06100	23.00	21	17711.08	24.53	56.20	0.83	0.60	0.05	MODRSS		47.50		MODTES	CR		84.00		27M0F8W			P	4
MCO	MCO11600	-37.00	21	17711.08	7.40	43.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
NPL	NPL12200	50.00	21	17711.08	83.70	28.30	1.72	0.60	163.00	MODRSS		44.31		MODTES	CR		84.00		27M0F8W			P	
NZL	NZL28700	128.00	21	17711.08	173.00	-41.00	3.30	1.28	48.00	MODRSS		38.19		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
TON	TON21500	170.00	21	17711.08	-174.70	-18.00	1.41	0.68	85.00	MODRSS		44.63		MODTES	CR		84.00		27M0F8W			P	
UAE	UAE27400	17.00	21	17711.08	53.60	24.40	0.98	0.80	162.00	MODRSS		45.50		MODTES	CL		84.00		27M0F8W			P	
USA	GUM33100	122.00	21	17711.08	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CR		87.00		27M0F8W		15	P	
USA	GUM33101	122.00	21	17711.08	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CR		87.00		27M0F8W		15	P	
AUS	AUS00800	164.00	22	17730.26	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CL		87.00		27M0F8W			P	
BDI	BDI27000	11.00	22	17730.26	29.90	-3.10	0.71	0.60	80.00	MODRSS		48.15		MODTES	CR		84.00		27M0F8W			P	
BGD	BGD22000	74.00	22	17730.26	90.30	23.60	1.46	0.84	135.00	MODRSS		43.56		MODTES	CR		84.00		27M0F8W			P	
CBG	CBG29900	68.00	22	17730.26	105.00	12.70	1.01	0.90	110.00	MODRSS		44.86		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15900	79.80	22	17730.26	106.00	32.50	5.00	3.70	150.00	MODRSS		31.78		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN16800	92.00	22	17730.26	124.80	48.10	2.68	0.92	157.00	MODRSS		40.53		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN18300	62.00	22	17730.26	104.80	39.00	1.48	0.60	142.00	MODRSS		44.96		MODTES	CL		84.00		27M0F8W			P	
COG	COG23500	-13.00	22	17730.26	14.60	-0.70	2.02	1.18	59.00	MODRSS		40.67		MODTES	CR		84.00		27M0F8W			P	
CTI	CTI23700	-30.00	22	17730.26	-5.80	7.40	1.55	1.43	162.00	MODRSS		40.99		MODTES	CR		84.00		27M0F8W			P	4
F	F2aA2762	-7.00	22	17730.26	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2762	-7.00	22	17730.26	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	22	17730.26	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	22	17730.26	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	22	17730.26	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	REU09700	29.00	22	17730.26	55.60	-19.20	1.56	0.78	96.00	MODRSS		43.59		MODTES	CL		84.00		27M0F8W		5	P	
F	REU09701	29.00	22	17730.26	3.70	45.20	1.94	1.68	24.00	MODRSS		39.32		MODTES	CL		84.00		27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	22	17730.26	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	22	17730.26	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	22	17730.26	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	22	17730.26	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	22	17730.26	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	22	17730.26	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	22	17730.26	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FIN	FIN10400	5.00	22	17730.26	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
G	G UKDBS	-33.50	22	17730.26	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.20		MODTES	CL		84.00		27M0F8W	UKDBS-3		A	4
GEO	GEO06400	23.00	22	17730.26	43.35	42.27	1.11	0.60	161.21	MODRSS		46.23		MODTES	CL		84.00		27M0F8W			P	4
HNG	HNG10600	-1.00	22	17730.26	22.20	45.60	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
IND	IND04200	68.00	22	17730.26	79.30	27.70	2.14	1.16	147.00	MODRSS		40.50		MODTES	CR		89.00		27M0F8W			P	1
INS	INS03000	80.20	22	17730.26	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CL		84.00		27M0F8W			P	
KGZ	KGZ07000	44.00	22	17730.26	73.88	41.32	1.34	0.64	3.53	MODRSS		45.12		MODTES	CR		84.00		27M0F8W			P	4, 7
KRE	KRE28600	110.00	22	17730.26	127.00	39.10	1.30	1.10	31.00	MODRSS		42.89		MODTES	CL		87.00		27M0F8W			P	3, 4
KWT	KWT11300	17.00	22	17730.26	47.60	29.20	0.68	0.60	145.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
MLA	MLA22700	86.00	22	17730.26	102.10	4.10	1.62	0.82	135.00	MODRSS		43.21		MODTES	CL		84.00		27M0F8W			P	
MTN	MTN22300	-37.00	22	17730.26	-12.20	18.50	2.62	1.87	150.00	MODRSS		37.55		MODTES	CL		86.00		27M0F8W			P	
PAK	PAK28100	38.00	22	17730.26	65.20	27.90	1.52	1.42	28.00	MODRSS		41.11		MODTES	CL		84.00		27M0F8W			P	
PHL	PHL28500	98.00	22	17730.26	121.30	11.10	3.46	1.76	99.00	MODRSS		36.60		MODTES	CL		84.00		27M0F8W			P	
SDN	SDN23100	-7.00	22	17730.26	29.90	12.90	2.64	2.08	155.00	MODRSS		37.05		MODTES	CR		86.00		27M0F8W			P	
SUI	SUI14000	-19.00	22	17730.26	8.20	46.60	0.98	0.70	171.00	MODRSS		46.08		MODTES	CR		84.00		27M0F8W			P	2
SYR	SYR22900	11.00	22	17730.26	38.30	34.90	1.04	0.90	7.00	MODRSS		44.73		MODTES	CL		84.00		27M0F8W			P	
TUN	TUN15000	-25.00	22	17730.26	9.50	33.50	1.88	0.72	135.00	MODRSS		43.13		MODTES	CL		84.00		27M0F8W			P	
AGL	AGL29500	-13.00	23	17749.44	16.50	-12.00	3.09	2.26	84.00	MODRSS		36.01		MODTES	CL		84.00		27M0F8W			P	
ARS	ARS34000	17.00	23	17749.44	44.60	23.40	4.21	2.48	145.00	MODRSS		34.28		MODTES	CL		84.00		27M0F8W		71	P	

1	2	4	1	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position	Chan nel	Centre Frequency	Boresight		Space Antenna Character.			Space Antenna	Shap. Beam	Space Ant. Gain		Earth Antenna	Polarization		EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
					Long.°	Lat.°	Major°	Minor°	Orient.°			Co-pol.	X-pol.		Typ.	Angle							
AUS	AUS00400	152.00	23	17749.44	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CL		87.00		27M0F8W		76	P	
AUS	AUS0040A	152.00	23	17749.44	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	4
AUS	AUS0040B	152.00	23	17749.44	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	4
AUS	AUS0040C	152.00	23	17749.44	135.36	-23.95	6.89	4.83	141.15	R123FR		29.23		MODTES	CL		87.00		27M0F8W		76	P	4
AUS	AUS00700	164.00	23	17749.44	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		77	P	
AUS	AUS0070A	164.00	23	17749.44	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		77	P	4
BHR	BHR2550A	17.00	23	17749.44	50.50	26.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W		71	P	4
BRM	BRM29800	74.00	23	17749.44	97.10	19.10	3.58	1.48	104.00	MODRSS		37.21		MODTES	CL		84.00		27M0F8W			P	
CHN	CHN15800	79.80	23	17749.44	106.00	32.50	5.00	3.70	150.00	MODRSS		31.78		MODTES	CL		84.00		27M0F8W			P	
CVA	CVA08500	-37.00	23	17749.44	10.80	41.50	2.00	0.60	138.00	MODRSS		43.66		MODTES	CR		84.00		27M0F8W			P	
CZE	CZE14400	17.00	23	17749.44	15.50	49.79	0.92	0.60	174.55	MODRSS		47.02		MODTES	CR		84.00		27M0F8W			P	4
E	CNR13000	-30.00	23	17749.44	-15.70	28.40	1.54	0.60	5.00	MODRSS		44.79		MODTES	CR		84.00		27M0F8W		22	P	4
E	HISPASA2	-30.00	23	17749.44	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4
ERI	ERI09200	23.00	23	17749.44	39.41	14.98	1.67	0.95	145.48	MODRSS		42.44		MODTES	CL		84.00		27M0F8W			P	4
F	F2aA2773	-7.00	23	17749.44	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	23	17749.44	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	23	17749.44	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	23	17749.44	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	23	17749.44	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	23	17749.44	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	23	17749.44	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	23	17749.44	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	23	17749.44	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	23	17749.44	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	23	17749.44	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	23	17749.44	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
GHA	GHA10800	-25.00	23	17749.44	-1.20	7.90	1.48	1.06	102.00	MODRSS		42.49		MODTES	CR		83.00		27M0F8W			P	
GNE	GNE30300	-19.00	23	17749.44	10.30	1.50	0.68	0.60	10.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
HOL	HOL21300	-19.00	23	17749.44	5.40	52.00	0.76	0.60	171.00	MODRSS		47.86		MODTES	CL		84.00		27M0F8W			P	
IND	IND04600	68.00	23	17749.44	84.70	20.50	1.60	0.86	30.00	MODRSS		43.06		MODTES	CL		84.00		27M0F8W			P	1
INS	INS03200	80.20	23	17749.44	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CR		84.00		27M0F8W			P	
ISL	ISL05000	5.00	23	17749.44	-19.50	61.00	2.20	0.80	4.00	MODRSS		41.99		MODTES	CL		84.00		27M0F8W			P	
JOR	JOR22400	11.00	23	17749.44	35.80	31.40	0.84	0.78	114.00	MODRSS		46.28		MODTES	CR		85.00		27M0F8W			P	
KIR	KIR00002	176.00	23	17749.44	-157.78	-0.33	2.40	0.64	110.62	MODRSS		42.60		MODTES	CL		84.00		27M0F8W			P	
NOR	BIFROS21	-0.80	23	17749.44	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CR		84.00		27M0FXF	BIFROSTXX2		A	
NPL	NPL1220A	50.00	23	17749.44	83.70	28.30	1.72	0.60	163.00	MODRSS		44.31		MODTES	CR		84.00		27M0F8W			P	4, 7
NZL	NIU05400	158.00	23	17749.44	-169.80	-19.00	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W		2	P	
NZL	NIU05401	158.00	23	17749.44	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CR		84.00		27M0F8W		2	P	
SDN	SDN23000	-7.00	23	17749.44	29.90	9.80	2.95	2.17	123.00	MODRSS		36.38		MODTES	CL		86.00		27M0F8W			P	
SRL	SRL25900	-33.50	23	17749.44	-11.80	8.60	0.78	0.68	114.00	MODRSS		47.20		MODTES	CL		84.00		27M0F8W			P	4
TKM	TKM06800	44.00	23	17749.44	59.18	38.84	2.25	0.99	164.51	MODRSS		40.94		MODTES	CL		84.00		27M0F8W			P	4, 7
ZWE	ZWE13500	-1.00	23	17749.44	29.60	-18.80	1.46	1.36	37.00	MODRSS		41.47		MODTES	CR		85.00		27M0F8W			P	
ARM	ARM06400	23.00	24	17768.62	44.99	39.95	0.73	0.60	148.17	MODRSS		48.02		MODTES	CL		84.00		27M0F8W			P	4
AUS	AUS00500	152.00	24	17768.62	135.00	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
CAF	CAF25800	-13.00	24	17768.62	21.00	6.30	2.25	1.68	31.00	MODRSS		38.67		MODTES	CR		84.00		27M0F8W			P	
CBG	CBG29900	68.00	24	17768.62	105.00	12.70	1.01	0.90	110.00	MODRSS		44.86		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
CHN	CHN16600	92.00	24	17768.62	121.10	41.70	1.52	0.78	154.00	MODRSS		43.71		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN17700	79.80	24	17768.62	111.80	30.80	1.42	0.82	160.00	MODRSS		43.79		MODTES	CR		84.00		27M0F8W			P	
CHN	CHN18800	62.00	24	17768.62	101.50	25.10	1.86	1.08	132.00	MODRSS		41.42		MODTES	CR		84.00		27M0F8W			P	
DNK	DNK09000	5.00	24	17768.62	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2788	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	24	17768.62	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	24	17768.62	45.10	-12.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W		7	P	
F	MYT09801	29.00	24	17768.62	3.60	45.60	1.97	1.71	22.00	MODRSS		39.17		MODTES	CL		84.00		27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	24	17768.62	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	24	17768.62	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	24	17768.62	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	24	17768.62	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	24	17768.62	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	24	17768.62	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	24	17768.62	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
I	I 08200	-19.00	24	17768.62	12.30	41.30	2.38	0.98	137.00	MODRSS		40.77		MODTES	CR		84.00		27M0F8W			P	
IND	IND04100	56.00	24	17768.62	78.40	16.00	2.08	1.38	35.00	MODRSS		39.87		MODTES	CR		84.00		27M0F8W			P	1
INS	INS03000	80.20	24	17768.62	113.60	-1.40	6.73	3.33	160.00	MODRSS		30.94		MODTES	CL		84.00		27M0F8W			P	
IRQ	IRQ25600	11.00	24	17768.62	43.50	33.00	2.28	1.32	145.00	MODRSS		39.66		MODTES	CL		84.00		27M0F8W			P	
KAZ	KAZ06600	44.00	24	17768.62	64.72	46.40	4.31	1.70	172.22	MODRSS		35.79		MODTES	CR		84.00		27M0F8W			P	4, 7
LSO	LSO30500	5.00	24	17768.62	27.80	-29.80	0.66	0.60	36.00	MODRSS		48.47		MODTES	CL		84.00		27M0F8W			P	
MLA	MLA22700	86.00	24	17768.62	102.10	4.10	1.62	0.82	135.00	MODRSS		43.21		MODTES	CL		84.00		27M0F8W			P	
MTN	MTN28800	-37.00	24	17768.62	-7.80	23.40	1.63	1.10	141.00	MODRSS		41.91		MODTES	CL		86.00		27M0F8W			P	
MWI	MWI30800	-1.00	24	17768.62	34.10	-13.00	1.54	0.60	87.00	MODRSS		44.79		MODTES	CL		84.00		27M0F8W			P	
NGR	NGR11500	-25.00	24	17768.62	8.30	16.80	2.54	2.08	44.00	MODRSS		37.22		MODTES	CL		85.00		27M0F8W			P	
NOR	BIFROS22	-0.80	24	17768.62	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NZL	TKL05800	158.00	24	17768.62	-171.80	-8.90	0.70	0.60	35.00	MODRSS		48.21		MODTES	CL		84.00		27M0F8W		1	P	
NZL	TKL05801	158.00	24	17768.62	172.30	-39.70	2.88	1.56	47.00	MODRSS		37.92		MODTES	CL		84.00		27M0F8W		1	P	
OMA	OMA12300	17.00	24	17768.62	55.60	21.00	1.88	1.02	100.00	MODRSS		41.62		MODTES	CR		85.00		27M0F8W			P	
PAK	PAK28200	38.00	24	17768.62	68.50	25.80	1.32	0.62	133.00	MODRSS		45.32		MODTES	CL		84.00		27M0F8W			P	
PHL	PHL28500	98.00	24	17768.62	121.30	11.10	3.46	1.76	99.00	MODRSS		36.60		MODTES	CL		84.00		27M0F8W			P	
POR	AZR13400	-30.00	24	17768.62	-23.40	36.10	2.56	0.70	158.00	MODRSS		41.91		MODTES	CL		84.00		27M0F8W			P	
SDN	SDN23200	-7.00	24	17768.62	29.60	18.40	2.54	2.09	167.00	MODRSS		37.20		MODTES	CR		86.00		27M0F8W			P	
ALB	ALB29600	-7.00	25	17787.80	20.10	41.00	1.17	0.65	128.00	MODRSS		45.64		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00900	164.00	25	17787.80	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		78	P	
AUS	AUS0090A	164.00	25	17787.80	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
AUS	AUS0090B	164.00	25	17787.80	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	Space Ant. Gain X-pol.	Earth Antenna	Polarization Typ.	Polarization Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
BEL	BEL01800	-19.00	25	17787.80	4.60	50.60	0.82	0.60	167.00	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
BFA	BFA10700	-30.00	25	17787.80	-1.50	12.20	1.45	1.14	29.00	MODRSS		42.26		MODTES	CL		84.00		27M0F8W			P	4
CYP	CYP08600	5.00	25	17787.80	33.30	35.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
D	D2-21600	-1.00	25	17787.80	12.60	52.10	0.83	0.63	172.00	MODRSS		47.26		MODTES	CR		84.00		27M0F8W			P	4, 7
DJI	DJI09900	23.00	25	17787.80	42.50	11.60	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
E	HISPASA2	-30.00	25	17787.80	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4
F	F 09306	-7.00	25	17787.80	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	25	17787.80	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	25	17787.80	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	25	17787.80	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	25	17787.80	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	25	17787.80	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	25	17787.80	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	25	17787.80	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	25	17787.80	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	25	17787.80	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	25	17787.80	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	25	17787.80	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
ISL	ISL04900	-33.50	25	17787.80	-19.00	64.90	1.00	0.60	177.00	MODRSS		46.67		MODTES	CR		82.00		27M0F8W			P	
KEN	KEN24900	11.00	25	17787.80	37.90	1.10	2.29	1.56	94.00	MODRSS		38.92		MODTES	CL		84.00		27M0F8W			P	
LVA	LVA06100	23.00	25	17787.80	24.53	56.20	0.83	0.60	0.05	MODRSS		47.50		MODTES	CR		84.00		27M0F8W			P	4
MCO	MCO11600	-37.00	25	17787.80	7.40	43.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
MNG	MNG24800	74.00	25	17787.80	107.50	47.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		89.02		27M0F8W			P	
RUS	RSTRSA11	36.00	25	17787.80	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	25	17787.80	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	25	17787.80	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	25	17787.80	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	25	17787.80	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	25	17787.80	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	25	17787.80	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	25	17787.80	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	25	17787.80	118.22	51.52					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RUS-4		P	3, 4
TON	TON21500	170.00	25	17787.80	-174.70	-18.00	1.41	0.68	85.00	MODRSS		44.63		MODTES	CR		84.00		27M0F8W			P	
UAE	UAE27400	17.00	25	17787.80	53.60	24.40	0.98	0.80	162.00	MODRSS		45.50		MODTES	CL		84.00		27M0F8W			P	
USA	GUM33100	122.00	25	17787.80	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CR		87.00		27M0F8W		15	P	
USA	GUM33101	122.00	25	17787.80	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CR		87.00		27M0F8W		15	P	
AUS	AUS00600	152.00	26	17806.98	135.50	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
BDI	BDI27000	11.00	26	17806.98	29.90	-3.10	0.71	0.60	80.00	MODRSS		48.15		MODTES	CR		84.00		27M0F8W			P	
COG	COG23500	-13.00	26	17806.98	14.60	-0.70	2.02	1.18	59.00	MODRSS		40.67		MODTES	CR		84.00		27M0F8W			P	
CTI	CTI23700	-30.00	26	17806.98	-5.80	7.40	1.55	1.43	162.00	MODRSS		40.99		MODTES	CR		84.00		27M0F8W			P	4, 7
F	F2aA2762	-7.00	26	17806.98	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2762	-7.00	26	17806.98	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	26	17806.98	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	26	17806.98	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	26	17806.98	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	REU09700	29.00	26	17806.98	55.60	-19.20	1.56	0.78	96.00	MODRSS		43.59		MODTES	CL		84.00		27M0F8W		5	P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F	REU09701	29.00	26	17806.98	3.70	45.20	1.94	1.68	24.00	MODRSS		39.32		MODTES	CL		84.00		27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	26	17806.98	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	26	17806.98	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	26	17806.98	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	26	17806.98	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	26	17806.98	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	26	17806.98	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	26	17806.98	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
FIN	FIN10400	5.00	26	17806.98	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
G	G UKDBS	-33.50	26	17806.98	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.20		MODTES	CL		84.00		27M0F8W	UKDBS-3		A	4
GEO	GEO06400	23.00	26	17806.98	43.35	42.27	1.11	0.60	161.21	MODRSS		46.23		MODTES	CL		84.00		27M0F8W			P	4
HNG	HNG10600	-1.00	26	17806.98	22.20	45.60	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
KGZ	KGZ07000	44.00	26	17806.98	73.88	41.32	1.34	0.64	3.53	MODRSS		45.12		MODTES	CR		84.00		27M0F8W			P	4, 7
KWT	KWT11300	17.00	26	17806.98	47.60	29.20	0.68	0.60	145.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
MTN	MTN22300	-37.00	26	17806.98	-12.20	18.50	2.62	1.87	150.00	MODRSS		37.55		MODTES	CL		86.00		27M0F8W			P	
RUS	RSTRSA12	36.00	26	17806.98	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	26	17806.98	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	26	17806.98	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	26	17806.98	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	26	17806.98	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	26	17806.98	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	26	17806.98	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	26	17806.98	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
SDN	SDN23100	-7.00	26	17806.98	29.90	12.90	2.64	2.08	155.00	MODRSS		37.05		MODTES	CR		86.00		27M0F8W			P	
SUI	SUI14000	-19.00	26	17806.98	8.20	46.60	0.98	0.70	171.00	MODRSS		46.08		MODTES	CR		84.00		27M0F8W			P	2
SYR	SYR22900	11.00	26	17806.98	38.30	34.90	1.04	0.90	7.00	MODRSS		44.73		MODTES	CL		84.00		27M0F8W			P	
TUN	TUN15000	-25.00	26	17806.98	9.50	33.50	1.88	0.72	135.00	MODRSS		43.13		MODTES	CL		84.00		27M0F8W			P	
AGL	AGL29500	-13.00	27	17826.16	16.50	-12.00	3.09	2.26	84.00	MODRSS		36.01		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00900	164.00	27	17826.16	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		78	P	
AUS	AUS0090A	164.00	27	17826.16	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
AUS	AUS0090B	164.00	27	17826.16	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
BHR	BHR25500	17.00	27	17826.16	50.50	26.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
CVA	CVA08300	-37.00	27	17826.16	12.40	41.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
CZE	CZE14400	17.00	27	17826.16	15.50	49.79	0.92	0.60	174.55	MODRSS		47.02		MODTES	CR		84.00		27M0F8W			P	4
DNK	DNK09100	5.00	27	17826.16	-19.50	61.00	2.20	0.80	4.00	MODRSS		41.99		MODTES	CL		84.00		27M0F8W			P	
E	CNR13000	-30.00	27	17826.16	-15.70	28.40	1.54	0.60	5.00	MODRSS		44.79		MODTES	CR		84.00		27M0F8W		22	P	4, 7
E	HISPASA2	-30.00	27	17826.16	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4, 7
ERI	ERI09200	23.00	27	17826.16	39.41	14.98	1.67	0.95	145.48	MODRSS		42.44		MODTES	CL		84.00		27M0F8W			P	4
F	F2aA2773	-7.00	27	17826.16	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	27	17826.16	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	27	17826.16	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	27	17826.16	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	27	17826.16	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	27	17826.16	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	27	17826.16	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	27	17826.16	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
F /EUT	E2WA7DD1	29.00	27	17826.16	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	27	17826.16	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	27	17826.16	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	27	17826.16	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
GHA	GHA10800	-25.00	27	17826.16	-1.20	7.90	1.48	1.06	102.00	MODRSS		42.49		MODTES	CR		83.00		27M0F8W			P	
GNE	GNE30300	-19.00	27	17826.16	10.30	1.50	0.68	0.60	10.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
HOL	HOL21300	-19.00	27	17826.16	5.40	52.00	0.76	0.60	171.00	MODRSS		47.86		MODTES	CL		84.00		27M0F8W			P	
JOR	JOR22400	11.00	27	17826.16	35.80	31.40	0.84	0.78	114.00	MODRSS		46.28		MODTES	CR		85.00		27M0F8W			P	
NOR	BIFROS21	-0.80	27	17826.16	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CR		84.00		27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	27	17826.16	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	27	17826.16	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	27	17826.16	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	27	17826.16	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	27	17826.16	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	27	17826.16	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	27	17826.16	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	27	17826.16	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	27	17826.16	118.22	51.52					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RUS-4		P	3, 4
SDN	SDN23000	-7.00	27	17826.16	29.90	9.80	2.95	2.17	123.00	MODRSS		36.38		MODTES	CL		86.00		27M0F8W			P	
SRL	SRL25900	-33.50	27	17826.16	-11.80	8.60	0.78	0.68	114.00	MODRSS		47.20		MODTES	CL		84.00		27M0F8W			P	4
TKM	TKM06800	44.00	27	17826.16	59.18	38.84	2.25	0.99	164.51	MODRSS		40.94		MODTES	CL		84.00		27M0F8W			P	4, 7
ZWE	ZWE13500	-1.00	27	17826.16	29.60	-18.80	1.46	1.36	37.00	MODRSS		41.47		MODTES	CR		85.00		27M0F8W			P	
ARM	ARM06400	23.00	28	17845.34	44.99	39.95	0.73	0.60	148.17	MODRSS		48.02		MODTES	CL		84.00		27M0F8W			P	4
AUS	AUS00600	152.00	28	17845.34	135.50	24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
CAF	CAF25800	-13.00	28	17845.34	21.00	6.30	2.25	1.68	31.00	MODRSS		38.67		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2788	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	28	17845.34	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	28	17845.34	45.10	-12.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W		7	P	
F	MYT09801	29.00	28	17845.34	3.60	45.60	1.97	1.71	22.00	MODRSS		39.17		MODTES	CL		84.00		27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	28	17845.34	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	28	17845.34	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	28	17845.34	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	28	17845.34	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	28	17845.34	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	28	17845.34	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	28	17845.34	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
I	I 08200	-19.00	28	17845.34	12.30	41.30	2.38	0.98	137.00	MODRSS		40.77		MODTES	CR		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm	Beam	Orbital	Chan	Centre	Boresight		Space Antenna Character.			Space	Shap.	Space Ant. Gain		Earth	Polarization		EIRP	Power	Designation	Satellite	Group	Status	Re-
Symb	Identification	Position°	nel	Frequency	Long.°	Lat.°	Major°	Minor°	Orient.°	Antenna	Beam	Co-pol.	X-pol.	Antenna	Typ.	Angle	dBW	Control	of Emission	Identification	Code		marks
IRQ	IRQ25600	11.00	28	17845.34	43.50	33.00	2.28	1.32	145.00	MODRSS		39.66		MODTES	CL		84.00		27M0F8W			P	
KAZ	KAZ06600	44.00	28	17845.34	64.72	46.40	4.31	1.70	172.22	MODRSS		35.79		MODTES	CR		84.00		27M0F8W			P	4, 7
LSO	LSO30500	5.00	28	17845.34	27.80	-29.80	0.66	0.60	36.00	MODRSS		48.47		MODTES	CL		84.00		27M0F8W			P	
MTN	MTN28800	-37.00	28	17845.34	-7.80	23.40	1.63	1.10	141.00	MODRSS		41.91		MODTES	CL		86.00		27M0F8W			P	
MWI	MWI30800	-1.00	28	17845.34	34.10	-13.00	1.54	0.60	87.00	MODRSS		44.79		MODTES	CL		84.00		27M0F8W			P	
NGR	NGR11500	-25.00	28	17845.34	8.30	16.80	2.54	2.08	44.00	MODRSS		37.22		MODTES	CL		85.00		27M0F8W			P	
NOR	BIFROS22	-0.80	28	17845.34	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NOR	NOR12101	5.00	28	17845.34	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
OMA	OMA12300	17.00	28	17845.34	55.60	21.00	1.88	1.02	100.00	MODRSS		41.62		MODTES	CR		85.00		27M0F8W			P	
POR	AZR13400	-30.00	28	17845.34	-23.40	36.10	2.56	0.70	158.00	MODRSS		41.91		MODTES	CL		84.00		27M0F8W			P	7
RUS	RSTRSA12	36.00	28	17845.34	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	28	17845.34	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	28	17845.34	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	28	17845.34	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	28	17845.34	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	28	17845.34	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	28	17845.34	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	28	17845.34	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
SDN	SDN23200	-7.00	28	17845.34	29.60	18.40	2.54	2.09	167.00	MODRSS		37.20		MODTES	CR		86.00		27M0F8W			P	
ALB	ALB29600	-7.00	29	17864.52	20.10	41.00	1.17	0.65	128.00	MODRSS		45.64		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00900	164.00	29	17864.52	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		78	P	
AUS	AUS0090A	164.00	29	17864.52	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
AUS	AUS0090B	164.00	29	17864.52	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
BEL	BEL01800	-19.00	29	17864.52	4.60	50.60	0.82	0.60	167.00	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
BFA	BFA10700	-30.00	29	17864.52	-1.50	12.20	1.45	1.14	29.00	MODRSS		42.26		MODTES	CL		84.00		27M0F8W			P	4, 7
CYP	CYP08600	5.00	29	17864.52	33.30	35.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
D	D2-21600	-1.00	29	17864.52	12.60	52.10	0.83	0.63	172.00	MODRSS		47.26		MODTES	CR		84.00		27M0F8W			P	4, 7
DJI	DJI09900	23.00	29	17864.52	42.50	11.60	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
E	HISPASA2	-30.00	29	17864.52	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4, 7
F	F 09306	-7.00	29	17864.52	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	29	17864.52	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	29	17864.52	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	29	17864.52	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	29	17864.52	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	29	17864.52	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	29	17864.52	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	29	17864.52	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	29	17864.52	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	29	17864.52	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	29	17864.52	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	29	17864.52	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
ISL	ISL04900	-33.50	29	17864.52	-19.00	64.90	1.00	0.60	177.00	MODRSS		46.67		MODTES	CR		82.00		27M0F8W			P	
KEN	KEN24900	11.00	29	17864.52	37.90	1.10	2.29	1.56	94.00	MODRSS		38.92		MODTES	CL		84.00		27M0F8W			P	
LVA	LVA06100	23.00	29	17864.52	24.53	56.20	0.83	0.60	0.05	MODRSS		47.50		MODTES	CR		84.00		27M0F8W			P	4
MCO	MCO11600	-37.00	29	17864.52	7.40	43.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
MNG	MNG24800	74.00	29	17864.52	107.50	47.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		89.02		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position°	Chan nel	Centre Frequency	Boresight Long °	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
RUS	RSTRSA11	36.00	29	17864.52	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	29	17864.52	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	29	17864.52	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	29	17864.52	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	29	17864.52	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	29	17864.52	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	29	17864.52	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	29	17864.52	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
SEN	SEN22200	-37.00	29	17864.52	-14.40	13.80	1.46	1.04	139.00	MODRSS		42.63		MODTES	CR		85.00		27M0F8W			P	
TON	TON21500	170.00	29	17864.52	-174.70	-18.00	1.41	0.68	85.00	MODRSS		44.63		MODTES	CR		84.00		27M0F8W			P	
UAE	UAE27400	17.00	29	17864.52	53.60	24.40	0.98	0.80	162.00	MODRSS		45.50		MODTES	CL		84.00		27M0F8W			P	
USA	GUM33100	122.00	29	17864.52	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CR		87.00		27M0F8W		15	P	
USA	GUM33101	122.00	29	17864.52	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CR		87.00		27M0F8W		15	P	
AUS	AUS00600	152.00	30	17883.70	135.50	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
BDI	BDI27000	11.00	30	17883.70	29.90	-3.10	0.71	0.60	80.00	MODRSS		48.15		MODTES	CR		84.00		27M0F8W			P	
COG	COG23500	-13.00	30	17883.70	14.60	-0.70	2.02	1.18	59.00	MODRSS		40.67		MODTES	CR		84.00		27M0F8W			P	
CTI	CTI23700	-30.00	30	17883.70	-5.80	7.40	1.55	1.43	162.00	MODRSS		40.99		MODTES	CR		84.00		27M0F8W			P	4
F	F2aA2762	-7.00	30	17883.70	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2762	-7.00	30	17883.70	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	30	17883.70	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	30	17883.70	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	30	17883.70	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	REU09700	29.00	30	17883.70	55.60	19.20	1.56	0.78	96.00	MODRSS		43.59		MODTES	CL		84.00		27M0F8W		5	P	
F	REU09701	29.00	30	17883.70	3.70	45.20	1.94	1.68	24.00	MODRSS		39.32		MODTES	CL		84.00		27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	30	17883.70	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	30	17883.70	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	30	17883.70	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	30	17883.70	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	30	17883.70	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	30	17883.70	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	30	17883.70	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G_UKDBS	-33.50	30	17883.70	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.20		MODTES	CL		84.00		27M0F8W	UKDBS-3		A	4
GEO	GEO06400	23.00	30	17883.70	43.35	42.27	1.11	0.60	161.21	MODRSS		46.23		MODTES	CL		84.00		27M0F8W			P	4
HNG	HNG10600	-1.00	30	17883.70	22.20	45.60	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
KGZ	KGZ07000	44.00	30	17883.70	73.88	41.32	1.34	0.64	3.53	MODRSS		45.12		MODTES	CR		84.00		27M0F8W			P	4, 7
KWT	KWT11300	17.00	30	17883.70	47.60	29.20	0.68	0.60	145.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
MTN	MTN22300	-37.00	30	17883.70	-12.20	18.50	2.62	1.87	150.00	MODRSS		37.55		MODTES	CL		86.00		27M0F8W			P	
RUS	RSTRSA12	36.00	30	17883.70	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	30	17883.70	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	30	17883.70	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	30	17883.70	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	30	17883.70	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	30	17883.70	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	30	17883.70	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	30	17883.70	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
S	S_13900	5.00	30	17883.70	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm	Beam	Orbital	Chan	Centre	Boresight		Space Antenna Character.			Space	Shap.	Space Ant. Gain		Earth	Polarization		EIRP	Power	Designation	Satellite	Group	Status	Re-
Symb	Identification	Position°	nel	Frequency	Long.°	Lat.°	Major°	Minor°	Orient.°	Antenna	Beam	Co-pol.	X-pol.	Antenna	Typ.	Angle	dBW	Control	of Emission	Identification	Code		marks
SDN	SDN23100	-7.00	30	17883.70	29.90	12.90	2.64	2.08	155.00	MODRSS		37.05		MODTES	CR		86.00		27M0F8W			P	
SUI	SUI14000	-19.00	30	17883.70	8.20	46.60	0.98	0.70	171.00	MODRSS		46.08		MODTES	CR		84.00		27M0F8W			P	2
SYR	SYR22900	11.00	30	17883.70	38.30	34.90	1.04	0.90	7.00	MODRSS		44.73		MODTES	CL		84.00		27M0F8W			P	
TUN	TUN15000	-25.00	30	17883.70	9.50	33.50	1.88	0.72	135.00	MODRSS		43.13		MODTES	CL		84.00		27M0F8W			P	
AGL	AGL29500	-13.00	31	17902.88	16.50	-12.00	3.09	2.26	84.00	MODRSS		36.01		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00900	164.00	31	17902.88	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		78	P	
AUS	AUS0090A	164.00	31	17902.88	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
AUS	AUS0090B	164.00	31	17902.88	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
BHR	BHR25500	17.00	31	17902.88	50.50	26.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
CVA	CVA08300	-37.00	31	17902.88	12.40	41.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
CZE	CZE14400	17.00	31	17902.88	15.50	49.79	0.92	0.60	174.55	MODRSS		47.02		MODTES	CR		84.00		27M0F8W			P	4
E	CNR13000	-30.00	31	17902.88	-15.70	28.40	1.54	0.60	5.00	MODRSS		44.79		MODTES	CR		84.00		27M0F8W		22	P	4
E	HISPASA2	-30.00	31	17902.88	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4
ERI	ERI09200	23.00	31	17902.88	39.41	14.98	1.67	0.95	145.48	MODRSS		42.44		MODTES	CL		84.00		27M0F8W			P	4
F	F2aA2773	-7.00	31	17902.88	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	31	17902.88	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	31	17902.88	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	31	17902.88	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	31	17902.88	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	31	17902.88	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	31	17902.88	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	31	17902.88	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	31	17902.88	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	31	17902.88	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	31	17902.88	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	31	17902.88	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
GHA	GHA10800	-25.00	31	17902.88	-1.20	7.90	1.48	1.06	102.00	MODRSS		42.49		MODTES	CR		83.00		27M0F8W			P	
GNE	GNE30300	-19.00	31	17902.88	10.30	1.50	0.68	0.60	10.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
HOL	HOL21300	-19.00	31	17902.88	5.40	52.00	0.76	0.60	171.00	MODRSS		47.86		MODTES	CL		84.00		27M0F8W			P	
ISL	ISL05000	5.00	31	17902.88	-19.50	61.00	2.20	0.80	4.00	MODRSS		41.99		MODTES	CL		84.00		27M0F8W			P	
JOR	JOR22400	11.00	31	17902.88	35.80	31.40	0.84	0.78	114.00	MODRSS		46.28		MODTES	CR		85.00		27M0F8W			P	
NOR	BIFROS21	-0.80	31	17902.88	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CR		84.00		27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	31	17902.88	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	31	17902.88	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	31	17902.88	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	31	17902.88	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	31	17902.88	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	31	17902.88	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	31	17902.88	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	31	17902.88	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	31	17902.88	118.22	51.52					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RUS-4		P	3, 4
SDN	SDN23000	-7.00	31	17902.88	29.90	9.80	2.95	2.17	123.00	MODRSS		36.38		MODTES	CL		86.00		27M0F8W			P	
SRL	SRL25900	-33.50	31	17902.88	-11.80	8.60	0.78	0.68	114.00	MODRSS		47.20		MODTES	CL		84.00		27M0F8W			P	4
TKM	TKM06800	44.00	31	17902.88	59.18	38.84	2.25	0.99	164.51	MODRSS		40.94		MODTES	CL		84.00		27M0F8W			P	4, 7
ZWE	ZWE13500	-1.00	31	17902.88	29.60	-18.80	1.46	1.36	37.00	MODRSS		41.47		MODTES	CR		85.00		27M0F8W			P	
ARM	ARM06400	23.00	32	17922.06	44.99	39.95	0.73	0.60	148.17	MODRSS		48.02		MODTES	CL		84.00		27M0F8W			P	4

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
AUS	AUS00600	152.00	32	17922.06	135.50	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
CAF	CAF25800	-13.00	32	17922.06	21.00	6.30	2.25	1.68	31.00	MODRSS		38.67		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2788	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	32	17922.06	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	32	17922.06	45.10	-12.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W		7	P	
F	MYT09801	29.00	32	17922.06	3.60	45.60	1.97	1.71	22.00	MODRSS		39.17		MODTES	CL		84.00		27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	32	17922.06	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	32	17922.06	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	32	17922.06	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	32	17922.06	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	32	17922.06	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	32	17922.06	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	32	17922.06	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
I	I 08200	-19.00	32	17922.06	12.30	41.30	2.38	0.98	137.00	MODRSS		40.77		MODTES	CR		84.00		27M0F8W			P	
IRQ	IRQ25600	11.00	32	17922.06	43.50	33.00	2.28	1.32	145.00	MODRSS		39.66		MODTES	CL		84.00		27M0F8W			P	
KAZ	KAZ06600	44.00	32	17922.06	64.72	46.40	4.31	1.70	172.22	MODRSS		35.79		MODTES	CR		84.00		27M0F8W			P	4, 7
LSO	LSO30500	5.00	32	17922.06	27.80	-29.80	0.66	0.60	36.00	MODRSS		48.47		MODTES	CL		84.00		27M0F8W			P	
MTN	MTN28800	-37.00	32	17922.06	-7.80	23.40	1.63	1.10	141.00	MODRSS		41.91		MODTES	CL		86.00		27M0F8W			P	
MWI	MWI30800	-1.00	32	17922.06	34.10	-13.00	1.54	0.60	87.00	MODRSS		44.79		MODTES	CL		84.00		27M0F8W			P	
NGR	NGR11500	-25.00	32	17922.06	8.30	16.80	2.54	2.08	44.00	MODRSS		37.22		MODTES	CL		85.00		27M0F8W			P	
NOR	BIFROS22	-0.80	32	17922.06	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
NOR	NOR12102	5.00	32	17922.06	17.00	61.50	2.00	1.00	10.00	R13RSS		41.44		R13TES	CR		84.00		27M0F8W			PE	
OMA	OMA12300	17.00	32	17922.06	55.60	21.00	1.88	1.02	100.00	MODRSS		41.62		MODTES	CR		85.00		27M0F8W			P	
POR	AZR13400	-30.00	32	17922.06	-23.40	36.10	2.56	0.70	158.00	MODRSS		41.91		MODTES	CL		84.00		27M0F8W			P	
RUS	RSTRSA12	36.00	32	17922.06	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	32	17922.06	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	32	17922.06	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	32	17922.06	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	32	17922.06	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	32	17922.06	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	32	17922.06	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	32	17922.06	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
SDN	SDN23200	-7.00	32	17922.06	29.60	18.40	2.54	2.09	167.00	MODRSS		37.20		MODTES	CR		86.00		27M0F8W			P	
ALB	ALB29600	-7.00	33	17941.24	20.10	41.00	1.17	0.65	128.00	MODRSS		45.64		MODTES	CL		84.00		27M0F8W			P	
BEL	BEL01800	-19.00	33	17941.24	4.60	50.60	0.82	0.60	167.00	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
BFA	BFA10700	-30.00	33	17941.24	-1.50	12.20	1.45	1.14	29.00	MODRSS		42.26		MODTES	CL		84.00		27M0F8W			P	4
CYP	CYP08600	5.00	33	17941.24	33.30	35.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
D	D2-21600	-1.00	33	17941.24	12.60	52.10	0.83	0.63	172.00	MODRSS		47.26		MODTES	CR		84.00		27M0F8W			P	4, 7
DJI	DJI09900	23.00	33	17941.24	42.50	11.60	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
E	HISPASA2	-30.00	33	17941.24	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4
F	F 09306	-7.00	33	17941.24	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	33	17941.24	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	33	17941.24	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	33	17941.24	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	33	17941.24	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	33	17941.24	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	33	17941.24	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	33	17941.24	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	33	17941.24	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	33	17941.24	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	33	17941.24	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	33	17941.24	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
ISL	ISL04900	-33.50	33	17941.24	-19.00	64.90	1.00	0.60	177.00	MODRSS		46.67		MODTES	CR		82.00		27M0F8W			P	
KEN	KEN24900	11.00	33	17941.24	37.90	1.10	2.29	1.56	94.00	MODRSS		38.92		MODTES	CL		84.00		27M0F8W			P	
LVA	LVA06100	23.00	33	17941.24	24.53	56.20	0.83	0.60	0.05	MODRSS		47.50		MODTES	CR		84.00		27M0F8W			P	4
MCO	MCO11600	-37.00	33	17941.24	7.40	43.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
MNG	MNG24800	74.00	33	17941.24	107.50	47.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		89.02		27M0F8W			P	
RUS	RSTRSA11	36.00	33	17941.24	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	33	17941.24	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	33	17941.24	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	33	17941.24	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	33	17941.24	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	33	17941.24	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	33	17941.24	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	33	17941.24	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
SEN	SEN22200	-37.00	33	17941.24	-14.40	13.80	1.46	1.04	139.00	MODRSS		42.63		MODTES	CR		85.00		27M0F8W			P	
TON	TON21500	170.00	33	17941.24	-174.70	-18.00	1.41	0.68	85.00	MODRSS		44.63		MODTES	CR		84.00		27M0F8W			P	
UAE	UAE27400	17.00	33	17941.24	53.60	24.40	0.98	0.80	162.00	MODRSS		45.50		MODTES	CL		84.00		27M0F8W			P	
USA	GUM33100	122.00	33	17941.24	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CR		87.00		27M0F8W		15	P	
USA	GUM33101	122.00	33	17941.24	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CR		87.00		27M0F8W		15	P	
BDI	BDI27000	11.00	34	17960.42	29.90	-3.10	0.71	0.60	80.00	MODRSS		48.15		MODTES	CR		84.00		27M0F8W			P	
COG	COG23500	-13.00	34	17960.42	14.60	-0.70	2.02	1.18	59.00	MODRSS		40.67		MODTES	CR		84.00		27M0F8W			P	
CTI	CTI23700	-30.00	34	17960.42	-5.80	7.40	1.55	1.43	162.00	MODRSS		40.99		MODTES	CR		84.00		27M0F8W			P	4
F	F2aA2762	-7.00	34	17960.42	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2762	-7.00	34	17960.42	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	34	17960.42	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	34	17960.42	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	34	17960.42	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	REU09700	29.00	34	17960.42	55.60	-19.20	1.56	0.78	96.00	MODRSS		43.59		MODTES	CL		84.00		27M0F8W		5	P	
F	REU09701	29.00	34	17960.42	3.70	45.20	1.94	1.68	24.00	MODRSS		39.32		MODTES	CL		84.00		27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	34	17960.42	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	34	17960.42	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	34	17960.42	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F /EUT	E2WA7DD2	29.00	34	17960.42	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	34	17960.42	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	34	17960.42	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	34	17960.42	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G UKDBS	-33.50	34	17960.42	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.20		MODTES	CL		84.00		27M0F8W	UKDBS-3		A	4
GEO	GEO06400	23.00	34	17960.42	43.35	42.27	1.11	0.60	161.21	MODRSS		46.23		MODTES	CL		84.00		27M0F8W			P	4
HNG	HNG10600	-1.00	34	17960.42	22.20	45.60	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
KGZ	KGZ07000	44.00	34	17960.42	73.88	41.32	1.34	0.64	3.53	MODRSS		45.12		MODTES	CR		84.00		27M0F8W			P	4, 7
KWT	KWT11300	17.00	34	17960.42	47.60	29.20	0.68	0.60	145.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
MTN	MTN22300	-37.00	34	17960.42	-12.20	18.50	2.62	1.87	150.00	MODRSS		37.55		MODTES	CL		86.00		27M0F8W			P	
RUS	RSTRSA12	36.00	34	17960.42	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	34	17960.42	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	34	17960.42	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	34	17960.42	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	34	17960.42	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	34	17960.42	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	34	17960.42	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	34	17960.42	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
S	S 13800	5.00	34	17960.42	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W		27	P	
SDN	SDN23100	-7.00	34	17960.42	29.90	12.90	2.64	2.08	155.00	MODRSS		37.05		MODTES	CR		86.00		27M0F8W			P	
SUI	SUI14000	-19.00	34	17960.42	8.20	-46.60	0.98	0.70	171.00	MODRSS		46.08		MODTES	CR		84.00		27M0F8W			P	2
SYR	SYR22900	11.00	34	17960.42	38.30	34.90	1.04	0.90	7.00	MODRSS		44.73		MODTES	CL		84.00		27M0F8W			P	
TUN	TUN15000	-25.00	34	17960.42	9.50	33.50	1.88	0.72	135.00	MODRSS		43.13		MODTES	CL		84.00		27M0F8W			P	
AGL	AGL29500	-13.00	35	17979.60	16.50	12.00	3.09	2.26	84.00	MODRSS		36.01		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00900	164.00	35	17979.60	136.00	23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		78	P	
AUS	AUS0090A	164.00	35	17979.60	136.62	24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
AUS	AUS0090B	164.00	35	17979.60	136.62	24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
BHR	BHR25500	17.00	35	17979.60	50.50	26.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
CVA	CVA08300	-37.00	35	17979.60	12.40	-41.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
CZE	CZE14400	17.00	35	17979.60	15.50	-19.79	0.92	0.60	174.55	MODRSS		47.02		MODTES	CR		84.00		27M0F8W			P	4
DNK	DNK09100	5.00	35	17979.60	-19.50	61.00	2.20	0.80	4.00	MODRSS		41.99		MODTES	CL		84.00		27M0F8W			P	
E	CNR13000	-30.00	35	17979.60	-15.70	28.40	1.54	0.60	5.00	MODRSS		44.79		MODTES	CR		84.00		27M0F8W		22	P	4
E	HISPASA2	-30.00	35	17979.60	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4
ERI	ERI09200	23.00	35	17979.60	39.41	14.98	1.67	0.95	145.48	MODRSS		42.44		MODTES	CL		84.00		27M0F8W			P	4
F	F2aA2773	-7.00	35	17979.60	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	35	17979.60	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	35	17979.60	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	35	17979.60	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	35	17979.60	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	35	17979.60	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	35	17979.60	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	35	17979.60	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	35	17979.60	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	35	17979.60	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	35	17979.60	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	35	17979.60	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9

1	2	3	4	5	6		7			8	9	10		11	12			14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
GHA	GHA10800	-25.00	35	17979.60	-1.20	7.90	1.48	1.06	102.00	MODRSS		42.49		MODTES	CR		83.00		27M0F8W			P	
GNE	GNE30300	-19.00	35	17979.60	10.30	1.50	0.68	0.60	10.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
HOL	HOL21300	-19.00	35	17979.60	5.40	52.00	0.76	0.60	171.00	MODRSS		47.86		MODTES	CL		84.00		27M0F8W			P	
JOR	JOR22400	11.00	35	17979.60	35.80	31.40	0.84	0.78	114.00	MODRSS		46.28		MODTES	CR		85.00		27M0F8W			P	
NOR	BIFROS21	0.80	35	17979.60	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CR		84.00		27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	35	17979.60	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	35	17979.60	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	35	17979.60	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	35	17979.60	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	35	17979.60	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	35	17979.60	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	35	17979.60	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	35	17979.60	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	35	17979.60	118.22	51.52					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RUS-4		P	3, 4
SDN	SDN23000	-7.00	35	17979.60	29.90	9.80	2.95	2.17	123.00	MODRSS		36.38		MODTES	CL		86.00		27M0F8W			P	
SRL	SRL25900	-33.50	35	17979.60	-11.80	8.60	0.78	0.68	114.00	MODRSS		47.20		MODTES	CL		84.00		27M0F8W			P	4
TKM	TKM06800	44.00	35	17979.60	59.18	38.84	2.25	0.99	164.51	MODRSS		40.94		MODTES	CL		84.00		27M0F8W			P	4, 7
ZWE	ZWE13500	-1.00	35	17979.60	29.60	-18.80	1.46	1.36	37.00	MODRSS		41.47		MODTES	CR		85.00		27M0F8W			P	
ARM	ARM06400	23.00	36	17998.78	44.99	39.95	0.73	0.60	148.17	MODRSS		48.02		MODTES	CL		84.00		27M0F8W			P	4
AUS	AUS00600	152.00	36	17998.78	135.50	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
CAF	CAF25800	-13.00	36	17998.78	21.00	6.30	2.25	1.68	31.00	MODRSS		38.67		MODTES	CR		84.00		27M0F8W			P	
DNK	DNK09000	5.00	36	17998.78	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2788	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_A3388	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	36	17998.78	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	36	17998.78	45.10	-12.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W		7	P	
F	MYT09801	29.00	36	17998.78	3.60	45.60	1.97	1.71	22.00	MODRSS		39.17		MODTES	CL		84.00		27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	36	17998.78	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	36	17998.78	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	36	17998.78	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	36	17998.78	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	36	17998.78	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	36	17998.78	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	36	17998.78	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
I	I 08200	-19.00	36	17998.78	12.30	41.30	2.38	0.98	137.00	MODRSS		40.77		MODTES	CR		84.00		27M0F8W			P	
IRQ	IRQ25600	11.00	36	17998.78	43.50	33.00	2.28	1.32	145.00	MODRSS		39.66		MODTES	CL		84.00		27M0F8W			P	
KAZ	KAZ06600	44.00	36	17998.78	64.72	46.40	4.31	1.70	172.22	MODRSS		35.79		MODTES	CR		84.00		27M0F8W			P	4, 7
LSO	LSO30500	5.00	36	17998.78	27.80	-29.80	0.66	0.60	36.00	MODRSS		48.47		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.	Lat	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
MTN	MTN28800	-37.00	36	17998.78	-7.80	23.40	1.63	1.10	141.00	MODRSS		41.91		MODTES	CL		86.00		27M0F8W			P	
MWI	MWI30800	-1.00	36	17998.78	34.10	-13.00	1.54	0.60	87.00	MODRSS		44.79		MODTES	CL		84.00		27M0F8W			P	
NGR	NGR11500	-25.00	36	17998.78	8.30	16.80	2.54	2.08	44.00	MODRSS		37.22		MODTES	CL		85.00		27M0F8W			P	
NOR	BIFROS22	-0.80	36	17998.78	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
OMA	OMA12300	17.00	36	17998.78	55.60	21.00	1.88	1.02	100.00	MODRSS		41.62		MODTES	CR		85.00		27M0F8W			P	
POR	AZR13400	-30.00	36	17998.78	-23.40	36.10	2.56	0.70	158.00	MODRSS		41.91		MODTES	CL		84.00		27M0F8W			P	7
RUS	RSTRSA12	36.00	36	17998.78	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	36	17998.78	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	36	17998.78	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	36	17998.78	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	36	17998.78	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	36	17998.78	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	36	17998.78	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	36	17998.78	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
SDN	SDN23200	-7.00	36	17998.78	29.60	18.40	2.54	2.09	167.00	MODRSS		37.20		MODTES	CR		86.00		27M0F8W			P	
ALB	ALB29600	-7.00	37	18017.96	20.10	41.00	1.17	0.65	128.00	MODRSS		45.64		MODTES	CL		84.00		27M0F8W			P	
BEL	BEL01800	-19.00	37	18017.96	4.60	50.60	0.82	0.60	167.00	MODRSS		47.53		MODTES	CL		84.00		27M0F8W			P	
BFA	BFA10700	-30.00	37	18017.96	-1.50	12.20	1.45	1.14	29.00	MODRSS		42.26		MODTES	CL		84.00		27M0F8W			P	4, 7
CYP	CYP08600	5.00	37	18017.96	33.30	35.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
D	D2-21600	-1.00	37	18017.96	12.60	52.10	0.83	0.63	172.00	MODRSS		47.26		MODTES	CR		84.00		27M0F8W			P	4, 7
DJI	DJI09900	23.00	37	18017.96	42.50	11.60	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	
E	HISPASA2	-30.00	37	18017.96	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4, 7
F	F 09306	-7.00	37	18017.96	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F8W	RADIOSAT	19	A	
F	F3_A2751	-7.00	37	18017.96	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3351	-7.00	37	18017.96	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2751	-7.00	37	18017.96	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3351	-7.00	37	18017.96	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		77.30		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	37	18017.96	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	37	18017.96	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	37	18017.96	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	37	18017.96	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	37	18017.96	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	37	18017.96	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	37	18017.96	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
ISL	ISL04900	-33.50	37	18017.96	-19.00	64.90	1.00	0.60	177.00	MODRSS		46.67		MODTES	CR		82.00		27M0F8W			P	
KEN	KEN24900	11.00	37	18017.96	37.90	1.10	2.29	1.56	94.00	MODRSS		38.92		MODTES	CL		84.00		27M0F8W			P	
LVA	LVA06100	23.00	37	18017.96	24.53	56.20	0.83	0.60	0.05	MODRSS		47.50		MODTES	CR		84.00		27M0F8W			P	4
MCO	MCO11600	-37.00	37	18017.96	7.40	43.70	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		83.00		27M0F8W			P	
MNG	MNG24800	74.00	37	18017.96	107.50	47.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		89.02		27M0F8W			P	
RUS	RSTRSA11	36.00	37	18017.96	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	37	18017.96	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	37	18017.96	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	37	18017.96	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	37	18017.96	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	37	18017.96	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	37	18017.96	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm Symb	Beam Identification	Orbital Position	Channel	Centre Frequency	Boresight Long.°	Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Re-marks
RUS	RSTRSD51	140.00	37	18017.96	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
SEN	SEN22200	-37.00	37	18017.96	-14.40	13.80	1.46	1.04	139.00	MODRSS		42.63		MODTES	CR		85.00		27M0F8W			P	
UAE	UAE27400	17.00	37	18017.96	53.60	24.40	0.98	0.80	162.00	MODRSS		45.50		MODTES	CL		84.00		27M0F8W			P	
USA	GUM33100	122.00	37	18017.96	151.10	11.60	6.48	3.49	179.00	MODRSS		30.90		MODTES	CR		87.00		27M0F8W		15	P	
USA	GUM33101	122.00	37	18017.96	-157.50	21.00	2.02	0.60	115.00	MODRSS		43.61		MODTES	CR		87.00		27M0F8W		15	P	
BDI	BDI27000	11.00	38	18037.14	29.90	-3.10	0.71	0.60	80.00	MODRSS		48.15		MODTES	CR		84.00		27M0F8W			P	
COG	COG23500	-13.00	38	18037.14	14.60	-0.70	2.02	1.18	59.00	MODRSS		40.67		MODTES	CR		84.00		27M0F8W			P	
CTI	CTI23700	-30.00	38	18037.14	-5.80	7.40	1.55	1.43	162.00	MODRSS		40.99		MODTES	CR		84.00		27M0F8W			P	4, 7
F	F2aA2762	-7.00	38	18037.14	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2762	-7.00	38	18037.14	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3362	-7.00	38	18037.14	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2762	-7.00	38	18037.14	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3362	-7.00	38	18037.14	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	REU09700	29.00	38	18037.14	55.60	-19.20	1.56	0.78	96.00	MODRSS		43.59		MODTES	CL		84.00		27M0F8W		5	P	
F	REU09701	29.00	38	18037.14	3.70	45.20	1.94	1.68	24.00	MODRSS		39.32		MODTES	CL		84.00		27M0F8W		5	P	
F /EUT	E2WA7DA2	29.00	38	18037.14	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	38	18037.14	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	38	18037.14	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	38	18037.14	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	38	18037.14	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	38	18037.14	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	38	18037.14	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
G	G_UKDBS	-33.50	38	18037.14	-3.50	53.80	1.84	0.72	142.00	MODRSS		43.20		MODTES	CL		84.00		27M0F8W	UKDBS-3		A	4
GEO	GEO06400	23.00	38	18037.14	43.35	42.27	1.11	0.60	161.21	MODRSS		46.23		MODTES	CL		84.00		27M0F8W			P	4
HNG	HNG10600	-1.00	38	18037.14	22.20	45.60	2.00	2.00	0.00	MODRSS		38.43		MODTES	CL		84.00		27M0F8W			P	
KGZ	KGZ07000	44.00	38	18037.14	73.88	41.32	1.34	0.64	3.53	MODRSS		45.12		MODTES	CR		84.00		27M0F8W			P	4, 7
KWT	KWT11300	17.00	38	18037.14	47.60	29.20	0.68	0.60	145.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
MTN	MTN22300	-37.00	38	18037.14	-12.20	18.50	2.62	1.87	150.00	MODRSS		37.55		MODTES	CL		86.00		27M0F8W			P	
NOR	NOR12000	5.00	38	18037.14	17.00	61.50	2.00	1.00	10.00	MODRSS		41.44		MODTES	CR		84.00		27M0F8W			P	
RUS	RSTRSA12	36.00	38	18037.14	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	38	18037.14	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	38	18037.14	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	38	18037.14	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	38	18037.14	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	38	18037.14	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	38	18037.14	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	38	18037.14	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
SDN	SDN23100	-7.00	38	18037.14	29.90	12.90	2.64	2.08	155.00	MODRSS		37.05		MODTES	CR		86.00		27M0F8W			P	
SUI	SUI14000	-19.00	38	18037.14	8.20	46.60	0.98	0.70	171.00	MODRSS		46.08		MODTES	CR		84.00		27M0F8W			P	2
SYR	SYR33900	11.00	38	18037.14	37.60	34.20	1.32	0.88	74.00	MODRSS		43.80		MODTES	CL		84.00		27M0F8W			P	
TUN	TUN27200	-25.00	38	18037.14	2.50	32.00	3.59	1.75	175.00	MODRSS		36.47		MODTES	CL		84.00		27M0F8W			P	
AGL	AGL29500	-13.00	39	18056.32	16.50	-12.00	3.09	2.26	84.00	MODRSS		36.01		MODTES	CL		84.00		27M0F8W			P	
AUS	AUS00900	164.00	39	18056.32	136.00	-23.90	7.26	4.48	132.00	MODRSS		29.32		MODTES	CR		87.00		27M0F8W		78	P	
AUS	AUS0090A	164.00	39	18056.32	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
AUS	AUS0090B	164.00	39	18056.32	136.62	-24.16	6.82	4.20	134.19	R123FR		29.87		MODTES	CR		87.00		27M0F8W		78	P	4
BHR	BHR25500	17.00	39	18056.32	50.50	26.10	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W			P	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
CVA	CVA08300	-37.00	39	18056.32	12.40	41.60	0.60	0.60	0.00	MODRSS		48.88		MODTES	CR		84.00		27M0F8W			P	
CZE	CZE14400	17.00	39	18056.32	15.50	49.79	0.92	0.60	174.55	MODRSS		47.02		MODTES	CR		84.00		27M0F8W			P	4
E	CNR13000	-30.00	39	18056.32	-15.70	28.40	1.54	0.60	5.00	MODRSS		44.79		MODTES	CR		84.00		27M0F8W		22	P	4, 7
E	HISPASA2	-30.00	39	18056.32	-8.80	35.40	3.00	1.90	45.00	MODRSS		36.90		MODTES	CR		84.00		27M0F8W	HISPASAT-2	22	A	4, 7
ERI	ERI09200	23.00	39	18056.32	39.41	14.98	1.67	0.95	145.48	MODRSS		42.44		MODTES	CL		84.00		27M0F8W			P	4
F	F2aA2773	-7.00	39	18056.32	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2773	-7.00	39	18056.32	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3373	-7.00	39	18056.32	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2773	-7.00	39	18056.32	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3373	-7.00	39	18056.32	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		76.60		33M0G9W	RADIOSAT-3	19	A	
F /EUT	E2WA7DA1	29.00	39	18056.32	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB1	29.00	39	18056.32	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC1	29.00	39	18056.32	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD1	29.00	39	18056.32	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE1	29.00	39	18056.32	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF1	29.00	39	18056.32	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG1	29.00	39	18056.32	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CL		84.00		27M0F9W	EUROPESAT-1	16	AE	9
GHA	GHA10800	-25.00	39	18056.32	-1.20	7.90	1.48	1.06	102.00	MODRSS		42.49		MODTES	CR		83.00		27M0F8W			P	
GNE	GNE30300	-19.00	39	18056.32	10.30	1.50	0.68	0.60	10.00	MODRSS		48.34		MODTES	CR		84.00		27M0F8W			P	
HOL	HOL21300	-19.00	39	18056.32	5.40	52.00	0.76	0.60	171.00	MODRSS		47.86		MODTES	CL		84.00		27M0F8W			P	
ISL	ISL05000	5.00	39	18056.32	-19.50	61.00	2.20	0.80	4.00	MODRSS		41.99		MODTES	CL		84.00		27M0F8W			P	
JOR	JOR22400	11.00	39	18056.32	35.80	31.40	0.84	0.78	114.00	MODRSS		46.28		MODTES	CR		85.00		27M0F8W			P	
MNG	MNG24800	74.00	39	18056.32	107.50	47.80	2.00	2.00	0.00	MODRSS		38.43		MODTES	CR		89.02		27M0F8W			P	
NOR	BIFROS21	-0.80	39	18056.32	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CR		84.00		27M0FXF	BIFROSTXX2		A	
RUS	RSTRSA11	36.00	39	18056.32	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA21	56.00	39	18056.32	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA31	86.00	39	18056.32	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA51	140.00	39	18056.32	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0F8W	RST-5	42	P	
RUS	RSTRSD11	36.00	39	18056.32	38.00	53.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD21	56.00	39	18056.32	65.00	63.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD31	86.00	39	18056.32	97.00	62.00					COP	38.40	8.40	MODTES	CR		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD51	140.00	39	18056.32	158.00	56.00					COP	38.40		MODTES	CR		84.00		27M0G7W	RST-5	42	P	
RUS	RUS00400	110.00	39	18056.32	118.22	51.52					COP	38.40	8.40	MODTES	CR		84.00		27M0F3F	RUS-4		P	3, 4, 7
SDN	SDN23000	-7.00	39	18056.32	29.90	9.80	2.95	2.17	123.00	MODRSS		36.38		MODTES	CL		86.00		27M0F8W			P	
SRL	SRL25900	-33.50	39	18056.32	-11.80	8.60	0.78	0.68	114.00	MODRSS		47.20		MODTES	CL		84.00		27M0F8W			P	4
TKM	TKM06800	44.00	39	18056.32	59.18	38.84	2.25	0.99	164.51	MODRSS		40.94		MODTES	CL		84.00		27M0F8W			P	4, 7
ZWE	ZWE13500	-1.00	39	18056.32	29.60	-18.80	1.46	1.36	37.00	MODRSS		41.47		MODTES	CR		85.00		27M0F8W			P	
ARM	ARM06400	23.00	40	18075.50	44.99	39.95	0.73	0.60	148.17	MODRSS		48.02		MODTES	CL		84.00		27M0F8W			P	4
AUS	AUS00600	152.00	40	18075.50	135.50	-24.20	7.19	5.20	140.00	MODRSS		28.71		MODTES	CR		87.00		27M0F8W			P	
CAF	CAF25800	-13.00	40	18075.50	21.00	6.30	2.25	1.68	31.00	MODRSS		38.67		MODTES	CR		84.00		27M0F8W			P	
F	F2_A2788	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CR		84.00		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2784	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F2aA2788	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-2	19	A	
F	F3_A2784	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A2788	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		27M0F9W	RADIOSAT-3	19	A	
F	F3_A3384	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	

1	2	3	4	5	6		7			8	9	10		11	12		13	14	15	16	17	18	19
Adm. Symb	Beam Identification	Orbital Position°	Channel	Centre Frequency	Boresight Long.°	Boresight Lat.°	Space Antenna Character. Major°	Minor°	Orient.°	Space Antenna	Shap. Beam	Space Ant. Gain Co-pol.	X-pol.	Earth Antenna	Polarization Typ.	Angle	EIRP dBW	Power Control	Designation of Emission	Satellite Identification	Group Code	Status	Remarks
F	F3_A3388	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0F9W	RADIOSAT-3	19	A	
F	F3_D2784	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D2788	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3384	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	F3_D3388	-7.00	40	18075.50	3.88	48.20	0.70	0.70	0.00	MODRSS		41.00		MODTES	CL		76.60		33M0G9W	RADIOSAT-3	19	A	
F	MYT09800	29.00	40	18075.50	45.10	-12.80	0.60	0.60	0.00	MODRSS		48.88		MODTES	CL		84.00		27M0F8W		7	P	
F	MYT09801	29.00	40	18075.50	3.60	45.60	1.97	1.71	22.00	MODRSS		39.17		MODTES	CL		84.00		27M0F8W		7	P	
F /EUT	E2WA7DA2	29.00	40	18075.50	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DB2	29.00	40	18075.50	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DC2	29.00	40	18075.50	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DD2	29.00	40	18075.50	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DE2	29.00	40	18075.50	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DF2	29.00	40	18075.50	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
F /EUT	E2WA7DG2	29.00	40	18075.50	16.30	44.30	5.77	2.96	11.00	R13RSS		32.50		R13TES	CR		84.00		27M0F9W	EUROPESAT-1	16	AE	9
I	I 08200	-19.00	40	18075.50	12.30	41.30	2.38	0.98	137.00	MODRSS		40.77		MODTES	CR		84.00		27M0F8W			P	
IRQ	IRQ25600	11.00	40	18075.50	43.50	33.00	2.28	1.32	145.00	MODRSS		39.66		MODTES	CL		84.00		27M0F8W			P	
KAZ	KAZ06600	44.00	40	18075.50	64.72	46.40	4.31	1.70	172.22	MODRSS		35.79		MODTES	CR		84.00		27M0F8W			P	4, 7
LSO	LSO30500	5.00	40	18075.50	27.80	-29.80	0.66	0.60	36.00	MODRSS		48.47		MODTES	CL		84.00		27M0F8W			P	
MTN	MTN28800	-37.00	40	18075.50	-7.80	23.40	1.63	1.10	141.00	MODRSS		41.91		MODTES	CL		86.00		27M0F8W			P	
MWI	MWI30800	-1.00	40	18075.50	34.10	-13.00	1.54	0.60	87.00	MODRSS		44.79		MODTES	CL		84.00		27M0F8W			P	
NGR	NGR11500	-25.00	40	18075.50	8.30	16.80	2.54	2.08	44.00	MODRSS		37.22		MODTES	CL		85.00		27M0F8W			P	
NOR	BIFROS22	-0.80	40	18075.50	17.00	61.50	2.00	1.00	10.00	MODRSS		41.00		MODTES	CL		84.00		27M0FXF	BIFROSTXX2		A	
OMA	OMA12300	17.00	40	18075.50	55.60	21.00	1.88	1.02	100.00	MODRSS		41.62		MODTES	CR		85.00		27M0F8W			P	
POR	AZR13400	-30.00	40	18075.50	-23.40	36.10	2.56	0.70	158.00	MODRSS		41.91		MODTES	CL		84.00		27M0F8W			P	7
RUS	RSTRSA12	36.00	40	18075.50	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-1	38	P	
RUS	RSTRSA22	56.00	40	18075.50	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-2	39	P	
RUS	RSTRSA32	86.00	40	18075.50	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0F3F	RST-3	40	P	
RUS	RSTRSA52	140.00	40	18075.50	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0F8W	RST-5	42	A	
RUS	RSTRSD12	36.00	40	18075.50	38.00	53.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-1	38	P	
RUS	RSTRSD22	56.00	40	18075.50	65.00	63.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-2	39	P	
RUS	RSTRSD32	86.00	40	18075.50	97.00	62.00					COP	38.40	8.40	MODTES	CL		84.00		27M0G7W	RST-3	40	P	
RUS	RSTRSD52	140.00	40	18075.50	158.00	56.00					COP	38.40		MODTES	CL		84.00		27M0G7W	RST-5	42	P	
S	S 13902	5.00	40	18075.50	17.00	61.50	2.00	1.00	10.00	R13RSS		41.44		R13TES	CR		84.00		27M0F8W			PE	
SDN	SDN23200	-7.00	40	18075.50	29.60	18.40	2.54	2.09	167.00	MODRSS		37.20		MODTES	CR		86.00		27M0F8W			P	

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 372-E
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.16 **PLENARY MEETING**

SIXTEENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 5	358	**ARTICLE S5** Table of allocations – band 450 - 460 MHz – Numbers S5.286A to S5.286E
	356	– Numbers S5.441, S5.441A Table of allocations – band 11.7 - 12.7 GHz – Numbers S5.516, S5.481A Table of allocations – band 18.8 - 19.3 GHz – band 28.5 - 29.1 GHz – Number S5.523A **ARTICLE S22** **RESOLUTION COM5-18 (WRC-97)** **RESOLUTION COM5-19 (WRC-97)** **RESOLUTION COM5-27 (WRC-97)**

A.-M. NEBES
Chairman of Committee 6

Annex: 34 pages

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ARTICLE S5

MHz
450 – 460

Allocation to Services		
Region 1	Region 2	Region 3
450 – 455	FIXED MOBILE MOD S5.209 S5.271 S5.286 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286D ADD S5.286E	
455 – 456 FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E	**455 – 456** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C	**455 – 456** FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E
456 – 459	FIXED MOBILE S5.271 S5.287 S5.288	
459 – 460 FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E	**459 – 460** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C	**459 – 460** FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E

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MOD **S5.286A** The use of the bands 454 - 456 MHz and 459 - 460 MHz by the mobile-satellite service is subject to coordination under Resolution **46 (Rev.WRC-97)**/No. **S9.11A**.

MOD **S5.286B** The use of the band 454 - 455 MHz in the countries listed in S5.286D, 455 - 456 MHz and 459 - 460 MHz in Region 2, and 454 - 456 MHz and 459 - 460 MHz in the countries listed in S5.286E ,by stations in the mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services.

MOD **S5.286C** The use of the band 454 - 455 MHz in the countries listed in S5.286D, 455 - 456 MHz and 459 - 460 MHz in Region 2, and 454 - 456 MHz and 459 - 460 MHz in the countries listed in S5.286E, by stations in the mobile-satellite service, shall not constrain the development and use of the fixed and mobile services.

ADD **S5.286D** *Additional allocation:* in Canada, the United States, Mexico and Panama, the band 454 - 455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis.

ADD **S5.286E** *Additional allocation:* in Cape Verde, Ghana, Indonesia, Mali, Nigeria and Papua New Guinea, the bands 454 - 456 MHz and 459- 460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis.

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MOD S5.441 The use of the bands 4500 - 4800 MHz (space-to-Earth), 6725 - 7025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix **S30B**. The use of the bands 10.7 - 10.95 GHz (space-to-Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by GSO satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix **S30B**. The use of the bands 10.7 - 10.95 GHz (space-to-Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by non-GSO satellite systems in the fixed-satellite service shall be in accordance with the provisions of Resolution [**COM5-18**].

ADD S5.441A* The use of the bands 10.95 - 11.2 GHz (space-to-Earth), 11.45 - 11.7 GHz (space-to-Earth), 11.7 - 12.2 GHz (space-to-Earth) in Region 2, 12.2 - 12.75 GHz (space-to-Earth) in Region 3, 12.5 - 12.75 GHz (space-to-Earth) in Region 1, 13.75 - 14.5 GHz (Earth-to-space), 17.8 - 18.6 GHz (space-to-Earth), 19.7 - 20.2 GHz (space-to-Earth), 27.5 - 28.6 GHz (Earth-to-space), 29.5 - 30 GHz (Earth-to-space) by non-GSO and GSO satellite systems in the fixed-satellite service is subject to the provisions of Resolution [**COM5-18**]. The use of the band 17.8 - 18.1 GHz (space-to-Earth) by non-GSO FSS systems is also subject to the provisions of Resolution [**COM5-19**].

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* NOTE - Footnote S5.441A shall be placed in all boxes in the Table in Article S5 relating to frequency bands referred to in that note.

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MOD

GHz
10.7 – 12.7

Allocation to Services		
Region 1	Region 2	Region 3
11.7 – 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE Mobile except aeronautical mobile	**11.7 – 12.1** FIXED S5.486 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile S5.485 S5.488	**11.7 – 12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE
	12.1 – 12.2 FIXED-SATELLITE (space-to-Earth) S5.485 S5.488 S5.489	S5.487 S5.487A
S5.487 S5.487A	**12.2 – 12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE S5.488 S5.490 S5.492 S5.487A	**12.2 – 12.5** FIXED MOBILE except aeronautical mobile BROADCASTING S5.487 S5.491

MOD S5.516 The use of the band 17.3 - 18.1 GHz by GSO satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. For the use of the band 17.3 - 17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2 - 12.7 GHz, see Article **S11**. The use of the bands 17.3 - 18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8 - 18.1 GHz (Earth-to-space) in Region 2 by non-GSO satellite systems in the fixed-satellite service is subject to the provisions of Resolution [**COM5-19**].

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ADD S5.487A *Additional allocation:* in Region 1, the band 11.7 - 12.5 GHz, in Region 2, the band 12.2 - 12.7 GHz and in Region 3, the band 11.7 - 12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-GSO systems and subject to the provisions of Resolution [**COM5-19**].

MOD

GHz
18.6 – 20.2

Allocation to Services		
Region 1	Region 2	Region 3
18.8 – 19.3	FIXED FIXED-SATELLITE (space-to-Earth) MOD S5.523A MOBILE	

MOD

GHz
27 – 29.9

Allocation to Services		
Region 1	Region 2	Region 3
28.5 – 29.1	FIXED FIXED-SATELLITE (Earth-to-space) MOD S5.523A S5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) S5.541 S5.540	

MOD S5.523A The use of the bands 18.8 - 19.3 GHz (space-to-Earth) and 28.6 - 29.1 GHz (Earth-to-space) by GSO and non-GSO fixed-satellite service networks is subject to the application of the provisions of No. **S9.11A**/Resolution **46 (Rev.WRC-97)** and No. **S22.2** [**2613**] does not apply. Administrations having GSO networks under coordination prior to 18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. **S9.11A**/Resolution **46** (**Rev.WRC-97**) with non-GSO networks for which notification information has been received by the Bureau prior to that date, with a view to reaching results acceptable to all the parties concerned. Non-GSO networks shall not cause unacceptable interference to GSO fixed-satellite service networks for which complete Appendix **3** notification information is considered as having been received by the Bureau prior to 18 November 1995.

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ARTICLE S22

Section II. Control of Interference to Geostationary-Satellite Systems

MOD **S22.2** § 2. (1) Non-geostationary-satellite systems shall not cause unacceptable interference to geostationary-satellite systems in the fixed-satellite service and the broadcasting-satellite service operating in accordance with these Regulations.

ADD **S22.5A1** In the frequency band 17.8 - 18.1 GHz, the maximum aggregate power flux-density produced at the geostationary-satellite orbit by all the space stations in a non-geostationary-satellite system in the fixed-satellite service shall not exceed the values given in Table **S22-2**.

ADD **S22.5B** § 6. (1) The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary-satellite orbit, produced by emissions from all the space stations of a non-geostationary-satellite system operating in the fixed-satellite service in the frequency bands listed in Table **S22-**1, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-1** for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth as specified in Table **S22-1**, for all pointing directions towards the geostationary-satellite orbit.

ADD **S22.5B.1** [1] The equivalent power flux-density is defined as the sum of the power flux-densities produced at a point of the Earth's surface by all space stations within a non-geostationary-satellite system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing towards the geostationary-satellite orbit. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{\max}}\right]$$

where:

– N_s is the number of non-geostationary space stations visible from the point considered at the Earth's surface, within an elevation angle greater than or equal to 0°;

– i is the index of the non-geostationary space station considered;

– pfd_i is the power flux-density produced at the point considered at the Earth's surface in dB(W/m^2) in the reference bandwidth;

– θ_i is the angle between the direction considered towards the geostationary-satellite orbit and the direction of the interfering space station in the non-geostationary-satellite system;

– $G_r(\theta_i)$ is the gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary-satellite network;

– G_{max} is the maximum gain (as a ratio) of the above receive reference antenna;

– $epfd$ is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

NOTE - Tables S22-1 to S22-4 and Nos. S22.26 to S22.29 contain provisional limits corresponding to an interference level caused by one non-GSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

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ADD TABLE **S22-1**

Frequency band allocated to the BSS	**Antenna diameter (cm)**	**Equivalent pfd level (dB(W/m²/4kHz)) which may not be exceeded during the percentage of time shown**		**Reference antenna radiation pattern**
		99.7%	**100%**	
11.7 - 12.5 GHz in Region 1, 11.7 - 12.2 GHz and 12.5 - 12.75 GHz in Region 3	30 60 90	-172.3 -183.3 -186.8	-169.3 -170.3 -170.3	Recommendation ITU-R BO.1213
12.2 - 12.7 GHz in Region 2	45 100 120 180	-174.3 -186.3 -187.9 -191.4	-165.3 -170.3 -170.3 -170.3	Section 3.7.2 of Annex 5 of Appendix **30**
17.3 - 17.8 GHz in Region 2	For further study[1)]			

[1)] The interference from non-GSO FSS systems into GSO BSS systems operating in the frequency bands 17.3 - 17.8 GHz relates to the two following sharing situations:

- non-GSO FSS transmit earth station into GSO receive earth station;
- GSO BSS transmit space station into non-GSO FSS receive space stations.

Both situations need to be studied, in particular since coexistence of receive BSS earth stations and large numbers of transmit non-GSO FSS terminals would not be feasible within the same country.

ADD **S22.5C** (2) The aggregate power flux-density[2] produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary system in the fixed-satellite service, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-2** for the specified percentages of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in Table **S22-2**.

ADD S22.5C.1 [2] The aggregate power flux-density is defined as the summation of the power flux-densities produced at a point in the geostationary-satellite orbit by all the earth stations of a non-geostationary-satellite system. The aggregate power flux-density is computed by means of the following formula:

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_e} 10^{P_i(t)/10} \cdot \frac{G_t(\theta_i)}{4 \cdot \pi \cdot {d_i}^2}\right]$$

where:

– N_e is the number of earth stations in the non-geostationary-satellite system with an elevation angle greater than or equal to 0°, from which the point considered in the geostationary-satellite orbit is visible;

– i is the index of the earth station considered in the non-geostationary-satellite system;

– P_i is the RF power at the input of the transmitting antenna of the earth station considered in the non-geostationary-satellite system in dBW in the reference bandwidth;

– $\theta_i(t)$ is the off-axis angle between the boresight of the earth station considered in the non-geostationary-satellite system and the direction of the point considered in the geostationary-satellite orbit;

– $G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the earth station considered in the non-geostationary-satellite system in the direction of the point considered in the geostationary-satellite orbit;

– d_i is the distance in metres between the earth station considered in the non-geostationary-satellite system and the point considered in the geostationary-satellite orbit;

– $apfd$ is the aggregate power flux-density in dB(W/m^2) in the reference bandwidth.

NOTE - Tables S22-1 to S22-4 and RR S22.26 to S22.29 contain provisional limits corresponding to an interference level caused by one non-GSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

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ADD TABLE **S22-2**

Frequency band	**Aggregate pfd dB(W/m²/4 kHz)**	**Percentage of time during which pfd level may not be exceeded**
17.3 - 18.1 GHz in Regions 1 and 3 and 17.8 - 18.1 GHz in Region 2	-163	100%

ADD S22.5D (3) The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary-satellite orbit, produced by emissions from all the space stations of a non-geostationary-satellite system operating in the fixed-satellite service in the frequency bands listed in Table **S22-3**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-3** for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions into all the reference antennas and in the reference bandwidths specified in Table **S22-3**, and for all pointing directions towards the geostationary-satellite orbit.

NOTE - Tables S22-1 to S22-4 and RR S22.26 to S22.29 contain provisional limits corresponding to an interference level caused by one non-GSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

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ADD

PART (A) OF TABLE **S22-3**

Frequency band	**Equivalent pfd dB(W/m^2)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern**
10.7 - 11.7 GHz, 11.7 - 12.2 GHz in Region 2, 12.2 - 12.5 GHz in Region 3 and 12.5 - 12.75 GHz in Regions 1 and 3	-179	99.7	4	60 cm, ITU-R Rec. 465-5
	-192	99.9	4	3 m, ITU-R Rec. 465-5
	-186	99.97	4	3 m, ITU-R Rec. 465-5
	-195	99.97	4	10 m, ITU-R Rec. 465-5
	-170	99.999	4	60 cm, ITU-R Rec. 465-5
	-173	99.999	4	3 m, ITU-R Rec. 465-5
	-178	99.999	4	10 m, ITU-R Rec. 465-5
	-170	100	4	≥60 cm, ITU-R Rec. 465-5

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PART (B) OF TABLE **S22-3**

Frequency band	**Equivalent pfd dB(W/m^2)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern**
17.8 - 18.6 GHz	-165 -151	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-165 -151	99.0	40 1000	70 cm, ITU-R Rec. 465-5
	-165 -151	99.5	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	1.5 m, ITU-R Rec. 465-5
	-180 -166	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-184 -170	99.9	40 1000	7.5 m, ITU-R Rec. 465-5
	-188 -174	99.9	40 1000	12 m, ITU-R Rec. 465-5
	-165 -151	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5
19.7 - 20.2 GHz	-154 -140	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-164 -150	99.9	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	2 m, ITU-R Rec. 465-5
	-174 -160	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-154 -140	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5

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ADD **S22.5E** (2) The aggregate power flux-density[2] produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary-satellite system operating in the fixed-satellite service, for all conditions and for all methods of modulation, shall not exceed the limits given in Table **S22-4** for any percentage of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in Table **S22-4**.

NOTE - Tables S22-1 to S22-4 and RR S22.26 to S22.29 contain provisional limits corresponding to an interference level caused by one non-GSO FSS system in the frequency bands to be applied in accordance with Resolutions [COM5-18] and [COM5-19]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

ADD

PART (A) OF TABLE **S22-4**

Frequency band	**Aggregate pfd dB(W/m^2)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
12.5 - 12.75 GHz,	-170	100	4
12.75 - 13.25 GHz	-186	100	4
and 13.75 - 14.5 GHz	-170	100	4

PART (B) OF TABLE **S22-4**

Frequency band	**Aggregate pfd dB(W/m^2)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
27.5 - 28.6 GHz and	-159	100	40
29.5 - 30 GHz	-145	100	1000

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ADD **S22.5F** The limits given in Tables **S22-1** and **S22-3** may be exceeded on the territory of any country whose administration has so agreed.

Section VI. Earth Station Off-Axis Power Limitations in the Fixed-Satellite Service[1]

MOD **S22.26** § 9. The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station shall not exceed the following values for any off-axis angle φ which is 2.5° or more off the main lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p. per 40 kHz*
$2.5° \leq \varphi \leq 7°$	(39 - 25 log φ) dB(W/40 kHz)
$7° < \varphi \leq 9.2°$	18 dB(W/40 kHz)
$9.2° < \varphi \leq 48°$	(42 - 25 log φ) dB(W/40 kHz)
$48° < \varphi \leq 180°$	0 dB(W/40 kHz)

ADD **S22.27** For FM-TV emissions with energy dispersal, the limits in No. **S22.26** above may be exceeded by up to 3 dB provided that the off-axis total e.i.r.p. of the transmitted FM-TV carrier does not exceed the following values:

Off-axis angle	*Maximum e.i.r.p.*
$2.5° \leq \varphi \leq 7°$	(53 - 25 log φ) dBW
$7° < \varphi \leq 9.2°$	32 dBW
$9.2° < \varphi \leq 48°$	(56 - 25 log φ) dBW
$48° < \varphi \leq 180°$	14 dBW

[1] The provisions of this section are suspended pending the review of the values in Nos. S22.26, S22.27 and S22.28 by WRC-99.

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ADD S22.28 FM-TV carriers which operate without energy dispersal should be modulated at all times with programme material or appropriate test patterns. In this case, the off-axis total e.i.r.p. of the emitted FM-TV carrier shall not exceed the following values:

Off-axis angle	*Maximum e.i.r.p.*
$2.5° \leq \varphi \leq 7°$	$(53 - 25 \log \varphi)$ dBW
$7° < \varphi \leq 9.2°$	32 dBW
$9.2° < \varphi \leq 48°$	$(56 - 25 \log \varphi)$ dBW
$48° < \varphi \leq 180°$	14 dBW

ADD S22.29 The e.i.r.p. limits given in Nos.**S22.26**, **S22.27** and **S22.28** are applicable in the following frequency bands allocated to the fixed-satellite service (Earth-to-space):

12.75 - 13.25 GHz

13.75 - 14 GHz

14 - 14.5 GHz

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RESOLUTION COM5-18 (WRC-97)

USE OF NON-GEOSTATIONARY SYSTEMS IN THE FIXED-SATELLITE SERVICE IN CERTAIN FREQUENCY BANDS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the International Telecommunication Union has, among its purposes, "to promote the extension of the benefit of the new telecommunication technologies to all the world's inhabitants" (No. **6** of the Constitution of the International Telecommunication Union (Geneva, 1992));

b) that it is desirable, in this respect, to promote systems capable of providing universal service;

c) that new telecommunication services need advanced and reliable networks permitting high-capacity communications;

d) the need to encourage the development and implementation of new technologies;

e) that systems based on the use of new technologies associated with both geostationary (GSO) and non-geostationary (non-GSO) satellite constellations are capable of providing the most isolated regions of the world with high-capacity and low-cost means of communication;

f) that there should be equitable access to the radio-frequency spectrum and orbital resources in a mutually acceptable manner that allows for new entrants in the provision of services;

g) that all Members of the Union would benefit from the implementation of proposed systems in the allocated spectrum and from avoidance of monopolization or exclusive use of an allocation by a single system;

h) that the operation of such systems requires a suitable amount of spectrum in appropriate frequency bands;

i) that decisions on this matter should permit the operation of as many systems as possible;

j) that, in spite of the urgency attached to the development of such systems, technical, operational and regulatory issues should be studied in order to achieve the most efficient use of the spectrum that may be available for these systems;

k) that there is a need for the provision of services on a competitive basis between GSO/FSS and non-GSO/FSS as well as between non-GSO/FSS and non-GSO/FSS;

l) that the Radio Regulations must be sufficiently flexible to accommodate the introduction and implementation of innovative technologies as they evolve, and allow the further development and implementation of any proposed system in conformity with their provisions,

considering further

a) that further technical, operational and regulatory studies are required in order to determine further the conditions under which sharing of the frequency bands 10 - 30 GHz which are allocated to the FSS and where Resolution **46** does not apply is feasible between GSO and non-GSO systems, between non-GSO systems and between non-GSO and terrestrial systems;

b) that it is likely that non-GSO FSS systems communicated to the Radiocommunication Bureau will not be brought into use before the 1999 World Radiocommunication Conference (WRC-99);

c) that the diverging interpretations arising from No. **S22.2** result in an ambiguous regulatory status for both existing and future GSO and non-GSO systems in the fixed-satellite service (FSS) in the bands where this provision applies, with consequential risks for both types of systems;

d) that the harmonious development of non-GSO and GSO systems in the FSS requires that these ambiguities be resolved with no further delay;

e) that in resolving these ambiguities in the bands referred to in *resolves* 1 below, the GSO arc must be protected to ensure continued use of existing FSS systems and the development of new GSO technologies and systems in both unplanned bands and bands where plans exist;

f) that these ambiguities may be resolved in certain frequency bands by adopting power flux-density (pfd) limits which would apply to non-GSO FSS systems to protect GSO FSS systems, and by including in Article **S22** limits on the power radiated by non-GSO FSS systems in order adequately to protect GSO FSS systems in the frequency bands and sharing situations where Resolution **46** does not apply;

g) that in certain frequency bands which are currently used or planned to be used extensively by GSO FSS systems, provisional power flux-density limits applicable to non-GSO FSS systems have been developed;

h) that non-GSO FSS systems have been proposed in some of these bands which could meet these limits and would not require specific protection from existing and future GSO FSS systems, provided that minimum constraints are applied to GSO FSS systems, such as off-axis earth station e.i.r.p. limits;

i) that in the bands where the limits referred to in *considering further* f), g) and h) would apply, there would be no need for a coordination procedure between non-GSO FSS and GSO systems, with the exception of coordination between earth stations operating in opposite directions of transmission;

j) that there would be a need for a coordination procedure between non-GSO systems in the FSS and between non-GSO FSS systems and non-GSO systems in other services and for specific sharing criteria associated with this procedure, taking into consideration various types of non-GSO systems, including those in highly elliptical orbits;

k) the need to protect other co-primary services having allocations in the frequency bands referred to in *considering further* a) above and the need to assess further the sharing conditions between non-GSO FSS systems and these services;

l) that further studies on sharing conditions in frequency bands other than the 10 - 30 GHz frequency bands, where Resolution **46** does not apply, may also be necessary on the basis of the requirements that may emerge,

noting

1 that information relating to GSO and non-GSO systems in the FSS in the 10 - 30 GHz bands has been communicated to the Radiocommunication Bureau;

2 that some of these systems are in operation and others will be operated in the near future and, consequently, difficulties may be experienced in modifying their characteristics;

3 the need to protect existing and future terrestrial and space services and systems;

4 that No. **S22.2** is an operational provision which is to be applied between administrations, and does not require any specific action or finding by the Bureau,

recognizing

that the geostationary-satellite orbit and its associated spectrum are a uniquely valuable resource and that equitable access to this resource needs to be protected for all countries in the world,

resolves

1 that, as of 22 November 1997, in the frequency bands specified in Tables **S22-3** and **S22-4**, and in Tables 1 and 2 in Annex 1 to this Resolution, non-GSO FSS systems shall apply the procedures of Sections I and III of Article 11/Section I of Article **S9**, Nos. **S9.17** and **S9.17A** and the procedures of Article **13/S11**, and the non-GSO FSS systems for which complete notification information has been received by the Radiocommunication Bureau after 21 November 1997 shall be subject to the provisional power limits in Article **S22** and in Annex 1 to this Resolution;

2 that these limits shall be applied provisionally until the end of WRC-99, and that non-GSO systems in the fixed-satellite service for which complete notification information has been received by the Radiocommunication Bureau after 21 November 1997 shall be subject to the power limits in Article **S22**, as revised, if appropriate, by WRC-99;

3 that, as of 22 November 1997, in applying No. **S22.2,** administrations may consider these provisional power limits as corresponding to permissible levels of interference from a non-GSO system into a GSO system, irrespective of the dates of receipt by the Bureau of the complete notification information relating for the non-GSO system and of the complete coordination information for the GSO network;

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4 that, as of the end of WRC-99, an administration operating a non-GSO FSS system which is in compliance with the limits in Article **S22**, as revised, if appropriate, by WRC-99, shall be considered as having fulfilled its obligations under No. **S22.2** with respect to any GSO network, irrespective of the dates of receipt by the Bureau of the complete notification information for the non-GSO system and of the complete coordination information for the GSO network;

5 that, as of [the end of WRC-99], in the frequency bands specified in No. **S22.29** and Section 2.4 of Annex 1 to this Resolution, GSO FSS systems for which complete coordination information has been received by the Bureau after [the end of WRC-99] shall be subject to the limits in Article **S22** and in Sections 2.1, 2.2 and 2.3 of Annex 1 to this Resolution, as revised, if appropriate, by [WRC-99];

6 that, as of 22 November 1997, in the frequency bands specified in No. **S22.29** and Tables 1 and 2 of Annex 1 to this Resolution, non-GSO systems shall not claim protection from GSO networks operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete notification information for the non-GSO systems and of the complete coordination information for the GSO networks;

6*bis* that, between 22 November 1997 and the [end of WRC-99], if an administration operating or bringing into use a GSO FSS system before the [end of WRC-99] considers that a non-GSO FSS system proposed by another administration might cause unacceptable interference into its GSO system, then:

6bis.1 the administration operating the GSO system shall send to the administration operating the non-GSO FSS system, the technical details upon which its disagreement is based,

6bis.2 in the bands from 10.7 to 14.5 GHz, the administration operating the non-GSO FSS system shall resolve the difficulties,

6*bis*.3 in the frequency bands 17.8 - 18.6 GHz (space-to-Earth), 19.7- 20.2 GHz (space-to-Earth), 27.5 - 28.6 GHz (Earth-to-space) and 29.5 - 30.0 GHz (Earth-to-space), the administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

7 that, if an administration bringing into use a GSO FSS system after the [end of WRC-99] considers that a non-GSO FSS system proposed by another administration and which complies with the limits in Article **S22**, as revised, if appropriate, by WRC-99, might cause unacceptable interference into its GSO system, the administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

8 that, as of 22 November 1997, non-GSO systems in the FSS in the frequency bands referred to in *resolves* 1 above, shall, for coordination with other non-GSO FSS systems, be subject to application of the provisions of § 2.1 of Section II of Resolution **46 (WRC-97)**/No. **S9.12**,

requests ITU-R

1[1] taking into account *considering further* a), to conduct, as a matter of urgency, and complete, in time for consideration by [WRC-99]:

a) the appropriate technical, operational and regulatory studies to review the regulatory conditions relating to the coexistence of non-GSO and GSO systems in the FSS, in order to ensure that they do not pose undue constraints on the development of non-GSO and GSO FSS systems;

b) the development of a methodology for calculating the power levels produced by non-GSO FSS systems and the compliance of these levels with the limits referred to in *resolves* 1 and 2 above;

c) the studies relating to the sharing criteria to be applied for determining the need for coordination between non-GSO FSS systems on the one hand and non-GSO systems in the FSS and in other space services and terrestrial services on the other hand, with a view to promoting efficient use of spectrum/orbit resources and equitable access to these resources by all countries;

2[1] taking into account *considering further* l), to undertake the development of power limits or other frequency sharing mechanisms among GSO, non-GSO and terrestrial systems in the frequency bands other than those referred to in *resolves* 1 above and where non-GSO FSS systems are likely to be implemented and GSO systems are used or expected to be used extensively,

instructs the Radiocommunication Bureau

as of the end of WRC-99, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22** of a non-GSO FSS system for which notification information has been received between 22 November 1997 and the end of WRC-99. This review shall be based on the values in Article **S22**, as revised, if appropriate, by WRC-99.

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[1] See Annex 2 for further details concerning specific aspects of these studies in relation to frequency sharing between non-GSO FSS and GSO FSS.

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ANNEX 1 TO RESOLUTION COM5-18 (WRC-97)

PROVISIONAL LIMITS

Section I. Control of Interference to Geostationary-Satellite Systems

1.1 The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary-satellite orbit, produced by emissions from all the space stations of a non-geostationary-satellite system operating in the fixed-satellite service in the frequency bands listed in Table 1, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table 1 for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions into all the reference antennas and in the reference bandwidths specified in Table 1, and for all pointing directions towards the geostationary-satellite orbit.

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[1] The equivalent power flux-density is defined as the sum of the power flux-densities produced at a point of the Earth's surface by all space stations within a non-geostationary-satellite system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing towards the geostationary-satellite orbit. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{\max}}\right]$$

where:

- N_s is the number of non-geostationary space stations visible from the point considered at the Earth's surface, within an elevation angle greater than or equal to 0°;
- i is the index of the non-geostationary space station considered;
- pfd_i is the power flux-density produced at the point considered at the Earth's surface in dB(W/m^2) in the reference bandwidth;
- θ_i is the angle between the direction considered towards the geostationary-satellite orbit and the direction of the interfering space station in the non-geostationary-satellite system;
- $G_r(\theta_i)$ is the gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary-satellite network;
- G_{max} is the maximum gain (as a ratio) of the above receive reference antenna;
- $epfd$ is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

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NOTE - Tables 1 and 2 contain provisional limits corresponding to an interference level caused by one non-GSO FSS system in the frequency bands to be applied in accordance with Resolution [COM5-18]. These provisional limits are subject to review by ITUR and are subject to confirmation by WRC-99.

TABLE 1 (PART A)

Frequency band	**Equivalent pfd dB(W/m²)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**
10.7 - 11.7 GHz,	-179	99.7	4	60 cm, ITU-R Rec. 465-5
11.7 - 12.2 GHz in Region 2,	-192	99.9	4	3 m, ITU-R Rec. 465-5
	-186	99.97	4	3 m, ITU-R Rec. 465-5
12.2 - 12.5 GHz in Region 3 and	-195	99.97	4	10 m, ITU-R Rec. 465-5
	-170	99.999	4	60 cm, ITU-R Rec. 465-5
12.5 - 12.75 GHz in Regions 1 and3	-173	99.999	4	3m, ITU-R Rec. 465-5
	-178	99.999	4	10 m, ITU-R Rec. 465-5
	-170	100	4	≥60 cm, ITU-R Rec. 465-5

TABLE 1 (PART B)

Frequency band	**Equivalent pfd dB(W/m²)**	**Percentage of time during which epfd level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern**
17.8 - 18.6 GHz	-165 -151	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-165 -151	99.0	40 1000	70 cm, ITU-R Rec. 465-5
	-165 -151	99.5	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	1.5 m, ITU-R Rec. 465-5
	-180 -166	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-184 -170	99.9	40 1000	7.5 m, ITU-R Rec. 465-5
	-188 -174	99.9	40 1000	12 m, ITU-R Rec. 465-5
	-165 -151	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5

19.7 - 20.2 GHz	-154 -140	99.0	40 1000	30 cm, ITU-R Rec. 465-5
	-164 -150	99.9	40 1000	90 cm, ITU-R Rec. 465-5
	-167 -153	99.8	40 1000	2 m, ITU-R Rec. 465-5
	-174 -160	99.9	40 1000	5 m, ITU-R Rec. 465-5
	-154 -140	100	40 1000	30 cm to 12 m, ITU-R Rec. 465-5

1.2 The aggregate power flux-density[2] produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary-satellite system operating in the fixed-satellite service, for all conditions and for all methods of modulation, shall not exceed the limits given in Table 2 for any percentage of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in Table 2.

[2] The aggregate power flux-density is defined as the summation of the power flux-densities produced at a point in the geostationary-satellite orbit by all the earth stations of a non-geostationary-satellite system. The aggregate power flux-density is computed by means of the following formula:

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_E} 10^{P_i(t)/10} \cdot \frac{G_t(\theta_i)}{4 \cdot \pi \cdot d_i^2}\right]$$

where:

– N_E is the number of earth stations in the non-geostationary-satellite system with an elevation angle greater than or equal to 0°, from which the point considered in the geostationary-satellite orbit is visible;

– i is the index of the earth station considered in the non-geostationary-satellite system;

– P_i is the RF power at the input of the transmitting antenna of the earth station considered in the non-geostationary-satellite system in dBW in the reference bandwidth;

– $\theta_i(t)$ is the off-axis angle between the boresight of the earth station considered in the non-geostationary-satellite system and the direction of the point considered in the geostationary-satellite orbit;

– $G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the earth station considered in the non-geostationary system in the direction of the point considered in the geostationary-satellite orbit;

– d_i is the distance in metres between the earth station considered in the non-geostationary-satellite system and the point considered in the geostationary-satellite orbit;

– $apfd$ is the aggregate power flux-density in dB(W/m^2) in the reference bandwidth.

NOTE - Tables 1 and 2 contain provisional limits corresponding to an interference level caused by one non-GSO FSS system in the frequency bands to be applied in accordance with Resolution [COM5-18]. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

TABLE 2 (PART A)

Frequency band	**Aggregate pfd dB(W/m^2)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
12.5 - 12.75 GHz,	-170	100	4
12.75 - 13.25 GHz	-186	100	4
and	-170	100	4
13.75 - 14.5			

TABLE 2 (PART B)

Frequency band	**Aggregate pfd dB(W/m^2)**	**Percentage of time during which pfd level may not be exceeded**	**Reference bandwidth (kHz)**
27.5 - 28.6 GHz and	-159	100	40
29.5 - 30 GHz	-145	100	1000

1.3 The limits given in Table 1 may be exceeded on the territory of any country whose administration has so agreed.

Section II. Earth Station Off-Axis Power Limitations in the Fixed-Satellite Service[1]

2.1 The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station shall not exceed the following values for any off-axis angle φ which is 2.5° or more off the main lobe axis of an earth station antenna:

[1] The provisions of this section are suspended pending the review of the values in §§ 2.1, 2.2 and 2.3 by WRC-99.

Off-axis angle	*Maximum e.i.r.p. per 40 kHz*
2.5° ≤ φ ≤ 7°	(39 - 25 log φ) dB(W/40 kHz)
7° < φ ≤ 9.2°	18 dB(W/40 kHz)
9.2° < φ ≤ 48°	(42 - 25 log φ) dB(W/40 kHz)
48° < φ ≤ 180°	0 dB(W/40 kHz)

2.2 For FM-TV emissions with energy dispersal, the limits in § 2.1 above may be exceeded by up to 3 dB provided that the off-axis total e.i.r.p. of the transmitted FM-TV carrier does not exceed the following values:

Off-axis angle	*Maximum e.i.r.p.*
2.5° ≤ φ ≤ 7°	(53 - 25 log φ) dBW
7° < φ ≤ 9.2°	32 dBW
9.2° < φ ≤ 48°	(56 - 25 log φ) dBW
48° < φ ≤ 180°	14 dBW

2.3 FM-TV carriers which operate without energy dispersal should be modulated at all times with programme material or appropriate test patterns. In this case, the off-axis total e.i.r.p. of the emitted FM-TV carrier shall not exceed the following values:

Off-axis angle	*Maximum e.i.r.p.*
2.5° ≤ φ ≤ 7°	(53 - 25 log φ) dBW
7° < φ ≤ 9.2°	32 dBW
9.2° < φ ≤ 48°	(56 - 25 log φ) dBW
48° < φ ≤ 180°	14 dBW

2.4 The e.i.r.p. limits given in §§ 2.1, 2.2 and 2.3 are applicable in the following frequency bands allocated to the fixed-satellite service (Earth-to-space):

12.75 - 13.25 GHz

13.75 - 14 GHz

14 - 14.5 GHz

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ANNEX 2 TO RESOLUTION COM5-18 (WRC-97)

ITU-R STUDIES ON FREQUENCY SHARING BETWEEN NON-GSO FSS AND GSO FSS

The following is a list of the studies and related activities required.

1) Characterization of short-duration interference peaks which might exceed epfd limits set by a WRC for large earth station antennas, in terms of maximum and mean amplitudes, maximum and mean durations, mean time between occurrences, aggregate percentages of time of occurrences and typical amplitude/time profiles.

2) Acquisition of data relating to the impact of the interference peaks on the performance of a range of earth station demodulators of various types and origins. Administrations are encouraged to cooperate in this matter by arranging for the appropriate measurements to be carried out, and submitting the results to the appropriate working parties or task groups in time to be included in the ITU-R report to the next conference.

3) Carrying out computer simulations to determine the impact on epfd statistics of multiple non-GSO networks interfering with a GSO downlink, and in particular to discover the percentage-of-time thresholds for which the probability of simultaneous interference peaks from satellites in different non-GSO constellations becomes significant. Both homogeneous and inhomogeneous sets of non-GSO systems should be simulated where the necessary data are available.

4) Conducting investigations to find out whether the emissions from the satellites and earth stations of non-GSO systems would cause problems for the TT&C of GSO (and non-GSO) satellites, during both their launch and operational phases, and the development of methods for avoiding such problems.

5) Carrying out computer simulations to derive the time statistics of short-term interference between two or more non-GSO FSS networks, with the objective of determining the approximate number of such networks which could co-exist in the same bands.

6) Identification and validation of software which could be used by BR to check whether a system for which an application for spectrum has been made would comply with the epfd and apfd limits.

7) Carrying out studies to determine the feasibility of frequency sharing between non-GSO FSS networks using circular orbits and networks using slightly-inclined geostationary orbits, and also between non-GSO FSS networks and networks using "quasi-geostationary" orbits.

8) Development, if practicable, of continuous curves of epfd versus antenna diameter and/or G/T of the GSO earth station to be protected. Whilst it may be necessary to limit the compliance checking by BR to a few discrete antenna sizes, administrations will need to know that the protection will be adequate in the cases of antennas of other sizes; hence the desirability of continuous curves.

9) Continuation of studies on techniques for the mitigation of interference between GSO and non-GSO networks, and between non-GSO and non-GSO networks.

10) Refinement of the methodologies in new Recommendation ITU-R [Document BL/14] for the derivation of I/N limits and their conversion to epfd and apfd limits, taking into account propagation fade statistics, the different circumstances of "transparent" and remodulating satellite transponders, and the impact of fade counter-measures such as adaptive power control.

11) Consideration of how account can be taken, in studies concerning the definition of uplink limits, of the gain versus off-axis angle characteristics of the receiving spot beams of geostationary satellites.

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RESOLUTION COM5-19 (WRC-97)

USE OF THE FREQUENCY BANDS COVERED BY APPENDICES 30 AND 30A BY NON-GSO SYSTEMS IN THE FIXED-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that provisional limits have been established and included in Article **S22** and in the Annex to this Resolution to ensure that the interference caused by non-geostationary-satellite (non-GSO) systems in the fixed-satellite service (FSS) into assignments operated in conformity with the Appendices 30 and 30A Plans is maintained within negligible levels;

b) that the integrity of the above-mentioned Plans and their future modifications is to be ensured;

c) that non-GSO systems should not be entered into those Plans and therefore should not apply the procedures associated with the Plans and should not be protected by those procedures;

d) that this Conference has decided to introduce in Article **S5** of the Radio Regulations a new allocation to the FSS in the frequency bands 11.7 - 12.5 GHz in Region 1, 12.2 - 12.7 GHz in Region 2 and 11.7 - 12.2 GHz in Region 3, limited to non-GSO FSS systems,

resolves

1 that, as of 22 November 1997:

a) a non-GSO FSS system operating in the frequency bands covered by Appendices 30 and 30A shall comply with the provisional limits specified in Article **S22** and in the Annex to this Resolution;

b) such a system shall, as of the end of WRC-99, comply with the limits specified in Article **S22,** as revised, if appropriate, by WRC-99, irrespective of the date of receipt of the complete notification information relating to the non-GSO FSS system;

c) as of 22 November 1997, in applying No. **S22.2,** administrations may consider these provisional power limits as corresponding to permissible levels of interference from a non-GSO system into a GSO system, irrespective of the dates of receipt by the Bureau of the complete notification information for the non-GSO system and for the GSO network;

d) as of the end of WRC-99, an administration operating a non-GSO FSS system in the band 17.8 - 18.1 GHz (space-to-Earth) which is in compliance with the limits appearing in Article **S22** as revised, if appropriate, by WRC-99, shall be considered as having fulfilled its obligations under No. **S22.2** with respect to any GSO network operating in the Earth-to-space direction, irrespective of the dates of receipt by the Bureau of the complete notification information for the non-GSO system and of the complete coordination or notification information, as appropriate, for the GSO network;

d1) between 22 November 1997 and the [end of WRC-99], if an administration operating or bringing into use a GSO system before the [end of WRC-99] considers that a non-GSO FSS system proposed by another administration might cause unacceptable interference into its GSO system, then:

– the administration operating the GSO system shall send to the administration operating the non-GSO FSS system, the technical details upon which its disagreement is based;

– the administration operating the non-GSO FSS system shall resolve the difficulties, taking into account especially degradation of picture and sound quality or signal availability with regard to GSO systems in operation;

e) a non-GSO FSS system operating in the frequency bands covered by Appendices 30 and 30A shall apply the procedures of Sections I and III of Article 11/Section I of Article **S9**, and **S9.17** and **S9.17A**, and the procedures of Article 13/**S11**;

f) such a system shall be subject, for the coordination with non-GSO systems, to the application of the provisions of § 2.1 of Section II of Resolution **46 (WRC-97)**/No. **S9.12**;

g) such a system shall apply, using an equivalent power flux-density threshold of -185.3 dB(W/m^2/4 kHz) for 99.7% of the time, calculated with the reference 90 cm diameter antenna pattern provided in Annex 5 of Appendix 30 (Orb-85) for Regions 1 and 3, the provisions of Article 7 of Appendix 30/**S9.8** with respect to assignments in [Step 1] of the Appendix 30 Plan for Regions 1 and 3, as revised by WRG97;

2 that non-GSO FSS systems in the frequency bands referred to in *resolves* 1 above shall not be operated before the end of WRC-99,

requests ITU-R

a) to conduct, as a matter of urgency and in time for consideration by WRC-99, the appropriate technical, operational and regulatory studies to review the regulatory provisions concerning the operation of non-GSO FSS systems in the frequency bands referred to in *resolves* 1 a) above in order to ensure that these conditions ensure appropriate protection of the Plans and their future modifications and do not place unreasonable constraints on the development of GSO systems in these bands;

b) to undertake and complete the development of a methodology for calculating the power levels produced by non-GSO FSS systems and the compliance of these levels with the limits referred to in *resolves* 1 a) and 1 b) above;

c) to complete the studies relating to the sharing criteria to be applied for determining the need for coordination between non-GSO FSS systems, with a view to promoting efficient use of spectrum/orbit resources and equitable access to these resources by all countries;

d) to report to CPM-99 on the conclusion of these studies,

instructs the Radiocommunication Bureau

as of the end of WRC-99, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22** of a non-GSO FSS system for which notification information has been received between 22 November 1997 and [the end of WRC-99]. This review shall be based on the values in Article **S22**, as revised, if appropriate, by [WRC-99].

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ANNEX TO RESOLUTION COM5-19 (WRC-97)

PROVISIONAL LIMITS

Section I. Control of Interference to Geostationary-Satellite Systems

1.1 In the frequency band 17.8 - 18.1 GHz, the maximum aggregate power flux-density produced at the geostationary-satellite orbit by all the space stations in a non-geostationary-satellite system in the fixed-satellite service shall not exceed the values given in Table 2.

1.2 The equivalent power flux-density[1], at any point on the Earth's surface visible from the geostationary-satellite orbit, produced by emissions from all the space stations of a non-geostationary-satellite system operating in the fixed-satellite service in the frequency bands listed in Table 1, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Table 1 for the given percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth as specified in Table 1, for all pointing directions towards the geostationary-satellite orbit.

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[1] The equivalent power flux-density is defined as the sum of the power flux-densities produced at a point of the Earth's surface by all space stations within a non-geostationary-satellite system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing towards the geostationary-satellite orbit. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{\max}}\right]$$

where:

– N_s is the number of non-geostationary space stations visible from the point considered at the Earth's surface, within an elevation angle greater than or equal to 0°;

– i is the index of the non-geostationary space station considered;

– pfd_i is the power flux-density produced at the point considered at the Earth's surface in dB(W/m^2) in the reference bandwidth;

– θ_i is the angle between the direction considered towards the geostationary-satellite orbit and the direction of the interfering space station in the non-geostationary system;

– $G_r(\theta_i)$ is the gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary-satellite network;

– G_{max} is the maximum gain (as a ratio) of the above receive reference antenna;

– *epfd* is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

TABLE 1

Frequency band allocated to the BSS	**Antenna diameter (cm)**	**Equivalent pfd level (dB(W/m^2/ 4 kHz)) which may not be exceeded during the percentage of time shown**		**Reference antenna radiation pattern**
		99.7%	**100%**	
11.7 - 12.5 GHz in Region 1, 11.7 - 12.2 GHz and 12.5 - 12.75 GHz in Region 3	30 60 90	-172.3 -183.3 -186.8	-169.3 -170.3 -170.3	Recommendation ITU-R BO.1213
12.2 - 12.7 GHz in Region 2	45 100 120 180	-174.3 -186.3 -187.9 -191.4	-165.3 -170.3 -170.3 -170.3	Section 3.7.2 of Annex 5 of Appendix **30**
17.3 - 17.8 GHz in Region 2	For further study[1)]			

[1)] The interference from non-GSO FSS systems into GSO BSS systems operating in the frequency bands 17.3 - 17.8 GHz relates to the two following sharing situations:

- non-GSO FSS transmit earth station into GSO receive earth station;
- GSO BSS transmit space station into non-GSO FSS receive space stations.

Both situations need to be studied, in particular since coexistence of receive BSS earth stations and large numbers of transmit non-GSO FSS terminals would not be feasible within the same country.

1.3 The aggregate power flux-density^2 produced at any point in the geostationary-satellite orbit by the emissions from all the earth stations in a non-geostationary system in the fixed-satellite service, for all conditions and for all methods of modulation, shall not exceed the limits given in Table 2 for the specified percentages of time. These limits relate to the power flux-density which would be obtained under free-space propagation conditions in the reference bandwidth specified in Table 2.

[2] The aggregate power flux-density is defined as the summation of the power flux-densities produced at a point in the geostationary-satellite orbit by all the earth stations of a non-geostationary-satellite system. The aggregate power flux-density is computed by means of the following formula:

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_E} 10^{P_i(t)/10} \cdot \frac{G_t(\theta_i)}{4 \cdot \pi \cdot d_i^2}\right]$$

where:

– N_E is the number of earth stations in the non-geostationary-satellite system with an elevation angle greater than or equal to 0°, from which the point considered in the geostationary-satellite orbit is visible;

– i is the index of the earth station considered in the non-geostationary-satellite system;

– P_i is the RF power at the input of the transmitting antenna of the earth station considered in the non-geostationary-satellite system in dBW in the reference bandwidth;

– $\theta_i(t)$ is the off-axis angle between the boresight of the earth station considered in the non-geostationary-satellite system and the direction of the point considered in the geostationary-satellite orbit;

– $G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the earth station considered in the non-geostationary-satellite system in the direction of the point considered in the geostationary-satellite orbit;

– d_i is the distance in metres between the earth station considered in the non-geostationary-satellite system and the point considered in the geostationary-satellite orbit;

– *apfd* is the aggregate power flux-density in dB(W/m^2) in the reference bandwidth.

TABLE 2

Frequency band	**Aggregate pfd dB(W/m^2/4 kHz)**	**Percentage of time during which pfd level may not be exceeded**
17.3 - 18.1 GHz in Regions 1 and 3 and 17.8 - 18.1 GHz in Region 2	-163	100%

1.4 The limits given in Table 1 may be exceeded on the territory of any country whose administration has so agreed.

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RESOLUTION COM5-27 (WRC-97)

USE OF THE BANDS 18.8 - 19.3 GHz AND 28.6 - 29.1 GHz BY NETWORKS OPERATING IN THE FIXED-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that, by its Resolution **118**, the World Radiocommunication Conference (Geneva, 1995) recommended that this Conference review the results of studies carried out by ITU-R relating to the use of the frequency bands 20/30 GHz;

b) that it also recommended that this Conference take appropriate action, including adjustments to spectrum allocations, for the harmonious development of GSO and non-GSO systems and terrestrial services in the same bands;

c) that it has reviewed the above studies, and has taken appropriate action in relation to the use of the frequency bands 18.8 - 18.9 GHz and 28.6 - 28.7 GHz as indicated in No. MOD **S5.523A**;

d) that, in its Resolution **118**, WRC-95 considered:

- that the development of GSO and non-GSO systems in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz entails major global investment and, consequently, their reciprocal coordination needs the firm commitment of all parties concerned on the basis of application of Resolution **46 (Rev.WRC-97)**;
- that WRC-97 should consider the non-application of No. **S22.2** (No. **2613**) of the Radio Regulations in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz in light of the spectrum requirements for non-GSO FSS systems;

e) that WRC-95 adopted in *resolves* 1 to 5 of Resolution **118** the procedures applicable to the frequency bands 18.9 - 19.3 GHz and 28.7 - 29.1 GHz only;

f) that, in the light of *considering* d) and e) above, GSO and non-GSO FSS systems referred to in MOD **S5.523A** are being developed in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz;

g) that MOD **S5.523A** will enter into force on the date indicated in Article **S59** of the Radio Regulations;

h) that WRC-97 decided to delete Resolution **118**, as of 22 November 1997,

noting

that the band 18.8 - 19.3 GHz is heavily used by the fixed service and there is a need to continue the use of this band in many countries,

resolves

1 that, as of 18 November 1995, the provisions of Resolution **46 (Rev.WRC-97)/S9.11A** shall apply and No. **S22.2** of the Radio Regulations shall not apply in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz, to frequency assignments to GSO and non-GSO systems of the fixed-satellite service;

2 that should modifications arise to frequency assignments of non-GSO FSS systems which were notified before 18 November 1995, when coordination was not required, then no coordination is required when the characteristics of the modified frequency assignment are within the limits of those of the original notification,

instructs the Radiocommunication Bureau

to apply the provisions of MOD **S5.523A (WRC-97)**, in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz, as from 22 November 1997.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 373-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.4 **PLENARY MEETING**

FOURTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**
COM 6	341 (B.7)	**RESOLUTION 13 (Rev.WRC-97)**
	354 (B.8)	**RESOLUTION 27 (Rev.WRC-97)**
	332(Rev.2)	**RESOLUTION 33 (Rev.WRC-97)**
	364 (B.11)	**RESOLUTION 121 (Rev.WRC-97)**
	362 (B.10)	**RESOLUTION 214 (Rev.WRC-97)**
	161(Rev.1)	**RESOLUTION PLEN-1 (WRC-97)**
	DT/157+Corr.1	**RESOLUTION PLEN-4 (WRC-97)**
	341 (B.7)	**RESOLUTION GTPLEN1-2 (WRC-97)**
	344	**RESOLUTION GTPLEN2-1 (WRC-97)**
	354 (B.8)	**RESOLUTION COM4-17 (WRC-97)**
	354 (B.8)	**RESOLUTION COM4-18 (WRC-97)**
	354 (B.8)	**RESOLUTION COM4-19 (WRC-97)**
	362 (B.10)	**RESOLUTION COM4-20 (WRC-97)**
	341 (B.7)	**RESOLUTION COM5-10 (WRC-97)**
	360 (B.9)	**RESOLUTION COM5-11 (WRC-97)**
	360 (B.9)	**RESOLUTION COM5-12 (WRC-97)**
	362 (B.10)	**RESOLUTION COM5-15 (WRC-97)**
	360 (B.9)	**RESOLUTION COM5-16 (WRC-97)**
	360 (B.9)	**RESOLUTION COM5-17 (WRC-97)**
	364 (B.11)	**RESOLUTION COM5-23 (WRC-97)**
	341 (B.7)	**RESOLUTION COM5-24 (WRC-97)**
	362 (B.10)	**RESOLUTION COM5-25 (WRC-97)**
	360 (B.9)	**RESOLUTION COM5-28 (WRC-97)**
	360 (B.9)	**RESOLUTION COM5-29 (WRC-97)**
	258	**RECOMMENDATION GTPLEN2-A (WRC-97)**
		RESOLUTION 48 (WRC-95)
		RESOLUTION 70 (WARC-92)

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RESOLUTION 115 (WRC-95)
RESOLUTION 119 (WRC-95)
RESOLUTION 211
RESOLUTION 643
RESOLUTION 710
RESOLUTION 711
RESOLUTION 712
RECOMMENDATION 706

A.-M. NEBES
Chairman of Committee 6

Annex: 65 pages

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RESOLUTION 13 (Rev.WRC-97)

FORMATION OF CALL SIGNS AND ALLOCATION OF NEW INTERNATIONAL SERIES

The World Radiocommunication Conference (Geneva, 1997),

considering

the increasing demand for call signs justified by the increased number of Member States of the Union and by the increased requirements of countries which are already Member States,

believing

that call signs already in use should, as far as possible, not be changed,

noting

a) that the former call-sign series formed of three letters, or a figure and two letters, having been exhausted, a new series has been introduced formed of a letter, a figure and a letter; but in no case may the figure be 0 or 1;

b) that the method mentioned in *noting* a) is not applicable to series beginning with one of the following letters: B, F, G, I, K, M, N, R, W,

resolves

1 that the Director of the Radiocommunication Bureau shall continue to urge administrations:

1.1 to make maximum use of the possibilities of the series at present allocated, in order to avoid, as far as possible, further requests;

1.2 to review the call-sign assignments they have already made from their present allocations, with a view to releasing any series and placing them at the disposal of the Union;

2 that the Director shall, upon request, furnish advice to administrations on the means of effecting the greatest economy, which should be the rule, in the use of a series of call signs;

3 that if, nevertheless, before the next competent world radiocommunication conference, it appears that all the possibilities of the present system of forming call signs will be exhausted, the Director shall:

3.1 explore the possibility of extending the present allocations of international call-sign series by lifting the limitation on use of the letter "Q" and the digits "0" and "1";

3.2 issue a circular-letter:

3.2.1 explaining the position;

3.2.2 urging administrations to send in their proposals for possible solutions;

4 that, from the information thus submitted, the Director shall prepare a report, together with his comments and suggestions, for submission to the next competent world radiocommunication conference.

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RESOLUTION 27 (Rev.WRC-97)

REFERENCES TO ITU-R AND ITU-T RECOMMENDATIONS IN THE RADIO REGULATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the principles of incorporation by reference were adopted by the 1995 World Radiocommunication Conference and have been revised by this Conference (see Annex 1 to this Resolution);

b) that there are provisions of the Radio Regulations which employ mandatory incorporation by reference but fail to make explicit reference to the ITU-R or ITU-T Recommendations incorporated;

c) that the 1997 Conference Preparatory Meeting for this Conference urged administrations to give further consideration to the status of material incorporated by reference:

– using the initial assessment provided by the Bureau in the CPM Report and the set of principles given in Annex 1 to this Resolution;

– noting that mandatory references shall be explicit and use the appropriate regulatory language;

– taking into account the factors set out in Annex 2 to this Resolution;

d) that the Director of the Bureau has drawn up a list (see Annex 1 to the Report of the Conference Preparatory Meeting to this Conference) of the provisions of the Radio Regulations using incorporation by reference, which provides an initial assessment of the status of each reference and forms the basis for the work on appropriate referencing, examples of which are contained in Annex 3 to this Resolution;

e) that the Radiocommunication Bureau has drawn up a list, contained in Annex 4 to this Resolution, of the ITU-R Recommendations to which explicit reference is made in the Radio Regulations,

resolves

that ITU-R and ITU-T Recommendations incorporated or proposed for incorporation by reference in the provisions of the Radio Regulations be identified and examined at [WRC-99], with a view to establishing the correct method of reference in accordance with the principles set out in Annex 1 to this Resolution and taking into account the factors listed in Annex 2 to this Resolution, in order to complete the simplification of the Radio Regulations in respect of incorporation by reference,

instructs the Director of the Radiocommunication Bureau

to arrange for a review of the provisions of the Radio Regulations containing references to ITU-R or ITU-T Recommendations and propose suitable recommendations to the Conference Preparatory Meeting for inclusion in its report to [WRC-99], using the list of provisions contained in Annex 3 to this Resolution together with the guidance contained in Annexes 1 and 2 to this Resolution, and taking into account the list of ITU-R Recommendations contained in Annex 4 to this Resolution,

urges administrations

to use the Report of the Conference Preparatory Meeting to [WRC-99] in order to prepare their proposals on incorporation by reference to that Conference.

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ANNEX 1 TO RESOLUTION 27 (Rev.WRC-97)

PRINCIPLES OF INCORPORATION BY REFERENCE

1. Where references are non-mandatory, it is not necessary to establish specific conditions in applying the texts quoted. In such cases, reference could, for example, be made to "the latest version" of a Recommendation.

2. Mandatory references to Resolutions or Recommendations of a world radiocommunication conference (WRC) are acceptable without restriction, since such texts will have been agreed by a WRC.

3. Where mandatory references are suggested, and the relevant texts are brief, the referenced material should be incorporated in the body of the Radio Regulations.

4. If, on a case-by-case basis, it is decided to incorporate material by reference on a mandatory basis, then the following provisions shall apply:

4.1 the referenced text shall have the same treaty status as the Regulations themselves;

4.2 the reference must be explicit, specifying the specific part of the text (if appropriate) and the version or issue number;

4.3 the referenced text must be adopted by the Plenary of a competent WRC, but should not be part of the Final Acts;

4.4 all texts incorporated by reference must be readily available, by being published in a separate volume;

4.5 if, between WRCs, a referenced text (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the original version until such time as a competent WRC agrees to incorporate the new version of the reference. The mechanism for considering such a step is given in Resolution **28 (WRC-95)**.

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ANNEX 2 TO RESOLUTION 27 (Rev.WRC-97)

FACTORS TO BE CONSIDERED FOR THE FURTHER APPLICATION OF INCORPORATION BY REFERENCE

In reviewing the provisions of the Radio Regulations employing references to other texts, administrations and study groups should address the following factors:

1) whether each reference is mandatory, i.e. incorporated by reference, or non-mandatory;

2) whether in existing non-mandatory references, or mandatory references which are determined to be of non-mandatory character, appropriate linking language is used, e.g. the words "should" or "may";

3) whether in existing mandatory references, or other types of reference which are determined to be of mandatory character, clear mandatory linking language is used, e.g. the word "shall";

4) whether the incorporated ITU-R or ITU-T Recommendation(s) are explicitly identified;

5) where referenced ITU-R or ITU-T Recommendations are not explicitly identified, determine which ones should be identified;

6) whether text incorporated from ITU-R or ITU-T Recommendations should be placed directly in the Radio Regulations instead of using incorporation by reference;

7) if the ITU-R or ITU-T Recommendation to be incorporated is, as a whole, unsuitable as treaty status text, whether to limit the reference to those portions of the ITU-R or ITU-T Recommendation which are of a suitable nature or to place the mandatory portion directly in the Radio Regulations.

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ANNEX 3 TO RESOLUTION 27 (Rev.WRC-97)

PROVISIONS OF THE RADIO REGULATIONS REFERRING TO ITU-R AND ITU-T RECOMMENDATIONS

A) Provisions of Articles of the Simplified Radio Regulations referring to ITU-R and ITU-T Recommendations

RR item	Remark
S5.199 S5.287 S5.288 S19.38 S19.48 S19.92 S47.26 S47.27 S47.28 S47.29 S50.9 S51.35 S51.41 S51.77 S52.25 S52.27 S52.31 S52.69 S52.159 S52.181 S52.195 S52.222.1 S52.224 S52.229 S52.231 S52.240 S55.1 S57.1	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
S1.14 S5.511A S52.23 S52.235[+]	The reference to an ITU-R Recommendation in this provision seems to be of a **mandatory** character and the referenced text is **explicitly** identified, but a **non-standard wording** is used in this respect. There is a need to **review** these provisions with a view to using a standard wording. [+] The application of this provision is not mandatory but, if used, the referenced procedures are.

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S3.2 S5.138 S5.458C S13.19 S21.1 S29.13 S32.5 S32.9.3 S32.21 S32.43 S32.64 S33.17 S33.37 S33.41 S34.1 S34.2 S51.25 S52.112 S58.1*	The incorporation by reference of an ITU-R Recommendation or an ITU-T Recommendation* in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and ensure that a standard method of reference is used.
S5.208A S5.503A S16.6 S21.2.2 S21.4.1 S29.12 S32.7 S51.71 S52.32 S52.63 S52.148 S52.152 S52.153 S52.234 S54.2[+] S56.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for **review**, unless administrations wish to consider changing the character of this provision. [+] Consider whether the application and use of the procedures referenced are mandatory.

S1.156 S3.4 S3.7 S3.14 S5.474 S9.50.1 S15.10 S15.12.1 S15.13.1 S16.1 S19.3 S19.23 S19.24 S19.112* S19.115* S19.126* S21.6.1 S21.12.1 S21.16.1 A.S22.1 S22.22.2 S22.26 S30.1 S56.7*	The reference to an ITU-R Recommendation or an ITU-T Recommendation* in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
S16.2 S19.83 S52.149 S52.188 S52.192 S52.213	The reference to an ITU-R Recommendation in this provision is of an **undefined** character, but the referenced text is **explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e. mandatory or non-mandatory).
S1.153 S1.167 S26.6	The reference to an ITU-R Recommendation in this provision is of an **undefined** character and the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to indicating the character of the referenced text (i.e. mandatory or non-mandatory) and, if it becomes mandatory, to identify the referenced text explicitly.

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B) Parts of Appendices S1 to S18 to the Simplified Radio Regulations referring to ITU-R Recommendations and ITU-T Resolutions and Recommendations

RR/Ap. Item	Remark
• AP S4, Annex 2A, C.11, item d) • AP S5, Table S5-1, calculation method re No. S19.17A • AP S5, Annex 1, Tables 1-4	The reference to an ITU-R Recommendation in this provision is of a **mandatory** character and the referenced text is **explicitly** identified. Ensure that a standard method of reference is used.
• AP S1, item 3 (3.2) • AP S5, Table S5-1, threshold/condition re No. S19.21 • AP S5, Table S5-1, calculation method re No. S19.21 • AP S13, RR 3259A • AP S16*, Sect. III, item 5	The reference to an ITU-R Recommendation or an ITU-T Resolution or Recommendation* in this provision is of a **mandatory** character, but the referenced text is **not explicitly** identified. There is a need to **review** these provisions with a view to identifying the referenced text explicitly and to ensure that a standard method of reference is used.
• AP S4, Annex 2A, C.8 • AP S5, Annex 1, paragraphs 1.2.1 and 1.2.3.2	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character, but the referenced text is **explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.
AP S1, item 2 AP S2 AP S3, Table AP S3, item 12 AP S3, item 13 AP S11, Part B, (3.) AP S12, item 6) AP S13, RR 2937A AP S13, RR 3340	The reference to an ITU-R Recommendation in this provision is of a **non-mandatory** character and the referenced text is **not explicitly** identified. No need for review, unless administrations wish to consider changing the character of this provision.

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ADD

ANNEX 4 TO RESOLUTION 27 (Rev.WRC -97)

LIST OF ITU-R RECOMMENDATIONS REFERRED TO IN THE RADIO REGULATIONS[2]

Recommendation	Title	Status[1]	Document	RR provision No[3]
ITU-R M.257-3	Sequential Single Frequency selective-calling system for use in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 145	**S19.38**, S19.83, **S19.92**, **S52.222.1, S52.235**, S54.2, AP S13 (A5, para. 11)
ITU-R SF.356-4	Maximum allowable values of interference from line-of-sight radio-relay systems in a telephone channel of a system in the fixed-satellite service employing frequency modulation, when the same frequency bands are shared by both systems	NOC	1994 SF-series	AP S7, 2.3.1 Note 2
ITU-R SF.357-4	Maximum allowable values of interference in a telephone channel of an analogue angle-modulated radio-relay system sharing the same frequency bands as systems in the fixed-satellite service	**MOD**	Blue 4-9/BL/1	AP S7, 2.3.1 Note 2
ITU-R F.405-1	Pre-emphasis characteristics for FM radio-relay systems for television	NOC	1990 Series, Volume IX	AP S30 (An. 5, 3.1.1)

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1 Status as of date of the end of the 1997 Radiocommunication Assembly.

2 This list does not include ITU-R Recommendations referred to in WARC/WRC Resolutions and Recommendations.

3 The provisions indicated in bold make reference to the listed ITU-R Recommendation in a mandatory manner, i.e. incorporated by reference.

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ITU-R TF.460-6	Standard-frequency and time-signal emissions	**MOD**	Document 7/1020	**S1.14**
ITU-R S.465-5	Reference earth-station radiation pattern for use in coordination and interference assessment in the frequency range from 2 to about 30 GHz	**MOD**	1994 S-series	AP S30 (An. 6, 2.1)
ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 60	S19.83, **S51.41**
ITU-R S.483-3	Maximum permissible level of interference in a television channel of a geostationary-satellite network in the fixed-satellite service employing frequency modulation, caused by other networks of this service	**MOD**	Blue - 4/BL/10	AP S30 (An. 6, 1.5, Note 5)
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	NOC	1995 M-series Fascicle, Part 3, p. 150	**S51.77**, S52.182, **S52.231, AP S13 (A2, para. 10 (1))**
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 72	**S52.27**, S56.2
ITU-R M.493-9	Digital selective calling system for use in the maritime mobile services	**MOD**	Document M/1009	S54.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**MOD**	1997 M-series Fascicle, p. 339 + Document 8/1010	**S51.35**, S52.148, S52.149, S52.152, S52.153, **S52.159**, S54.2
ITU-R M.625-3	Direct-printing telegraph equipment employing automatic identification in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 1	S19.83, **S51.41**

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ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	NOC	1995 M-series Fascicle, Part 3, p. 143	S19.83, **S51.41**
ITU-R SF.675-3	Calculation of the maximum power density (averaged over 4 kHz) of an angle-modulated carrier	MOD	1994 SF-series	AP S4 (C8a, footnote)[4]
ITU-R M.690-1	Technical characteristics of emergency position-indicating radio beacons (EPIRBs) operating on the carrier frequencies of 121.5 MHz and 243 MHz	NOC	1995 M-series Fascicle, Part 4, p. 1	**AP S13 (A5, paras 1b and 4.2),** AP S15 (Table S15.2, 121.5 MHz),
ITU-R SF.765	Intersection of radio-relay antenna beams with orbits used by space stations in the fixed-satellite service	NOC	1994 SF-series Fascicle	S21.22, S21.41, S29.12
ITU-R RA.769-1	Protection criteria used for radioastronomical measurements	**MOD**	1995 RA-series Fascicle, p. 5	S5.208A **S5.511A**, S29.12[5]
ITU-R M.821-1	Optional expansion of the digital selective calling system for the maritime mobile service	MOD	1997 series M, Part 3	S54.2
ITU-R M.825-2	Characteristics of a transponder system using DSC techniques for use with vessel traffic services and ship-to-ship identification	MOD	Document 8/1005	S54.2

[4] The reference in this provision is SF.675.

[5] The reference in these provisions is RA.769.

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ITU-R IS.847-1	Determination of the coordination area of an earth station operating with a geostationary space station and using the same frequency band as a system in a terrestrial service	NOC	1994 IS-series Volume, p. 1	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**
ITU-R IS.848-1	Determination of the coordination area of a transmitting earth station using the same frequency band as receiving earth stations in bidirectionally allocated frequency bands	NOC	1994 IS-series Volume, p. 31	**AP S5 (Table S5.1)**
ITU-R IS.849-1	Determination of the coordination area for earth stations operating with non-geostationary spacecraft in bands shared with terrestrial services	NOC	1994 IS-series Volume, p. 40	**AP S5 (Table S5.1, An2 - Tables 2 and 3)**
ITU-R SA.1071	Use of the 13.75 to 14.0 GHz band by the space science services and the fixed-satellite service	NOC	1994 SA-series	S5.503A
ITU-R SM.1135	SINPO and SINPFEMO codes	NOC	1995 SM-series Fascicle, p. 47	[ ]
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	NOC	1995 SM-series Fascicle, p. 50	AP S1 (paras 1 (2) and **2 (3.1)**)
ITU-R SM.1139	International monitoring system	NOC	1995 SM-series Fascicle, p. 58	S16.2, S16.6
ITU-R IS.1143	System specific methodology for coordination of NGSO space stations (space-to-Earth) operating in the MSS with the fixed service	NOC	1995 IS-series	AP S5 (An 1, paras. 1.2.1 and 1.2.3.2)
ITU-R M.1169	Hours of service of ship stations	NOC	1995 M-series Fascicle, Part 3, p. 157	**S47.26, S47.27, S47.28, S47.29, S50.9**

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ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 162	S51.71, **S52.23, S52.25**, **S52.31**, S52.32, S52.63, **S52.69**, **S55.1**
ITU-R M.1171	Radiotelephony procedures in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 169	S51.71, S52.192, **S52.195,** S52.213, **S52.224**, S52.234, **S52.240**, **S57.1, AP S13(A2, para. 14A, 1)**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	NOC	1995 M-series Fascicle, Part 3, p. 178	**S19.48**, S32.7, AP S13 (Part A1, para. 5)
ITU-R M.1173	Technical characteristics of single-sideband transmitters used in the maritime mobile service for radiotelephony in the bands between 1 606.5 kHz (1 605 kHz Region 2) and 4 000 kHz and between 4 000 kHz and 27 500 kHz	NOC	1995 M-series Fascicle, Part 3, p. 211	**S52.181**, **S52.229**, **AP S17 (B, Sect. I (2) and I (6a,b))**
ITU-R M.1174	Characteristics of equipment used for on-board communications in the bands between 450 MHz	NOC	1995 M-series Fascicle, Part 3, p. 213	**S5.287, S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	NOC	1995 M-series Fascicle, Part 3, p. 215	**AP S13 (A5, para. 9)**
ITU-R M.1185-1	Method for determining coordination distance between ground based mobile earth stations and terrestrial stations operating in the 148.0 - 149.9 MHz band	**MOD**	Document 8/1019	**AP S5 (An. 1, 3.2, Table 1),** RS 46 (An. 2, Table 1)
ITU-R M.1187	A method for the calculation of the potentially affected region for a mobile-satellite service (MSS) network in the 1 - 3 GHz range using circular orbits	NOC	1995 M-series Fascicle, Part 5, p. 38	**AP S4 (C.11d)**

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RESOLUTION No. 33 (Rev.WRC-97)

RELATING TO THE BRINGING INTO USE OF SPACE STATIONS IN THE BROADCASTING-SATELLITE SERVICE, PRIOR TO THE ENTRY INTO FORCE OF AGREEMENTS AND ASSOCIATED PLANS FOR THE BROADCASTING-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that while Resolution **507** envisages plans for the broadcasting-satellite service, some administrations might nevertheless feel the need to bring stations in that service into use prior to such plans being established;

b) that administrations should, as far as possible, avoid proliferation of space stations in the broadcasting-satellite service before such plans have been established;

c) that a space station in the broadcasting-satellite service may cause harmful interference to terrestrial stations operating in the same frequency band, even if the latter are outside the service area of the space station;

d) that the procedures specified in Articles **S9** to **S14** and Appendix **S5** of the simplified Radio Regulations contain provisions for coordination between stations in the broadcasting-satellite service and terrestrial stations between space systems in that service and space systems of other administrations;

e) that there are many existing and planned stations in the broadcasting-satellite service not subject to agreements and associated plans that have submitted advance publication information (API) or a request for coordination under the existing Resolution **33 (WARC-79)** procedures and that some administrations are currently in coordination under these procedures;

resolves

1. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, and for satellite networks for which the API or the request for coordination has been received following [1 January 1999] the procedures of Articles **S9** to **S14** shall be applied for the coordination and notification of stations in the broadcasting-satellite service and coordination and notification of other services in respect of that service;

2. that, except in those cases where agreements and associated plans for the broadcasting-satellite service have been established and have entered into force, and for satellite networks for which the API or the request for coordination has been received by the Bureau prior to [1 January 1999] the procedure in sections A to C in this Resolution shall be applied;

3. that a future conference review the requirement for the procedures in this Resolution.

NOC

Section A. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Terrestrial Stations

NOC

Section B. Coordination Procedure Between Space Stations in the Broadcasting-Satellite Service and Space Systems of Other Administrations

NOC

Section C. Notification, Examination and Recording in the Master Register of Assignments to Space Stations in the Broadcasting-Satellite Service Dealt With under this Resolution

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RESOLUTION 121 (Rev.WRC-97)

CONTINUED DEVELOPMENT OF INTERFERENCE CRITERIA AND METHODOLOGIES FOR FIXED-SATELLITE SERVICE COORDINATION BETWEEN FEEDER LINKS OF NON-GEOSTATIONARY SATELLITE NETWORKS IN THE MOBILE-SATELLITE SERVICE AND GEOSTATIONARY-SATELLITE NETWORKS IN THE FIXED-SATELLITE SERVICE IN THE BANDS 19.3 - 19.7 GHz AND 29.1 - 29.5 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-95 made provision for use of the bands 19.3 -19.6GHz and 29.1 - 29.4 GHz by feeder links of non-geostationary-satellite networks in the mobile-satellite service (non-GSO MSS) and this Conference made provision for an additional 2 x 100 MHz in the bands 19.6 - 19.7 and 29.4 - 29.5 GHz;

b) that coordination between feeder links of non-GSO MSS networks, and geostationary-satellite networks in the fixed-satellite service (GSO FSS) and terrestrial networks in these bands will be in accordance with Annex 2 of Resolution **46 (Rev.WRC-97)**/Annex 1 of Appendix **S5**;

c) that simultaneous operation of GSO FSS networks and feeder links of non-GSO MSS networks will in most cases result in short-term, high-level interference between such networks, unless interference mitigation techniques are applied by both types of network;

d) that the CPM Report to this Conference concluded that, of the interference mitigation techniques that were studied, the use of adaptive power control, high-gain antennas and geographic isolation "appear to offer the most benefit in improving the sharing between non-GSO MSS feeder links and GSO FSS networks";

e) that ITU-R has developed a Recommendation containing several alternative methodologies for deriving long-term and short-term interference criteria applicable for sharing between non-GSO MSS feeder links and GSO FSS networks;

f) that further development of the Recommendation in *considering* e) would facilitate the determination of appropriate interference mitigation techniques;

g) that No. **S5.541A** of the Radio Regulations requires the use of interference mitigation techniques in order to facilitate coordination of feeder links of non-GSO MSS networks with GSO FSS networks;

h) that the continued development and implementation of interference mitigation techniques would facilitate the coordination of feeder links of non-GSO MSS networks with GSO FSS networks when the interference between such networks exceeds the applicable permissible interference criteria,

resolves to invite ITU-R

1. to undertake, as a matter of urgency, the continued development of appropriate permissible interference criteria for both non-GSO MSS feeder links and GSO FSS networks operating in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz;

2. to undertake, as a matter of urgency, studies of interference mitigation techniques (including those techniques listed in *considering* d)) which could facilitate coordination between non-GSO MSS feeder links and GSO FSS networks;

3. to undertake, as a matter of urgency, studies to develop coordination methodologies for GSO FSS networks and non-GSO MSS feeder links operating in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz on an equal basis,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Director of the Radiocommunication Bureau

to report on the progress of these studies to WRC-99.

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RESOLUTION 214 (Rev.WRC-97)

SHARING STUDIES RELATING TO CONSIDERATION OF THE ALLOCATION OF BANDS BELOW 1 GHz TO THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the agenda of this Conference included consideration of additional allocations on a worldwide basis for the non-geostationary mobile-satellite service (non-GSO MSS) below 1 GHz;

b) that the Conference Preparatory Meeting 1997, in its Report, indicated that for the non-GSO MSS below 1 GHz there is not enough spectrum currently allocated to allow development of all the systems currently in coordination, and that, in order to meet projected MSS requirements below 1 GHz, a range of an additional 7 to 10 MHz will be required in the near future although, as well, it is recognized that a number of these systems may not be implemented for reasons not connected with spectrum availability;

c) that there is an urgent need to make usable spectrum available on a worldwide basis for non-GSO MSS systems operating below 1 GHz;

d) that some non-GSO MSS systems are already operated by some administrations in existing MSS allocations and are at an advanced stage of consideration for operation in many other administrations, and that studies have been conducted within ITU-R on sharing between non-GSO MSS and certain terrestrial services which demonstrate the feasibility of sharing in the cases studied;

e) that issues concerning the technical and operational means to facilitate sharing between the terrestrial services and non-GSO MSS in the bands below 1 GHz remain to be studied;

f) that the requirements for the introduction of these new technologies have to be balanced with the needs of other services having allocations below 1 GHz;

g) that the bands below 1 GHz are extensively used by administrations for many services, although the extent to which they are used by each administration varies throughout the world,

noting

a) that additional studies may identify other bands below 1 GHz which could also be considered suitable for a worldwide allocation to non-GSO MSS;

b) that, based on the sharing techniques being developed for MSS below 1 GHz and the current use of the band 138 - 470 MHz by terrestrial services, this range may be considered for further study;

c) that constraints on the duration of any single transmission from an individual MSS mobile earth station and constraints on the period between consecutive transmissions from an individual MSS mobile earth station operating on the same frequency may facilitate sharing with terrestrial services;

d) that interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039-1,may be used by non-GSO MSS systems below 1 GHz in the Earth-to-space direction to promote compatibility with terrestrial systems when operating in the same frequency band;

e) that new technologies employed by some radiocommunication services, especially within the terrestrial mobile and broadcasting services, which require spectrum below 1 GHz, may have an impact on the sharing possibilities;

f) that non-GSO MSS systems operating below 1 GHz have undergone advance publication by the Radiocommunication Bureau and that administrations may seek to implement further such systems;

g) that there may be a need to review constraints on the current allocations to the MSS below 1 GHz,

resolves

1. that further studies are urgently required on operational and technical means to facilitate sharing between the non-GSO MSS and other radiocommunication services having allocations and operating below 1 GHz;

2. that [the 1999] World Radiocommunication Conference (WRC-99) be invited to consider, on the basis of the results of the studies conducted within ITU-R and the studies referred to in *resolves* 1 above, additional allocations on a worldwide basis for the non-GSO MSS below 1 GHz;

3. that relevant entities and organizations be invited to participate in these sharing studies;

4. that [the 1999/a future competent] world radiocommunication conference be invited to consider a review of the technical and regulatory constraints on non-GSO MSS allocations in the bands below 1 GHz, taking into account *considering d)*,

invites ITU-R

1. to study and develop Recommendations, as a matter of urgency, on the performance requirements, sharing criteria and technical and operational issues relating to sharing between both the existing and planned services, and non-GSO MSS below 1 GHz;

2. as a matter of urgency, to carry out studies in preparation for [a future competent Conference/(WRC-99)], including a review of the operating constraints referred to in *noting c)* necessary to protect the existing and planned development of all of the services to which the bands below 1 GHz are allocated, having regard to *noting d)*;

3. as a matter of urgency, to carry out studies in preparation for [a future competent Conference/(WRC-99)] with respect to interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039-1, necessary to permit the continued development of all of the services to which the bands are allocated;

4. to carry out a review [for a future competent conference] of the technical and regulatory constraints on non-GSO MSS allocations in the bands below 1 GHz, having regard to *considering d)*;

5. to bring the results of these studies to the attention of [the next competent Conference/(WRC-99)] and the relevant preparatory meetings,

urges administrations

1. to participate actively in these studies, with the involvement of both terrestrial and satellite interests;

2. to submit to ITU-R reports on their technical studies and on their operational and frequency sharing experience with non-GSO MSS systems operating below 1 GHz,

encourages administrations

to consider the use of dynamic channel assignment techniques, such as those described in Recommendation ITU-R M.1039-1.

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RESOLUTION PLEN-1 (WRC-97)

TELECOMMUNICATION RESOURCES FOR DISASTER MITIGATION AND RELIEF OPERATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that ITU, in the same spirit as reflected in Articles 40 and 46 of its Constitution and in Resolution 209 (Mob-87), has specifically recognized the importance of the international use of radiocommunications in the event of natural disasters, epidemics, famines and similar emergencies;

b) that the Plenipotentiary Conference of the International Telecommunication Union (Kyoto, 1994), in endorsing Resolution 7 of the World Telecommunication Development Conference (Buenos Aires, 1994), adopted Resolution 36 on telecommunications for disaster mitigation and disaster relief operations;

c) that administrations have been urged to take all practical steps to facilitate the rapid deployment and effective use of telecommunication resources for disaster mitigation and disaster relief operations by reducing and, where possible, removing regulatory barriers and strengthening transborder cooperation between States,

recognizing

a) the potential of modern telecommunication technologies as an essential tool for disaster mitigation and relief operations and the vital role of telecommunications for the safety and security of relief workers in the field;

b) the particular needs of developing countries and the special requirements of the inhabitants of remote areas;

c) the progress made in the implementation of Resolution 36 with respect to the preparation of the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations, as annexed to this Resolution,

noting

with appreciation the scheduling of the Intergovernmental Conference on Emergency Telecommunications (ICET-98) from 16 to 18 June 1998 in Tampere, Finland, which is expected to adopt the Convention referred to in *recognizing* c) above,

resolves

to invite the ITU Radiocommunication Sector to continue to study, as a matter of urgency, those aspects of radiocommunications that are relevant to disaster mitigation and relief operations, such as decentralized means of communications that are appropriate and generally available, including amateur radio facilities and mobile and portable satellite terminals,

requests the Director of the Radiocommunication Bureau

to support administrations in their work towards the implementation of Resolution 36,

instructs the Secretary-General

to work closely with the United Nations Emergency Relief Coordinator with a view to further increasing the Union's involvement in, and support to, disaster communications, and to report on the outcome of the Tampere Conference to the 1998 Plenipotentiary Conference so that that Conference or the ITU Council may take any action that it deems necessary,

invites

the United Nations Emergency Relief Coordinator and the Working Group on Emergency Telecommunications to collaborate closely with ITU in further work towards the implementation of Resolution 36, and in particular the adoption of the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations,

urges administrations

to give their full support to the adoption of the Convention and its national implementation.

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RESOLUTION PLEN-4 (WRC-97)

IMPLEMENTATION OF THE DECISIONS OF WRC-97 RELATING TO APPENDICES S30 AND S30A

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has adopted values for various technical parameters relating to Appendices **30** and **30A**;

b) that these technical parameters were used for the establishment of the revised Plans for Regions 1 and 3,

recognizing

a) that the revised Regions 1 and 3 Plan must be compatible with the Region 2 Plan and with the other services which have primary allocations in the planned bands in all three Regions;

b) that, in revising the Regions 1 and 3 Plan, the orbital position of a number of administrations were changed;

c) that a large number of Article **4** submissions that have either been processed or are currently being processed might affect the services mentioned in *recognizing* a) above;

d) that the Bureau needs clear instructions from WRC-97 on how to deal with these submissions and how to protect the Region 2 Plans and other services;

e) that the instructions to the Bureau should take effect as of the close of WRC-97 (22 November 1997),

resolves

1 that as of 22 November 1997 the Radiocommunication Bureau shall use the values of technical parameters adopted for planning at WRC-97 in its subsequent examination of submissions for modification and notifications of assignments in the Regions 1 and 3 Plan received under Articles **4** and **5** of Appendices **S30** and **S30A**. In particular, the following technical parameters shall be applied:

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- protection ratios used for EPM analyses as defined in Recommendation ITU-R BO.1296 instead of the protection ratios applied at WARC-77 and WARC-88;
- new reference earth receiving antenna pattern (Recommendation ITU-R BO.1213) instead of earth reference receiving antenna pattern applied at WARC-77;
- new reference feeder-link antenna patterns (Earth and space) in accordance with Recommendations ITU-R BO.1295 and ITU-R BO.1296 instead of the feeder link (Earth and space) reference antenna patterns applied at WARC-88;

2 that the following revisions to the Regions 1 and 3 Plans:

- the replacement of the assignments to Australia at 128° E and 98° E by assignments at 152° E and 164° E, respectively;
- the assignments successfully coordinated under Article **4** of Appendices **30** and **30A** for satellite networks RST-1, -2, -3 and -5, at orbital positions 36° E, 56° E, 86° E and 140° E, respectively;
- the replacement of assignments at 31° W by assignments at 30° W and 33.5° W in accordance with "Alternative Step 1" [see Table 7 of Document WRC97/56] (the orbital position at 31° W shall no longer be considered as an orbital position in the Plan);

shall not be considered as new or additional assignments under paragraph 4.1.1 of Article **4** of Appendices **S30** and **S30A**. Therefore, these assignments shall not be subject to the provisions of paragraph 4.3.5 of Appendix **S30** and paragraph 4.2.5 of Appendix **S30A** and the associated Rules of Procedure. In particular, the associated orbital positions shall be treated as "orbital positions in the Plan", and the assignments shall not lapse even if they are not brought into use within eight years from the adoption of the revised Plans;

3 that, the Bureau shall use equivalent protection margin (EPM) criteria to establish a new reference situation for the revised Regions 1 and 3 BSS and feeder-link Plans. In creating the new reference situation, the Bureau shall convert the merged OEPM file into separate uplink and downlink EPM files by eliminating the redundant beams created for the purpose of OEPM calculations using different "strapping" between feeder-link and downlink channels. The resultant new reference situation, including the use of power control for the feeder link, shall be published in a circular-letter for subsequent use in the application of the provisions of Appendices **S30** and **S30A**;

4 that the Radiocommunication Bureau shall review all special sections already published in order to determine the requirement for coordination with the revised Regions 1 and 3 Plan as well as with the current Region 2 Plan and other services in all three Regions, and publish the results of its review in corrigenda to the concerned special sections (see Resolution [**COM4-YYY**]);

5 that in examining the requirement for coordination of other services in all three Regions with the revised Regions 1 and 3 Plan in the cases described in *resolves* 4, the following methodology shall be applied:

- Protection from fixed-satellite service assignments already published. The Bureau shall review all special sections of the series AP30/C previously published, and publish corrigenda where required.
- Protection from fixed-satellite service assignments not yet processed. The Bureau shall determine the requirement for coordination and publish the request in its weekly circular. [The administrations responsible for the fixed-satellite service assignments shall then initiate coordination with the affected assignments in the revised Plan.]
- Protection from terrestrial assignments already in process. The Bureau shall determine the requirement for coordination and publish the request in its weekly circular. [The administration responsible for the terrestrial assignments shall then initiate coordination with the affected assignments in the revised Plan];

6 that as of the end of the Conference the Bureau shall process the pending Article **4** modifications with respect to the revised reference situation described in *resolves* 3, as follows:

- the Bureau shall process all pending modifications to the Plans of Appendix **S30** and Appendix **S30A** (i.e. those modifications being treated under Article **4** that have not yet completed the modification procedures) in the same date order of receipt by the Bureau of the complete information on the request for modification and, using the new technical planning criteria and reference situation, identify for each pending modification the list of administrations whose agreement is required and publish this list of affected administrations;
- within four months from the date of the above publication, possibly affected administrations should provide comments to the Bureau and to the notifying administration; however, the notifying administration shall indicate any agreements which have been obtained previously and any new agreements;
- in those cases where the degradation of the margins caused by the proposed modification is no worse under the new situation arising from the revision of the Plan than under the original situation, any agreements previously obtained under the Article **4** procedures of Appendices **30** or **30A** should be confirmed by the respective administrations;
- the existing time period to bring the modifications or additions into use of five years plus a possible extension of three years will continue to be counted as from the date of receipt of the modification or additions by the Bureau of the complete Annex 2 information pertaining to the request for modification;
- any modifications or additions involving new frequencies or orbit positions, or both, which have not been brought into service within this five + three year period shall be cancelled by the Bureau after it has informed the notifying administrations.

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RESOLUTION GTPLEN1-2 (WRC-97)

INTERVAL BETWEEN WORLD RADIOCOMMUNICATION CONFERENCES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the Additional Plenipotentiary Conference (Geneva, 1992) concluded that, in general, world radiocommunication conferences should be held every two years in order for ITU to close the widening gap between its Radio Regulations and the current radiocommunication environment;

b) that No. **90** of the ITU Constitution states that world radiocommunication conferences shall normally be convened every two years; however, following the application of the relevant provisions of the Convention, such a conference need not be convened or an additional one may be convened;

c) that serious concerns were expressed at this Conference about the extent of the agendas of the forthcoming world radiocommunication conferences, the limited time available for their preparation and the tendency to reconsider major issues at a subsequent conference,

recognizing

a) the argument that extending the interval between world radiocommunication conferences to two and a half or three years would increase the time available for preparatory studies by Member States, Sector Members and the Radiocommunication Bureau;

b) the counter-argument that efforts should be focused on establishing realistic and manageable agendas, rather than on extending the interval between conferences;

c) the strategies enunciated in contributions to WRC-97 for limiting conference agendas to items requiring urgent regulatory action for which the necessary technical preparatory work can be completed;

d) the further view that, if it is determined during the course of preparations for any given conference that preparatory studies related to a particular agenda item are not sufficiently mature to lead to substantive results, action on that item could include possible deferral until the following conference,

noting

that a decision to change the interval between world radiocommunication conferences will need to be based on a thorough analysis of the impact of such a change on the future financial plans of the Union and on the extent of the resources available to the Secretariat to support such conferences,

resolves to invite

1 the ITU Council, at its 1998 session, on the basis of information provided by the Radiocommunication Bureau and the General Secretariat and taking into account the views of the relevant organs of the Union, undertake an analysis as outlined under *noting* above, with a view to recommending a definitive course of action to the 1998 Plenipotentiary Conference on the feasibility of extending the interval between world radiocommunication conferences;

2 the 1998 Plenipotentiary Conference to determine an appropriate strategy and indicate in its decision whether changes to the Constitution and Convention will be required;

3 the 1998 Plenipotentiary Conference also to consider the feasibility of scheduling conferences in the future on a single theme or a limited number of themes,

invites the Secretary-General

to include this issue, as a matter of urgency, on the agenda of 1998 session of the ITU Council.

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RESOLUTION GTPLEN2-1 (WRC-97)

ADMINISTRATIVE DUE DILIGENCE APPLICABLE TO SOME SATELLITE COMMUNICATION SERVICES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that Resolution **18** of the ITU Plenipotentiary Conference (Kyoto, 1994) instructed the Director of the Radiocommunication Bureau to initiate a review of some important issues concerning international satellite network coordination and make a preliminary report to WRC-95 and a final report to WRC-97;

b) that the Director of the Radiocommunication Bureau provided a comprehensive report to WRC-97 including a number of recommendations for action as soon as possible and identifying areas requiring further study;

c) that one of the recommendations in the Director's report was that administrative due diligence should be adopted as a means of addressing the problem of reservation of orbit and spectrum capacity without actual use;

d) that experience may need to be gained in the application of the administrative due diligence procedures adopted by this Conference, and that several years may be needed to see whether administrative due diligence measures produce satisfactory results;

e) that new regulatory approaches may need to be carefully considered in order to avoid adverse effects on networks already going through the different phases of the procedures;

f) that Article **44** of the Constitution (Geneva, 1992) sets out the basic principles for the use of the radio-frequency spectrum and the geostationary-satellite orbit, taking into account the needs of developing countries,

considering further

that this Conference has decided to reduce the regulatory time-frame for bringing a satellite network into use,

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resolves

1 that the administrative due diligence procedure contained in Annex 1 to this Resolution shall be applied as from [22 November 1997] for a satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service for which the advance publication information [**S9.2B**], or for which the request for modifications of the Plans under Article **4**, paragraph 4.1 b) of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Plans under Article **4**, paragraph 4.1 a) of Appendices **30** and **30A** that extends the service area to another country or countries in addition to the existing service area, or for which the submission of information of Annex 2 of Appendix **30B** under supplementary provisions applicable to additional uses in the planned bands as defined in Article **2** of that Appendix (Section III of Article **6** of Appendix **30B**) has been received by the Bureau from [22 November 1997];

2 that for a satellite network or satellite system within the scope of paragraphs 1, 2 or 3 of Annex 1 to this Resolution not yet recorded in the MIFR, for which the advance publication information under [**RR 1042**/**S9.2B**] or the request for a modification to the Plans of Appendices **30** and **30A** or for the application of Section III of Article **6** of Appendix **30B** has been received by the Bureau before [22 November 1997], the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2003, or before the expiry of the original notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of [**RR 1550**] or the dates specified in the relevant provisions of Appendix **30** [(4.3.5)], Appendix **30A** [(4.2.5 and 4.2.6)] or Appendix **30B** [(6.57)], whichever date comes earlier. If the date of bringing into use, including extension specified above, is before 1 July 1998, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 1 July 1998;

3 that for a satellite network or satellite system within the scope of paragraphs 1, 2 or 3 of Annex 1 to this Resolution recorded in the MIFR, the responsible administration shall submit to the Bureau the complete due diligence information in accordance with Annex 2 to this Resolution not later than 21 November 2000;

4 that six months before the expiry date specified in *resolves* 2 or 3 above, if the responsible administration has not submitted the due diligence information, the Bureau shall send a reminder to that administration;

5 that if the due diligence information is found to be incomplete, the Bureau shall immediately request the administration to submit the missing information. In any case, the complete due diligence information shall be received by the Bureau before the expiry date specified in *resolves* 2 or 3 above, as appropriate, and shall be published by the Bureau in the Weekly Circular;

6 that if the complete due diligence information is not received by the Bureau before the expiry date specified in *resolves* 2 or 3 above, the request for coordination or request for a modification to the Plans of Appendices **30** and **30A** or for application of Section III of Article **6** of Appendix **30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **30** and **30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **30B** List shall be deleted by the Bureau after it has informed the concerned administration. The Bureau shall publish this information in the Weekly Circular,

further resolves

that the procedures in this Resolution are in addition to the provisions under Articles [**S9** or **S11**] or Appendices **30, 30A** or **30B**, as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **30, 30A**) in respect of extending the service area to another country or countries in addition to the existing service area,

instructs the Director of the Radiocommunication Bureau

to report to the next competent World Radiocommunication Conference [(WRC-99)] and future world radiocommunication conferences on the results of the implementation of the administrative due diligence procedure,

instructs the Secretary-General

to bring this Resolution to the attention of the 1998 Plenipotentiary Conference.

ANNEX 1 TO RESOLUTION GTPLEN2-1 (WRC-97)

1 Any satellite network or satellite system of the fixed-satellite service, mobile-satellite service or broadcasting-satellite service with frequency assignments that are subject to coordination under [Article **11**, **S9.7**, **S9.8**, **S9.9**, **S9.11**, **S9.12**, **S9.13**, Resolution **33**, Resolution **46**, Resolution **118** and Resolution **120**] shall be subject to these procedures.

2 Any modifications of the Plans under Article **4**, paragraph 4.1 b) of Appendices **30** and **30A** that involve the addition of new frequencies or orbit positions or modifications of the Plans under Article **4**, paragraph 4.1 a) of Appendices **30** and **30A** that extend the service area to another country or countries in addition to the existing service area shall be subject to these procedures.

3 Any submission of information under Annex 2 of Appendix **30B** under supplementary provisions applicable to additional uses in the planned bands as defined in Article **2** of that Appendix (Section III of Article **6** of Appendix **30B**) shall be subject to these procedures.

4 An administration requesting coordination for a satellite network under 1 above shall send to the Bureau as early as possible before bringing into use, but in any case not to be received before the end of the 5-year period established as a limit to bringing into use [**S9.1**], the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

5 An administration requesting a modification of the Plans of Appendices **30** and **30A** under 2 above shall send to the Bureau as early as possible before bringing into use, but in any case to be received before the end of the period established as a limit to bringing into use in accordance with Appendix 30, paragraph 4.3.5, and with Appendix 30A, paragraphs 4.2.5 and 4.2.6, the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

6 An administration applying Section III of Article 6 of Appendix **30B** relating to additional uses under 3 above shall send to the Bureau as early as possible before the bringing into use, but in any case to be received before the bringing into use, the due diligence information relating to the identity of the satellite network and the spacecraft manufacturer specified in Annex 2 to this Resolution.

7 The information to be submitted in accordance with 4, 5 or 6 above shall be signed by an authorized official of the notifying administration or of an administration that is acting on behalf of a group of named administrations.

8 On receipt of the due diligence information under 4, 5 or 6 above, the Bureau shall promptly examine that information for completeness. If the information is found to be complete, the Bureau shall publish the complete information in a special section of the Weekly Circular within 30 days.

9 If the information is found to be incomplete, the Bureau shall immediately request the administration to submit the missing information. In all cases, the complete due diligence information shall be received by the Bureau within the appropriate time period specified in 4, 5 or 6 above, as the case may be, relating to the date of bringing the satellite network into use.

10 Six months before expiry of the period specified in 4, 5 or 6 above and if the administration responsible for the satellite network has not submitted the due diligence information under 4, 5 or 6 above, the Bureau shall send a reminder to the responsible administration.

11 If the complete due diligence information is not received by the Bureau within the time limits specified in this Resolution, the networks covered by 1, 2 or 3 above shall no longer be taken into account and shall not be recorded in the MIFR. The provisional recording in the MIFR shall be deleted by the Bureau after it has informed the concerned administration. The Bureau shall publish this information in the Weekly Circular.

With respect to the request for modification of the Plans of Appendices **30** and **30A** under 2 above, the modification shall lapse if the due diligence information is not submitted in accordance with this Resolution.

With respect to the request for application of Section III of Article **6** of Appendix **30B** under 3 above, the network shall also be deleted from the Appendix **30B** List, if applicable.

12 Before the Bureau extends the date of bringing into use under [**S11.44 [RR 1550]**], the complete due diligence information under 4 above shall have been submitted by the responsible administration.

13 An administration notifying a satellite network under 1, 2 or 3 above for recording in the MIFR shall send to the Bureau as early as possible before bringing into use, but in any case before the date of bringing into use, the due diligence information relating to the identity of the satellite network and the launch services provider specified in Annex 2 to this Resolution.

14 When an administration has completely fulfilled the due diligence procedure but has not completed coordination, this does not preclude the application of **S11.41** by that administration.

ANNEX 2 TO RESOLUTION GTPLEN2-1 (WRC-97)

A **Identity of the satellite network**

a) Identity of the satellite network

b) Name of the administration

c) Country symbol

d) Reference to the advance publication information [or to the request for modification of the plans in **AP30**/**30A**]

e) Reference to the request for coordination [(not applicable for **AP30**/**30A**)]

f) Frequency band(s)

g) Name of the operator

h) Name of the satellite

i) Orbital characteristics

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B **Spacecraft manufacturer***

a) Name of the spacecraft manufacturer

b) Date of execution of the contract

c) Contractual "delivery window"

d) Number of satellites procured

C **Launch services provider**

a) Name of the launch vehicle provider

b) Date of execution of the contract

c) Anticipated launch or in-orbit delivery window

d) Name of the launch vehicle

e) Name and location of the launch facility

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* NOTE - In cases where a contract for satellite procurement covers more than one satellite, the relevant information shall be submitted for each satellite.

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RESOLUTION COM4-17 (WRC-97)

PUBLICATION OF THE WEEKLY CIRCULAR INCLUDING SPECIAL SECTIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the Weekly Circular and the Special Sections, as referred to in Articles **S9**, **S11** and **S12A** of the Radio Regulations, are currently published on paper, microfiche and diskette;

b) that the form, content and periodicity of this publication need to be reviewed in order to improve its usability;

c) that the IFL (International Frequency List) and the SRS (database of Space Radiocommunication Stations) are published every six months and the terrestrial plans are published on a yearly basis exclusively on CD-ROM;

d) that significant improvements have been made in recent times in terms of cost reduction and availability of CD-ROM and CD-ROM readers;

e) that large amounts of data may be more readily consulted if presented in an electronic format by using software;

f) that the introductionof new technologies requires adaptation and appropriate training from a user's point of view, especially for developing countries;

g) that information in electronic format could be used to fulfil administrations' database requirements,

further considering

h) that the ITU budget makes provision for the distribution of one free copy of the Weekly Circular and the Special Sections to each administration;

i) that the use of a CD-ROM format would significantly reduce the cost of publishing and distributing the Weekly Circular;

j) that the use of electronic format is important for many administrations,

resolves

1 that the publication of the Weekly Circular and the Special Sections on paper and microfiche, as well on diskette, be migrated to a CD-ROM format, having regard to *ŕesolves* 4" of this Resolution;

2 that this publication be fortnightly;

3 that tests should be conducted in cooperation with all administrations before introducing the CD-ROM publication replacing the Weekly Circular, including the Special Sections, published on paper, microfiche and diskette;

4 that, following the successful completion of these tests and for an introductory period of a minimum of three months ending 1 January 1999, both the paper, microfiche and diskette format and the CD-ROM format should be provided in parallel;

5 that the search software to be made available on the CD-ROM should be capable of easily identifying and extracting to file Parts I, II and III of the Weekly Circular, the associated Special Sections for terrestrial and space assignments, as well as plan assignments;

6 that administrations are encouraged to discontinue usage of paper, microfiche and diskette as soon as possible and to inform the Radiocommunication Bureau accordingly,

instructs the Director of the Radiocommunication Bureau

1 to initiate the introduction of a CD-ROM format for the publication of the Weekly Circular including the Special Sections;

2 to consult with all the administrations during the testing phase of the new system;

3 to provide an index of Parts I, II, III and the Special Sections printed on paper, for those administrations requesting it;

4 to include in radiocommunication seminars appropriate training in the use of the CD-ROM format;

5 to make the data also available on TIES by remote electronic access on a subscription basis;

6 to set a reasonable price for the provision of additional copies of the CD-ROM,

further instructs the Director of the Radiocommunication Bureau

7 to consider an alternative name, if appropriate, for the Weekly Circular;

8 to report to the next world radiocommunication conference on the experience gained in the introduction of the CD-ROM format, with a view to making any necessary consequential amendments to the Radio Regulations,

requests the Secretary-General

to consider the provision of suitable software and/or hardware for the least developed countries requesting it.

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RESOLUTION COM4-18 (WRC-97)

PROVISIONAL APPLICATION OF CERTAIN PROVISIONS OF THE RADIO REGULATIONS AS MODIFIED BY WRC-97 AND TRANSITIONAL ARRANGEMENTS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that as a result of the review under Resolution **18** (Kyoto, 1994), a number of provisions relating to the advance publication, coordination and notification of assignments for satellite networks have been modified and these should be applied provisionally as soon as possible;

b) that it was decided to reduce the regulatory time-frame for bringing a satellite network into use, and to delete the advance publication information (API) if not followed by the coordination data within 24 months of the date of receipt of the API;

c) that there are a number of satellite networks for which the relevant information has been communicated to ITU prior to the end of this Conference, and it is necessary to provide for some transitional measures for the treatment of this information by the Bureau,

resolves

1 that the provisions of Sections I, IA and IB of Article **S9** and provisions of Article **S11** (Nos. **S11.43A**, **S11.44**, **S11.44B** to **S11.44I, S11.47** and **S11.48**), as revised by WRC-97, shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis as of 22 November 1997;

2 that, for satellite networks which are subject to coordination for which the API has been received by the Bureau prior to 22 November 1997 but the coordination data has not been received by the Bureau prior to this date, the responsible administration shall have until 22 November 1999 or the end of the period pursuant to the application of No. **1056A** of the Radio Regulations, whichever date comes earlier, to submit the coordination data in accordance with the applicable provisions of the Radio Regulations; otherwise the Bureau shall cancel the relevant API in accordance with No. **1056A** or No. **S9.5D** as applicable;

3 that, for satellite networks for which the API has been received by the Bureau prior to 22 November 1997, the maximum allowed time period from the date of receipt of the API to bring the relevant frequency assignments into use shall be six years plus the extension pursuant to No. **1550** [and Resolution [**GTPLEN2-1**], if applicable, whichever date comes earlier];

4 that the revised Appendix**S4** with respect to the API for satellite networks which are subject to coordination under SectionII of Article **S9** shall be applied as of 22 November 1997;

5 that, for those networks which are subject to coordination for which the API has been received but not yet published prior to 22 November 1997, the Bureau shall publish only the information of the revised Appendix**S4** as modified by WRC-97.

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RESOLUTION COM4-19 (WRC-97)

PROVISIONAL APPLICATION OF Nos. S11.24 AND S11.26 OF THE RADIO REGULATIONS ADOPTED BY WRC-97 WITH REGARD TO HIGH ALTITUDE PLATFORM STATIONS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has made provision for the operation of high altitude platform stations within the fixed service in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz;

b) that the Radio Regulations Board issued a provisional rule of procedure concerning notification periods in No. **S11.24** (**RR 1228**) in February 1997, pending a final decision by WRC-97;

c) that WRC-97 modified No. **S11.24** and added No. **S11.26** of the Radio Regulations to the effect that notices relating to assignments for high altitude platform stations in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz "shall reach the Bureau not earlier than five years before the assignments are bought into use";

d) that Resolution **[COM5-7] (WRC-97)** gives the Bureau instructions concerning the treatment of notices for high altitude platform stations as from 22 November 1997,

resolves

that the provisions of Article **S11** (Nos. **S11.24** and **S11.26**) shall be applied by the Radiocommunication Bureau and by administrations on a provisional basis from 22 November 1997.

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RESOLUTION COM4-20 (WRC-97)

UPDATING OF THE "REMARKS" COLUMNS IN THE TABLES OF ARTICLE 9A OF APPENDIX 30A AND ARTICLE 11 OF APPENDIX 30

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that WRC-97 has adopted new texts relating to he symbols in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30;

b) that WRC-97 has adopted new entries in the "Remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30, on the understanding that the lists of identified administrations will be reviewed and revised, as appropriate, by WRC-99;

c) that studies of compatibility between the revised Regions 1 and 3 BSS (downlink and feeder link) Plans, and other services having allocations in the planned bands in all three Regions, and between the revised Regions 1 and 3 Plan and the Region 2 Plan, were performed during WRC-97 using data which had been received and published by the Bureau at the time of WRC-97 under relevant provisions of the Radio Regulations;

d) that because it was not possible to analyse fully the effect of all assignments which were received before 27 October 1997 but which had not been processed at the time of WRC-97;

e) that in order to analyse fully the effect of assignments that have nobeen fully processed, it is necessary to process the assignments which have been received prior to WRC-97,

recognizing

a) that the revised Regions 1 and 3 Plan must be compatible with the Region 2 Plan and with the other services which have primary allocations in the planned bands in all three Regions in accordance with principles adopted at WRC-97;

b) that the Radiocommunication Bureau requires clear instructions from WRC-97 on how to complete the analyses and to finalize the entries to be included in the "Remarks" column (column 9) of both Article 9A of Appendix 30A and Article 11 of Appendix 30;

c) that the instructions to the Bureau shall take effect on 22 November 1997,

resolves

1 that the Radiocommunication Bureau shall complete the required analyses based on the new Notes [10 to 14] to Article 9A of Appendix 30A and Notes [7 to 9] to Article 11.2 of Appendix 30 added during this Conference;

2 that the Radiocommunication Bureau shall publish the results of its analyses after the Conference, together with a modified "Remarks" column (column 9) of Article 9A of Appendix 30A and Article 11 of Appendix 30, in the form of a circular-letter;

3 that once the circular-letter referred to in *resolves* 2 has been sent, administrations will have a period of [60] days to decide whether they do or do not wish to go on appearing as "affected administrations" in the relevant table. If no reply is received from administrations within that period, it will be taken that there is no need to make any change;

4 that the new coordination requirements identified in the above-mentioned circular-letter shall apply provisionally from the date of the above-mentioned circular-letter until a decision is taken by WRC-99;

5 that the Radiocommunication Bureau shall report the results of its analyses and the final lists of administrations to be included in the modified "Remarks" columns to WRC-99,

instructs the Secretary-General

to bring this Resolution to the attention of the Council, at its next session, with a view to including this item on the agenda of WRC-99.

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RESOLUTION COM5-10 (WRC-97)

FREQUENCY SHARING IN THE BANDS 1 610.6 - 1 613.8 MHz AND 1 660 - 1 660.5 MHz BETWEEN THE MOBILE-SATELLITE SERVICE AND THE RADIO ASTRONOMY SERVICE

The World Radiocommunication Conference (Geneva, 1997),

with a view

to enabling the mobile-satellite service (MSS) and the radio astronomy service to make the most efficient use of frequency bands allocated to them, having due regard to the other services to which those bands are also allocated,

considering

a) that the bands 1 610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz are allocated to the radio astronomy service and the mobile-satellite service (Earth-to-space) on a co-primary basis;

b) that No. **[733E] S5.372** of the Radio Regulations states that "harmful interference shall not be caused to stations of the radio astronomy service using the band 1610.6 - 1 613.8 MHz by stations of the radiodetermination-satellite and mobile-satellite services ([No. **2904**] **S29.13** applies)"; and that Article **[36] S29** also points out that emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service;

c) that the nature of objects studied by the radio astronomy service in the bands 1 610.6 - 1613.8 MHz and 1 660 - 1 660.5 MHz demands maximum flexibility in the planning of observation frequencies;

d) that, in the bands 1610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz, which are shared between the radio astronomy service and the mobile-satellite service, operational constraints are necessary for mobile earth stations of the mobile-satellite service;

e) that a former ITU-R Recommendation relating to sharing between the mobile-satellite service and the radio astronomy service in the band 1660 - 1 660.5 MHz noted that further studies were required, particularly in the areas of propagation models and assumptions used for the determination of separation distances;

f) that Recommendation ITU-R M.1316 may be used in order to facilitate coordination between mobile earth stations and radio astronomy stations in the bands 1610.6 - 1 613.8 and 1 660 - 1 660.5 MHz;

g) that no experience has been gained up to now with the use of the Recommendation mentioned in *considering* f);

h) that the threshold levels of interference detrimental to the radio astronomy service are given in Recommendation ITU-R RA.769-1,

resolves

that a future competent conference should evaluate frequency sharing in the bands 1610.6 - 1 613.8 MHz and 1 660 - 1 660.5 MHz between the mobile-satellite service (MSS) and the radio astronomy service, based upon the experience gained with the use of ITU-R M.1316 and other relevant ITU-R Recommendations,

invites ITU-R

to submit a report to that future conference on evaluating the effectiveness of Recommendations aiming to facilitate sharing between the mobile-satellite service and the radio astronomy service,

urges administrations

to participate actively in this evaluation.

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RESOLUTION COM5-11 (WRC-97)

USE OF THE FREQUENCY BAND 31.8 - 33.4 GHz FOR HIGH DENSITY SYSTEMS IN THE FIXED SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that in the frequency band 31.8 - 33.4 GHz, high density systems in the fixed service, if deployed, might cause interference to or receive interference from stations in the existing services and that the priority and degree of protection afforded to each service is a matter for each administration to consider;

b) that the band 31.8 - 33.4 GHz is allocated on a primary basis to the fixed and radionavigation services and that portions of the band are allocated on a primary basis to the space research (deep space) and inter-satellite services;

c) that sharing criteria for the fixed and other services in the frequency band 31.8 - 33.4 GHz have not yet been developed within ITU-R,

resolves

1 that the date of the provisional application of the allocation to the fixed service in the frequency band 31.8 - 33.4 GHz is 1 January 2001;

2 that [WRC-99] should review this allocation, including the date of 1 January 2001, taking full account of the future requirements and development of the other services to which the band is allocated and available ITU-R studies,

requests ITU-R

to conduct, as a matter of urgency and in time for [WRC-99], the appropriate studies to determine what criteria would be necessary for sharing between stations in the fixed service and stations in the other services to which the frequency band 31.8 - 33.4 GHz is allocated.

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RESOLUTION COM5-12 (WRC-97)

FREQUENCY BANDS ABOVE 30 GHz AVAILABLE FOR HIGH-DENSITY APPLICATIONS IN THE FIXED SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that there is a dramatically increasing demand for high-density applications in the fixed service resulting from the deployment of new mobile networks and from the rapid worldwide deregulation in the provision of local broadband services, including multimedia;

b) that the frequency range from 30 to about 50 GHz is the range preferred to satisfy initial requirements, as indicated in *considering* a), while the bands above about 50 GHz are preferred for similar applications but which take technical advantage of high atmospheric absorption;

c) that the lower part of the spectrum above 30 GHz has advantages for the fixed service in areas where longer path lengths are necessary;

d) that the 38 GHz band is already heavily used by many administrations for high-density applications in the fixed service;

e) that the needs of other services to which the relevant frequency bands are already allocated must be taken into account;

f) that the band 37 - 37.5 GHz is being planned for use by the space research service (space-to-Earth) to provide moon-to-Earth and planetary communication links;

g) that the band 37 - 38 GHz is being planned for use by the space research service to provide space based very long baseline interferometry;

h) that the deployment of high-density applications in the fixed service in some bands potentially presents sharing difficulties with other primary services allocated to the same band, e.g. the fixed-satellite service;

i) that operations in the space services, such as in the fixed-satellite service, in those bands used by high-density applications in the fixed service may lead to sharing difficulties;

j) that there is a need for global harmonization of new and existing allocations of radio frequency bands to facilitate coordination between administrations, encourage development of competitive products through economies of scale, and the worldwide introduction of new telecommunication services, including the provision of reliable global information infrastructure (GII) access at an affordable cost,

resolves

that administrations should take into account that the bands 31.8 - 33.4 GHz*, 51.4 - 52.6 GHz, 55.78 - 59 GHz and 64 - 66 GHz are available for high-density applications in the fixed service, when considering allocations or other regulatory provisions in relation to these bands,

requests ITU-R

1 to undertake studies leading to the identification of system characteristics of high-density systems in the fixed service in the bands listed in the *resolves*;

2 to undertake, as a matter of urgency, studies of technical and operational criteria and of methods to facilitate sharing between high-density systems in the fixed service and other services in the bands listed in the *resolves*,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

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* The date of provisional application of this allocation shall be in conformity with Resolution [COM5-11].

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RESOLUTION COM5-15 (WRC-97)

STUDIES RELATING TO CONSIDERATION OF ALLOCATIONS IN BANDS AROUND 1.4 GHz FOR FEEDER LINKS OF THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICES WITH SERVICE LINKS OPERATING BELOW 1 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the agenda of this Conference included consideration of the adoption of additional allocations for non-geostationary mobile-satellite services (non-GSO MSS);

b) that the Report of the 1997 Conference Preparatory Meeting (CPM-97) stated that the Radiocommunication Bureau has identified at least 23 non-GSO MSS networks at frequencies below 1 GHz, at some state of coordination under Resolution 46 and that many of the proposed networks cannot be implemented in the existing allocations because there is not enough spectrum;

c) that CPM-97 stated that due to the extreme sensitivity of radio astronomy observations interference from unwanted (spurious and out-of-band) emissions can be a problem. However, CPM-97 noted that interference to radio astronomy can be avoided using various techniques including low-power transmitter levels, choice of modulation, bit shaping, output filtering and band limiting filters. Use of these techniques can minimize the band separation necessary to meet the recommended interference threshold levels for out-of-band emissions;

d) that, since CPM-97, one administration has carried out additional analyses and hardware demonstrations with a view to determining the feasibility of sharing between non-GSO MSS feeder links and services such as the earth exploration-satellite (passive), radio astronomy and space research (passive) services in bands around 1.4 GHz;

e) that factors taken into account by these post-CPM-97 activities in order to protect the passive services around 1.4 GHz from out-of-band emissions include: the use of narrow-band non-GSO MSS feeder-link transmissions; the use of spectrum-efficient modulation methods, such as GMSK, having inherently rapid roll-off of out-of-band emissions; the use, where necessary, of band-pass filters in satellite transmitters and MSS feeder-link transmitting earth stations; and guardbands where necessary;

f) that factors taken into account by these post-CPM-97 activities concerning sharing with radiolocation include the use of conventional techniques that may be applied in MSS satellite receivers, such as intermediate frequency limiters and time diversity, which have long been employed to protect radiolocation receivers, and techniques such as transmitted waveforms employing time diversity, which have been employed to protect receivers in other services from high-power pulsed radar transmitters,

recognizing

that the bands near 1.4 GHz are extensively used by many other services operating in accordance with the Radio Regulations, including fixed and mobile systems,

noting

a) that Resolution **214 (WRC-97)** states under *resolves* 1 that further studies are urgently required on operational and technical means to facilitate sharing between non-GSO MSS and other radiocommunication services having allocations and operating below 1 GHz;

b) that a former resolution identified issues relating to frequency sharing between the mobile-satellite service and terrestrial services at frequencies below 3 GHz as being among the urgent studies required in preparation for WRC-97;

c) that one administration performed such studies, which were submitted to ITU-R, but these studies could not be considered due to time limitations;

d) that, since WRC-95, one administration has performed studies on sharing between space and terrestrial services and feeder links near 1.4 GHz for non-GSO MSS systems with service links below 1 GHz,

resolves

1 to invite ITU-R, as a matter of urgency, to carry out studies to determine the operational and technical measures required to facilitate sharing in portions of the band 1390 - 1 400 MHz between existing and currently planned services and feeder links (Earth-to-space) for non-GSO MSS systems with service links operating below 1 GHz;

2 to invite ITU-R, as a matter of urgency, to carry out studies to determine operational and technical means to facilitate sharing, in portions of the band 1427 - 1 432 MHz, between existing and currently planned services and feeder links (space-to-Earth) for non-GSO MSS systems with service links operating below 1 GHz;

3 to invite ITU-R, as a matter of urgency, to study operational and technical measures required to protect passive services in the band 1400 - 1 427 MHz from unwanted emissions from feeder links near 1.4 GHz for non-GSO MSS systems with service links operating below 1 GHz;

4 to invite [WRC-99/a future competent conference] to consider, on the basis of completion of studies referred to in *resolves* 1, 2 and 3, additional allocations for feeder links on a worldwide basis for non-GSO MSS systems with service links below 1 GHz,

urges administrations

to participate actively in such studies, with the involvement of interested parties.

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RESOLUTION COM5-16 (WRC-97)

ALLOCATION TO THE FIXED-SATELLITE (SPACE-TO-EARTH) SERVICE IN THE 41.5 - 42.5 GHz BAND AND PROTECTION OF THE RADIO ASTRONOMY SERVICE IN THE 42.5 - 43.5 GHz BAND

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in the band 41.5 - 42.5 GHz in Regions 2 and 3 and in certain countries in Region 1 and that this band is adjacent to the band 42.5 - 43.5 GHz which is allocated, *inter alia*, to the radio astronomy service for both continuum and spectral line observations;

b) that unwanted emissions from space stations in the fixed-satellite (space-to-Earth) service in the band 41.5 - 42.5 GHz may result in harmful interference to the radio astronomy service in the band 42.5 - 43.5 GHz;

c) that various technical means may be used to reduce these unwanted emissions from space stations in the fixed-satellite service;

d) that a limited number of radio astronomy stations worldwide require protection, and that there may be means to limit the susceptibility of radio astronomy receivers to interference,

taking into account

the relevant provisions of the Radio Regulations,

resolves

that administrations shall not implement fixed-satellite systems in the band 41.5 - 42.5 GHz until technical and operational measures have been identified and agreed within ITU-R to protect the radio astronomy service from harmful interference in the band 42.5 - 43.5 GHz,

invites ITU-R

1 to study, as a matter of urgency, the harmful interference that space stations in the fixed-satellite (space-to-Earth) service operating in the band 41.5 - 42.5 GHz may cause to stations in the radio astronomy service operating in the band 42.5 - 43.5 GHz;

2 to identify technical and operational measures that may be taken to protect stations in the radio astronomy service operating in the band 42.5- 43.5 GHz, including geographical separation and out-of-band emission limits to be applied to space stations operating in the fixed-satellite service in the band 41.5 - 42.5 GHz, as well as measures that may be implemented to reduce the susceptibility of stations in the radio astronomy service to harmful interference;

3 to report on the results of these studies to the [CPM] of [WRC-99],

urges administrations

to participate actively in the aforementioned studies by submitting contributions to the ITU-R,

requests

[WRC-99] to take appropriate action based on these studies.

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RESOLUTION COM5-17 (WRC-97)

CRITERIA AND METHODOLOGIES FOR SHARING BETWEEN THE FIXED-SATELLITE SERVICE AND OTHER SERVICES WITH ALLOCATIONS IN THE BAND 40.5 - 42.5 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in Regions 2 and 3 and in certain countries in Region 1 and to the fixed service in the band 40.5 - 42.5 GHz;

b) that these allocations will provide flexibility to those administrations that seek to implement systems in the bands between 36 and 50 GHz;

c) that space service networks (fixed-satellite service and broadcasting-satellite service) will share the band 40.5 - 42.5 GHz on a primary basis with the fixed and broadcasting services;

d) that Section 7.5 of the Report of the Conference Preparatory Meeting to this Conference recognized that sharing of spectrum in frequency bands above 30 GHz between the fixed service and one or more other services could result in service impairments, and that there may be utility in further study of the feasibility of co-frequency sharing between the fixed service and other services with allocations in these bands;

e) that it may be useful to consider the identification of this spectrum range for high-density fixed service applications;

f) that given *considerings* a) to e), it would be useful to conduct such studies in the band 40.5 - 42.5 GHz;

g) that the new co-primary allocations to the fixed-satellite service and fixed service referred to in *considering* a) above are in the band adjacent to the band 42.5 - 43.5 GHz, which is the subject of an ITU-R study programme under Resolution **[COM5-16] (WRC-97)**;

h) that there is a need to establish sharing criteria, including power flux-density limits, to facilitate the co-existence of the space and terrestrial services with allocations in the band 40.5-42.5 GHz,

invites ITU-R

1 to undertake, as a matter of urgency, studies of appropriate criteria and methodologies for sharing, including power flux-density limits, between the fixed-satellite service and the other services with allocations in the band 40.5 - 42.5 GHz;

2 to report on the results of these studies to the [CPM] of [WRC-99],

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

requests

[WRC-99] to take appropriate action based on the results of these studies.

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RESOLUTION COM5-23 (WRC-97)

POWER FLUX-DENSITY LIMITS APPLICABLE TO NON-GSO FSS SYSTEMS FOR PROTECTION OF TERRESTRIAL SERVICES IN THE BANDS 10.7 - 12.75 GHz AND 17.7 - 19.3 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the power flux-density (pfd) limits specified in Table **S21-4** for the bands 10.7 - 12.75 GHz and 17.7 - 19.7 GHz for the protection of terrestrial services were originally developed assuming that potentially interfering space stations in the fixed-satellite service (FSS) would operate in the geostationary-satellite orbit (GSO);

b) that the results of studies to date on potential interference from non-GSO FSS networks in the 18.8 - 19.3 GHz range, but which may be extrapolated to the 17.7 - 19.3 GHz range, differ as to whether the power flux-density limits in Article **S21** would provide adequate protection of the fixed service when applied to non-GSO networks with a large number of satellites (i.e. greater than 100);

c) that, in the 10.7 - 12.75 GHz band, some initial sharing studies have been undertaken and further work is required in order to assess the adequacy of the existing power flux-density limits;

d) that further studies are required of the power flux-density limits applicable to non-GSO FSS systems for the protection of terrestrial services in the bands 10.7 - 12.75 GHz and 17.7 - 19.3 GHz,

noting

a) that Resolution **118 (WRC-95)** requested studies of the criteria for sharing between non-GSO FSS systems and terrestrial services in the 20/30 GHz bands;

b) that non-GSO FSS networks are being developed that take into account the power flux-density limits that were in force prior to this Conference; however, in the band 18.8 - 19.3 GHz, these values were subject to review by ITU-R;

c) that modifications to existing FSS network design or operating parameters may be needed in order to obtain conformance with the revised limits adopted by this Conference;

d) that the band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services and that administrations should endeavour to reduce to a minimum the risks of interference to passive sensors; the interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029,

resolves

1 that emissions from a space station in non-GSO FSS networks in the bands 10.7 - 12.75 GHz and 17.7 - 19.3 GHz shall comply with the power flux-density limits contained in Article **S21** and in Annex 1 to this Resolution for the protection of terrestrial services (see *considering* d));

2 that in view of *noting* b) in relation to the 18.8 - 19.3 GHz band in the case of non-GSO FSS networks for which complete coordination or notification information has been received by the Radiocommunication Bureau by 17 November 1995, or are in operation by that date, the power flux-density limits which were in force prior to 27 October 1997 shall continue to apply; in the case of non-GSO FSS networks for which such information was received after 17 November 1995, the power flux-density limits in Annex 1 to this Resolution will apply,

invites ITU-R

to study, as a matter of urgency, the appropriate power flux-density values to be applied to non-GSO networks in the aforementioned bands to ensure protection of the fixed service without unduly constraining the development of either type of network,

requests [WRC-99]

to review the provisional limits referred to in *resolves* 1 based on the results of the studies carried out by ITU-R,

urges administrations

to consider reductions in the power flux-density or the number of satellites in non-GSO FSS networks within the spirit of No. **S9.58**, so as to facilitate sharing between non-GSO FSS networks and systems in the fixed service.

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ANNEX 1

Frequency band	Service	Limits in dB(W/m²) for angle of arrival δ above the horizontal plane			Reference bandwidth
		0° - 5°	5° - 25°	25° - 90°	
10.7 - 11.7 GHz	Fixed-satellite (S-E)	–150[1)]	–150 + 0.5(δ-5)[1)]	–140[1)]	4 kHz
12.2 - 12.5 GHz (R3) 12.5 - 12.75 GHz (R1 and R3 countries listed in Nos. S5.494 and S5.496)	Fixed-satellite (S-E)	–148[1)]	–148 + 0.5(δ-5)[1)]	–138[1)]	4 kHz
11.7 - 12.5 GHz (R1) 12.2 - 12.7 GHz (R2) 11.7 - 12.2 GHz (R3) 11.7 - 12.2 GHz (R2)	Fixed-satellite (S-E), non-GSO	–148[2)]	–148 + 0.5(δ-5)[2)]	–138[2)]	4 kHz
17.7 - 19.3 GHz[3), 4)]	Fixed-satellite (S-E)	-115 or -125[5)]	–115 + 0.5 (δ-5) or –125 + (δ-5)[5)]	-105 or -105[5)]	1 MHz

[1)] Although these limits apply to both GSO and non-GSO FSS satellites, values for non-GSO systems require further study (see Resolution [**COM5-23**]).

[2)] These values require further study (see Resolution [**COM5-23**]).

[3)] The equality of rights to operate when a frequency band is allocated in different Regions to different services of the same category is established in No **S4.8**. Therefore, any limits concerning inter-Regional interference which may appear in ITU-R Recommendations should, as far as practicable, be observed by administrations.

[4)] The band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.

[5)] These values shall apply provisionally only to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems operating with more than 100 satellites (see Resolution [**COM5-23**]).

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RESOLUTION COM5-24 (WRC-97)

USE OF THE BANDS 1 525 - 1 559 MHz AND 1 626.5 - 1 660.5 MHz BY THE MOBILE-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference allocated the bands 1525 - 1 559 MHz (space-to-Earth) and 1 626.5 - 1 660.5 MHz (Earth-to-space) to the mobile-satellite service (MSS) to facilitate the assignment of spectrum to multiple mobile-satellite systems in a flexible and efficient manner;

b) that prior to this Conference there was a generic allocation by footnote provisions in some countries for the use of the bands 1530 - 1 544 MHz and 1 631.5 - 1 645.5 MHz by the mobile-satellite service, on condition that maritime mobile-satellite distress and safety communications have priority access over all other communications;

c) that prior to this Conference, there was a generic allocation by two footnotes for the use of the bands 1 555 - 1 559 MHz and 1 656.5 - 1 660.5 MHz by the mobile-satellite service, and in one of these footnotes the following conditions applied in two countries:

– the aeronautical mobile-satellite (R) service has priority access and immediate availability over all other communications within a network;

– mobile-satellite systems should be interoperable with the aeronautical mobile-satellite (R) service;

– account shall be taken of the priority of safety-related communications in the other mobile-satellite services;

d) that there is at least one global mobile-satellite system that is capable of providing global maritime mobile-satellite distress and safety communications according to Article **S53** and global AMS(R)S communications with priorities 1 to 6 of Article **S44** in accordance with IMO and ICAO requirements;

e) that technical considerations for sharing satellite network resources between MSS (other than AMS(R)S) and AMS(R)S have been developed by ITU-R (see Recommendation ITU-R M.[8/17]);

f) that global and regional mobile-satellite systems are being multilaterally coordinated in the bands 1 525 - 1 559 MHz (space-to-Earth) and 1 626.5 - 1 660.5 MHz (Earth-to-space) and that the ITU Radio Regulations provide the international framework for multilateral agreements;

g) that in Nos. **S5.362A** and **S5.353A** priority has been given to accommodating the spectrum requirements for distress, urgency and safety communications of GMDSS and AMS(R)S communications with priorities 1 to 6 of Article **S44** of AMS(R)S. See No. **S9.11A**, except No. **S9.13**,

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further considering

a) that the Convention on International Civil Aviation requires that stations of the AMS(R)S shall be in compliance with the internationally agreed Standards and Recommended Practices (SARP) and Procedures for Air Navigation Services (PANS);

b) that ICAO has developed a global Air Traffic Management system (ATM) which requires interoperability between stations operating in accordance with the ICAO Convention for those mobile-satellite systems providing AMS(R)S with the priority message structure of Article **S44**;

c) that this Conference modified provisions for the operational use of the Global Maritime Distress and Safety System (GMDSS) which is fully defined in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended (see No. MOD **S30.1**);

d) that IMO may also place similar requirements of interoperability for those mobile-satellite systems providing GMDSS communications with the priority message structure of Article **S53**,

recognizing

that Appendix **S15.2** identifies the bands 1530 - 1 544 MHz (space-to-Earth) and 1 626.5 - 1 645.5 MHz (Earth-to-space) for distress and safety purposes in the maritime mobile-satellite service as well as for routine non-safety purposes,

noting

that some countries in Region 2 use the bands 1 525 - 1 544 MHz, 1 545 - 1 559 MHz, 1 626.5 - 1 645.5 MHz and 1 646.5 - 1 660.5 MHz to provide national MSS on a generic basis and, where agreements with other administrations concerned are in place, provide multinational service,

resolves

1 that the future spectrum requirements for the provision of distress, urgency and safety communications in the GMDSS by the mobile-satellite service and AMS(R)S communications with priority 1 to 6 of Article **S44** should take into account internationally agreed assumptions and methodologies and information on actual GMDSS and AMS(R)S communication traffic usage and growth;

2 that the feasibility of prioritization, real-time pre-emptive access and, if necessary, interoperability between different mobile-satellite systems for GMDSS and AMS(R)S should be determined, in order to achieve the most flexible and practical use of the generic allocations,

requests ITU-R

1 to develop assumptions and methodologies and gather information on actual GMDSS and AMS(R)S communication traffic usage and growth, in order to determine the future spectrum requirements for the provision of distress, urgency and safety communications in the GMDSS by the mobile-satellite service and AMS(R)S communications with priority 1 to 6 of Article **S44**;

2 to determine the feasibility of prioritization, real-time pre-emptive access and, if necessary, interoperability between different mobile-satellite systems for GMDSS and AMS(R)S, in order to achieve the most flexible and practical use of the generic allocations;

3 to complete and report the results of the studies called for in *resolves* 1 and 2 above by [WRC-99 or a future competent conference],

requests the next competent WRC

to take into account the outcome of ITU-R studies and take appropriate action on this subject,

invites

ICAO, IMO, IALA, administrations and other organizations concerned to participate in the studies identified in *requests ITU-R* 1 and 2 above.

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RESOLUTION COM5-25 (WRC-97)

STUDIES RELATING TO CONSIDERATION OF THE ALLOCATION TO THE NON-GEOSTATIONARY MOBILE-SATELLITE SERVICE (MSS) IN THE METEOROLOGICAL AIDS BAND 405 - 406 MHz AND THE IMPACT ON PRIMARY SERVICES ALLOCATED IN THE ADJACENT BANDS

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that there is a significant shortfall of spectrum for the non-geostationary orbit (non-GSO) MSS below 1 GHz, and there is an urgent need to make additional spectrum available on a worldwide basis for such non-GSO MSS systems;

b) that the CPM-97 Report to WRC-97 states that the Radiocommunication Bureau (BR) has identified 23 non-GSO MSS networks, at frequencies below 1 GHz, at some state of coordination under (Resolution 46)**S9.11A**, that it is likely that a number of these systems may not be implemented for reasons not connected with spectrum availability and that several administrations have indicated in their information submitted to BR that they plan on implementing these non-GSO MSS systems by the year 2002 or earlier;

c) that the CPM-97 Report for WRC-97 also states that it appears that many of the proposed networks cannot be implemented in the existing allocations because there is not enough spectrum to allow the development of all of these systems in an economically viable manner;

d) that meteorological aids systems are essential to produce the upper air measurements required by the World Meteorological Organization (WMO), as summarized in Recommendation ITU-R SA.1165, and that systems using the band 400.15 - 406 MHz constitute the majority of the mobile and fixed observation stations worldwide;

e) that meteorological aids systems are also essential to produce the upper air measurements required for civilian and other applications;

f) that the amount of spectrum required by meteorological users, including WMO (station spacing requirement of 250 km), civilian users and other related users, in most geographical areas is about 5 MHz in the band 401 - 406 MHz using the currently employed technology;

g) that since this Conference upgraded allocation to the earth exploration-satellite service and the meteorological-satellite service to primary in the band 401 - 403 MHz, this is likely to impose constraints on the meteorological aids service in this band in certain geographical areas;

h) that the development of more spectrum-efficient meteorological aids systems is continuing in order to minimize the bandwidth required by these systems, as outlined in Recommendation SA.1165, and that recent development of these related technologies has been rapid;

i) that sharing studies to date have shown that co-channel sharing between currently proposed non-GSO MSS systems and meteorological aids in the band 401 - 406 MHz is not generally feasible, that any sharing would require band segmentation and that the band 405 - 406 MHz has been named by some administrations as a possible candidate band for such a new allocation;

j) that any transition of meteorological aids from the band 405 - 406 MHz should not increase the operational costs of meteorological aids networks beyond the available financial resources, and should not constrain the future development of the meteorological aids service, while using more spectrum-efficient systems;

k) that the COSPAS-SARSAT system operates within an exclusive allocation in the band 406 - 406.1 MHz, that the radio astronomy service has a primary allocation in the band 406.1 - 410 MHz and that these services need to be protected from MSS transmissions including unwanted emissions,

noting

a) that the possible use of the band 405 - 406 MHz by the mobile-satellite service should be limited to systems using narrow-band modulation techniques until further ITU-R studies conclude that other modulation techniques can protect COSPAS-SARSAT (406 - 406.1 MHz) and the radio astronomy service (406.1 - 410 MHz);

b) that Resolution **214 (Rev.WRC-97)** also addresses sharing studies relating to consideration of the allocation of bands below 1 GHz to the non-GSO mobile-satellite service,

resolves to invite ITU-R

1 as a matter of urgency, with the participation of WMO, to assess further the current and future requirements of the meteorological aids service in the band 401 - 406 MHz, taking into account the requirements of the earth exploration-satellite service and the meteorological-satellite service in the band 401 - 403 MHz;

2 as a matter of urgency, with the participation of WMO, to consider the possible transition of the meteorological aids service out of the band 405 - 406 MHz, which would minimize the impact on the meteorological aids service, while taking into account requirements for the implementation of non-GSO MSS;

3 to consider, based on the outcome of 1 and 2 above, a possible transition plan, including a transition date at which time meteorological aids could migrate their operations out of the band 405 - 406 MHz and MSS operations could commence;

4 as a matter of urgency, to study, with the participation of IUCAF and other relevant entities, the impact of unwanted emissions on the COSPAS-SARSAT system in the band 406 - 406.1 MHz and the radio astronomy service in the band 406.1 - 410 MHz, and identify appropriate protection measures for these services,

resolves

that [the 1999 World Radiocommunication Conference (WRC-99)/a future competent conference] be invited to consider, based on the outcome of *resolves to invite ITU-R* above, the possibility of allocating the band 405 - 406 MHz to the mobile-satellite service, including any appropriate transition plan,

urges administrations

1 to assess their current and future requirements for meteorological aids systems in the band 401 - 406 MHz taking into account the requirements of the earth exploration-satellite service and the meteorological-satellite service in the 401 - 403 MHz band;

2 to, either individually or on a subregional or regional basis, report to WMO and ITU-R on whether the whole of the band 401 - 406 MHz will be needed for meteorological aids, and the possibility of transition out of the band 405 - 406 MHz;

3 to submit to ITU-R the most up-to-date information on their plans for possible implementation of non-GSO MSS systems and the associated spectrum requirements,

instructs the Secretary-General

to bring this Resolution to the attention of WMO.

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RESOLUTION COM5-28 (WRC-97)

SHARING BETWEEN THE FIXED SERVICE AND OTHER SERVICES IN THE BAND 37 - 40 GHz

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the band 37 - 40 GHz is allocated to the fixed service on a primary basis and that an increasing number of stations in the fixed service are deployed or being planned for use;

b) that the band 37.5 - 40.0 GHz is allocated on a primary basis to the fixed-satellite service and that an increasing number of FSS systems are being planned for use;

c) that the deployment of high-density systems in either the fixed or fixed-satellite service may result in interference to the fixed-satellite service from stations in the fixed service, and that the priority and degree of protection afforded to the fixed-satellite service is a matter for each administration to consider;

d) that although sharing is feasible between earth stations in the fixed-satellite service and terrestrial stations provided appropriate coordination procedures and/or operational techniques are employed, sharing may in practice become difficult when high geographic densities of such stations are deployed in bands heavily used by either service;

e) that sharing could be facilitated by the adoption of appropriate frequency sub-bands, such as the gaps between the channelling plans recommended by ITU-R for the fixed service;

f) that it may be useful to consider the identification of this spectrum range for high-density fixed service applications,

requests ITU-R

1 to conduct studies in time for [WRC-99] to determine whether the power flux-density limits included in Article **S21** adequately protect terrestrial services from fixed-satellite service networks;

2 to conduct other studies leading to technical and operational recommendations to facilitate sharing between terrestrial and space services,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

requests

[WRC-99] to consider the identification of spectrum in the band 37 - 40 GHz for high-density applications in the fixed service.

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RESOLUTION COM5-29 (WRC-97)

USE OF THE FREQUENCY BAND 40.5 - 42.5 GHz BY THE FIXED-SATELLITE SERVICE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in Regions 2 and 3 and in certain countries in Region 1 and to the fixed service in the band 40.5 - 42.5 GHz;

b) that sharing criteria for the use of the band 40.5 - 42.5 GHz by the fixed-satellite service have not been studied by ITU-R,

recognizing

that Resolution [COM5-17] invites ITU-R to undertake, as a matter of urgency, studies of appropriate criteria and methodologies for sharing between the fixed-satellite service and the other services with allocations in the band 40.5 - 42.5 GHz,

resolves

1 that the date of the provisional application of the allocation to the fixed-satellite service in Regions 1 and 3 in the band 40.5 - 42.5 GHz is 1 January 2001;

2 that [WRC-99] should review this allocation, including the date of 1 January 2001, taking full account of the requirements of the other services to which the band is allocated and available ITU-R studies.

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RECOMMENDATION GTPLEN2-A (WRC -97)

ROLE OF INTERNATIONAL MONITORING IN REDUCING APPARENT CONGESTION IN THE USE OF ORBITAL AND SPECTRUM RESOURCES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the geostationary-satellite orbit and the radio-frequency spectrum are limited natural resources and are being increasingly utilized by space services;

b) the desirability of achieving a more effective use of the geostationary-satellite orbit and radio-frequency spectrum in order to assist administrations in satisfying their requirements and, to that end, the desirability of taking steps to make the International Frequency List reflect more accurately the actual use being made of these resources;

c) that monitoring information should assist ITU-R in discharging this function;

d) that facilities for monitoring of emissions originating from space stations are expensive,

recognizing

that an international monitoring system cannot be fully effective unless it covers all areas of the world,

invites ITU-R

to study and make recommendations concerning the facilities required to provide adequate coverage of the world with a view to ensuring efficient use of resources,

invites administrations

1 to make every effort to provide monitoring facilities as envisaged in Article(s) **S16** of the Radio Regulations;

2 to inform ITU-R of the extent to which they are prepared to cooperate in such monitoring programmes as may be requested by ITU-R;

3 to consider the various aspects of monitoring emissions originating from space stations to enable the provisions of Article(s) [**S21**, **S22**] to be applied.

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SUP	RESOLUTION 48 (WRC-95)
NOC	RESOLUTION 70 (WARC-92)
SUP	RESOLUTION 115 (WRC-95)
SUP	RESOLUTION 119 (WRC-95)
SUP	RESOLUTION 211
SUP	RESOLUTION 643
SUP	RESOLUTION 710
SUP	RESOLUTION 711
SUP	RESOLUTION 712
NOC	RECOMMENDATION 706

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 374-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.5 **PLENARY MEETING**

FIFTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**
COM 6	341 (B.7)	**ARTICLE S8**
	341 (B.7)	**ARTICLE S9**
	354 (B.8)	**ARTICLE S11**
	354 (B.8) + 341 (B.7)	**ARTICLE S13**
	341 (B.7)	**ARTICLE S14**
	341 (B.7)	**ARTICLE S19**
	354 (B.8)	**ARTICLE S59**
	341 (B.7)	**APPENDIX S4**
		– Annex 1A
		– Annex 1B
	354 (B.8)	**– Annex 2A**
		– Annex 2B
	354 (B.8)	**APPENDIX S5**

A.-M. NEBES
Chairman of Committee 6

Annex: 46 pages

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ARTICLE S8

NOC **S8.1**

MOD **S8.1.1** [1] The expression "frequency assignment", wherever it appears in this Chapter, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register. Additionally, wherever the expression relates to a space station in the geostationary-satellite orbit or in a non-geostationary-satellite orbit, it shall be associated with item A.4 of Annex2A to Appendix **S4**, as relevant.

(S8.2 not used)

MOD **S8.3** Any frequency assignment recorded in the Master Register with a favourable finding under No. **S11.31** shall have the right to international recognition. For such an assignment, this right means that other administrations shall take it into account when making their own assignments, in order to avoid harmful interference. In addition, frequency assignments in frequency bands subject to coordination or to a plan shall have a status derived from the application of the procedures relating to the coordination or associated with the plan.

MOD **S8.4** A frequency assignment shall be known as a non-conforming assignment when it is not in accordance with the Table of Frequency Allocations or the other[2] provisions of these Regulations. Such an assignment shall be recorded for information purposes, only when the notifying administration states that it will be operated in accordance with No. **S4.4** (See also No. **S8.5**).

NOC **S8.4.1 - S8.5**

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ARTICLE S9

MOD **Procedure for Effecting Coordination With or Obtaining Agreement of Other Administrations**[1, 2, 3, 4]

MOD A.S9.1 [1] For the application of the provisions of this Article with respect to stations in a space radiocommunication service using frequency bands covered by the fixed-satellite service allotment Plan, see also Appendix **S30B**.

MOD A.S9.3 [3] See Appendices **S30** and **S30A**, as appropriate, for the coordination of:

a) proposed modifications to the Appendix **S30** Plans for the broadcasting-satellite service in the frequency bands 11.7- 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

b) frequency assignments in other services to which the frequency bands referred to in a) above are allocated in the same region or in another region, with respect to assignments in the broadcasting-satellite service which are subject to the Appendix **S30** Plans;

c) proposed modifications to the Appendix **S30A** Plans for the feeder links to the broadcasting-satellite service in the frequency bands 17.3- 17.8 GHz (in Region 2), and 14.5 - 14.8 GHz and 17.3 - 18.1 GHz (in Regions 1 and 3), with respect to frequency assignments in the same service or in other services to which these bands are allocated;

d) frequency assignments in other services to which the frequency bands referred to in c) above are allocated in the same region or in another region, with respect to assignments in the fixed-satellite service (Earth-to-space) which are subject to the Appendix **S30A** Plans.

For the broadcasting-satellite service and for the feeder links for the broadcasting-satellite service in the fixed-satellite service in Region 2, Resolution **42** (**Orb-85**) is also applicable.

ADD AS9.4 [4] Resolution [**GTPLEN2-1**] shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

Note by Committee 4 - It may be necessary to include an additional footnote referencing a Resolution on the implementation of certain provisions of this Article.

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MOD **Section I. Advance Publication of Information on Satellite Networks or Satellite Systems - General**

MOD **S9.1** Before initiating any action under this Article or under Article **S11** in respect of frequency assignments for a satellite network or a satellite system, an administration, or one[1] acting on behalf of a group of named administrations, shall, prior to the coordination procedure described in Section II of Article **S9** below, where applicable, send to the Bureau a general description of the network or system for advance publication in the Weekly Circular not earlier than five years and preferably not later than two years before the planned date of bringing into use of the network or system (see also Nos. **S11.44** and **S11.44B** to **S11.44I**). The characteristics to be provided for this purpose are listed in Appendix **S4**. The coordination or notification information may also be communicated to the Bureau at the same time; it shall be considered as having been received by the Bureau not earlier than six months after the date of receipt of the information for advance publication where coordination is required by Section II of Article **S9**. Where coordination is not required by Section II, notification shall be considered as having been received by the Bureau not earlier than six months after the date of publication of the advance publication information.

NOC **S9.1.1**

MOD **S9.2** Amendments to the information sent in accordance with the provisions of No. **S9.1** shall also be sent to the Bureau as soon as they become available. The use of an additional frequency band will require the application of the advance publication procedure for this band.

NOC **S9.2A**

NOC **S9.2B**

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ADD **Sub-Section IA. Advance Publication of Information on Satellite Networks or Satellite Systems that Are not Subject to Coordination Procedure Under Section II**

MOD S9.3 If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration believes that interference which may be unacceptable may be caused to its existing or planned satellite networks or systems, it shall within four months of the date of the Weekly Circular communicate to the publishing administration its comments on the particulars of the anticipated interference to its existing or planned systems. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available. If no such comments are received from an administration within the aforementioned period, it may be assumed that the administration concerned has no objections to the planned satellite network(s) of the system on which details have been published.

SUP S9.3.1

MOD S9.4 In the case of difficulties, the administration responsible for the planned satellite network shall explore all possible means to resolve the difficulties without considering the possibility of adjustment to networks of other administrations. If no such means can be found, it may request the other administrations to explore all possible means to meet its requirements. The administrations concerned shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks. An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of No. **S9.2B** shall, after the period of four months, inform the Bureau of the progress made in resolving any difficulties. If necessary, a further report shall be provided prior to the submission of notices to the Bureau under Article **S11**.

NOC S9.5

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MOD **S9.5A** The procedure of Section IA shall be considered mainly for the purposes of informing all administrations of developments in the use of space radiocommunications.

ADD **Sub-Section IB. Advance Publication of Information on Satellite Networks or Satellite Systems that Are Subject to Coordination Procedure under Section II**

ADD **S9.5B** If, upon receipt of the Weekly Circular containing information published under No. **S9.2B**, any administration considers its existing or planned satellite systems or networks or terrestrial stations[1] to be affected, it may send its comments to the publishing administration, so that the latter may take those comments into consideration when initiating the coordination procedure. A copy of these comments shall also be sent to the Bureau. Thereafter, both administrations shall endeavour to cooperate in joint efforts to resolve any difficulties, with the assistance of the Bureau, if so requested by either of the parties, and shall exchange any additional relevant information that may be available.

ADD **S9.5B.1** [1] The only terrestrial stations to be taken into account are those for which the requirement to coordinate is under Nos. **S9.11**, **S9.11A** and **S9.21**.

ADD **S9.5C** The procedure of Section IB shall be considered mainly for the purposes of informing all administrations of developments in the use of space radiocommunications

ADD **S9.5D** If the information under No. **S9.30** has not been received by the Bureau within a period of 24 months after the date of receipt by the Bureau of the relevant information under Nos. **S9.1** and **S9.2,** the information published under No. **S9.2B** shall be cancelled, after the administration concerned has been informed at least three months before the end of the 24-month period. The Bureau shall also publish the cancellation in its Weekly Circular.

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MOD **Section II. Procedure for Effecting Coordination**[1, 2]

Sub-Section IIA. Requirement and Request for Coordination

MOD **S9.6** Before an administration[1, 2] notifies to the Bureau or brings into use a frequency assignment in any of the cases listed below, it shall effect coordination, as required, with other administrations identified under No**S9.27**:

MOD **S9.6.1** [1] In the case of coordination of an assignment in a satellite network, an administration may act on behalf of a group of named administrations. Whenever, under this provision, an administration acts on behalf of a group of named administrations, all members of the group retain the right to respond in respect of their own services which could affect or be affected by the proposed assignment.

ADD **S9.6.2** [2] In all cases, the coordination of an earth station with terrestrial stations or other earth stations operating in the opposite direction of transmission shall remain within the authority of the administration on the territory of which this station is located.

MOD **S9.7** *a)* for a station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a region where this service is not subject to a plan, in respect of any other satellite network using that orbit, in any space radiocommunication service in a frequency band and in a region where this service is not subject to a plan, with the exception of coordination between earth stations operating in the opposite direction of transmission.

NOC **S9.8** *b)*[4]

NOC **S9.9** *c)*[4]

MOD [4] Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending a decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD **S9.11** *d)* for a space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services;

NOC **S9.11A**

MOD **S9.12** i) in a satellite network using a non-geostationary-satellite orbit, in respect of any other satellite network using a non-geostationary-satellite orbit, and in respect of any other satellite network using the geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

MOD **S9.13** ii) in a satellite network using the geostationary-satellite orbit, in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission;

NOC **S9.15**

NOC **S9.17** *f)*[5]

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[5] Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending a decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD **S9.17A** *g)* for any specific earth station, in respect of other earth stations operating in the opposite direction of transmission, in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission and where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of another earth station, with the exception of the frequency bands subject to the Appendix **S30A** Plans;

MOD **S9.18** *h)* for any transmitting station of a terrestrial service in the bands referred to in No. **S9.17** within the coordination area of an earth station, in respect of this earth station, with the exception of the coordination under Nos. **S9.16** and **S9.19**;

MOD **S9.19** *i)* for any transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to an earth station of the broadcasting-satellite service, except where this service is subject to the Appendix **S30** Plans;

SUP 6)

NOC **S9.32**

NOC **S9.41**

MOD **S9.43** Those administrations not responding under No. **S9.41** within the time limit specified therein shall be regarded as unaffected and the provisions of Nos. **S9.48** and **S9.49** shall apply.

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Sub-Section IIC. Action Upon a Request for Coordination

MOD S9.50 An administration having received a request for coordination under Nos. **S9.7** to **S9.21**, or having been included in the procedure following action under No. **S9.41**, shall promptly examine the matter with regard to interference which may be caused to, or in certain cases, by its own assignments[2], identified in accordance with Appendix **S5**[3].

MOD S9.51 Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.7** to **S9.9** shall, within four months of the date of publication of the Weekly Circular under No. **S9.38**, either inform the requesting administration and the Bureau of its agreement or act under No. **S9.52**.

MOD S9.51A Following its action under No. **S9.50**, the administration with which coordination was sought under Nos. **S9.15** to **S9.19** shall, within four months of the date of dispatch of the coordination data under No. **S9.29**, either inform the requesting administration of its agreement or act under No. **S9.52**.

MOD S9.52 If an administration, following its action under No. **S9.50**, does not agree to the request for coordination, it shall, within four months of the date of publication of the Weekly Circular under **S9.38**, or of the date of dispatch of the coordination data under No. **S9.29**, inform the requesting administration of its disagreement and shall provide information concerning its own assignments upon which that disagreement is based. It shall also make such suggestions as it is able to offer with a view to satisfactory resolution of the matter. A copy of that information shall be sent to the Bureau. Where the information relates to terrestrial stations or earth stations operating in the opposite direction of transmission within the coordination area of an earth station, only that information relating to existing radiocommunication stations or to those to be brought into use within the next three months for terrestrial stations, or three years for earth stations, shall be treated as notifications under Nos. **S11.2** or **S11.9**.

NOC S9.52C

MOD S9.60 If, within the same four-month period specified in Nos.**S9.51** or **S9.51A**, an administration with which coordination is sought under Nos.**S9.7** to **S9.9** and **S9.15** to **S9.19** fails to reply or to give a decision under Nos. **S9.51** or **S9.51A** or, following its disagreement under No. **S9.52**, fails to provide information concerning its own assignments on which its disagreement is based, the requesting administration may seek the assistance of the Bureau.

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MOD

ARTICLE S11

Notification and Recording of Frequency Assignments[1, 2]

MOD A.S11.1

[1] See Appendices **S30** and **S30A**, respectively, for the notification and recording of:

a) frequency assignments to stations in the broadcasting-satellite service in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2);

b) frequency assignments to stations in other services to which the frequency bands referred to in a) above are allocated, so far as their relationship to the broadcasting-satellite service, which is subject to Appendix **S30**, is concerned;

c) frequency assignments to feeder-link stations in the fixed-satellite service (Earth-to-space) in the frequency bands 14.5 - 14.8 GHz in Region 1 (see No. **S5.510**) and in Region 3, 17.3 - 18.1 GHz in Regions 1 and 3 and 17.3 - 17.8 GHz in Region 2, and to stations in other services in these bands;

d) frequency assignments to stations in the same service or other services to which the frequency bands referred to in c) above are allocated, so far as their relationship to the fixed-satellite service (Earth-to-space) in these bands is concerned.

For the broadcasting-satellite service in Region 2 and for feeder links in the fixed-satellite service for thebroadcasting-satellite service in Region2, Resolution **42 (Rev.Orb-88)** is also applicable.

See also Appendix **S30B** for the notification and recording of assignments in the following frequency bands:

All Regions, fixed-satellite service only

4 500 - 4 800 MHz	(space-to-Earth)
6 725 - 7 025 MHz	(Earth-to-space)
10.7 - 10.95 GHz	(space-to-Earth)
11.2 - 11.45 GHz	(space-to-Earth)
12.75 - 13.25 GHz	(Earth-to-space)

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ADD **A.S11.2** [2] Resolution [**GTPLEN2-1**] shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

Note by Committee 4 - It may be necessary to include an additional footnote referencing a Resolution on the implementation of certain provisions of this Article.

MOD **S11.14** Frequency assignments to ship stations and to mobile stations of other services, to stations in the amateur service, to earth stations in the amateur-satellite service, and those to broadcasting stations in the high-frequency bands allocated to the broadcasting service between 5900 kHz and 26 100 kHz which are subject to Article **S12** shall not be notified under this Article.

MOD **S11.18** *a)* stations covered by the allotment plan of Appendices **S25**, **S26** and **S27**;

MOD **S11.21** *d)* any terrestrial stations in bands shared with space services which exceed the limits specified in Table II of Appendix **S7** and in No. **S21.3**;[2]

ADD **S11.21A** e) any terrestrial stations in bands listed in Table S21-2;[2]

MOD **S11.22** *f)* earth stations whose coordination area includes the territory of another administration, or where the earth station is located within the coordination area of an earth station operating in opposite direction of transmission;[2, 3]

ADD **S11.22.1** [3] In such cases, individual notices of frequency assignments are required for frequency bands allocated with equal rights to space services, in the opposite direction of transmission, where coordination is required under Appendix **S5**, Table S5-1.

(MOD) **S11.23** *g)* earth stations whose interference potential is greater than that of a coordinated typical earth station.[2]

(MOD) **S11.20.1 to S11.23.1**

[2] In such cases, individual notices of frequency assignments are required for frequency bands allocated with equal rights to terrestrial and space services where coordination is required under Appendix**S5**, Table S5-1.

MOD **S11.24** Notices relating to assignments to stations of terrestrial services, except for those referred to in Nos. **S11.25** or **ADD S11.26**, shall reach the Bureau not earlier than three months before the assignments are brought into use.

MOD **S11.25** Notices relating to assignments to stations in space services, and to terrestrial stations involved in coordination with a satellite network, shall reach the Bureau not earlier than three years before the assignments are brought into use.

ADD **S11.26** Notices relating to assignments for high altitude platform stations in the fixed service in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz shall reach the Bureau not earlier than five years before the assignments are brought into use.

Section II. Examination of Notices and Recording of Frequency Assignments in the Master Register

MOD **S11.27** Notices not containing those characteristics specified in Appendix **S4** as mandatory or required shall be returned with comments to help the notifying administration to complete and resubmit them, unless the information not provided is immediately forthcoming in response to an inquiry by the Bureau.

MOD **S11.31.3**

[3] Notices relating to radio astronomy stations are examined with respect to No. **S11.31** only.

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NOC **S11.32A**

NOC **S11.32A.1**

NOC **S11.33**

MOD **S11.36** When the examination with respect to No. **S11.31** leads to a favourable finding, the assignment shall be recorded in the Master Register or examined further with respect to Nos. **S11.32** to **S11.34**, as appropriate. When the finding with respect to No. **S11.31** is unfavourable, the assignment shall be recorded in the Master Register for information purposes and subject to application of No. **S8.5**, only if the administration undertakes that it will be operated in accordance with No. **S4.4**; otherwise the notice shall be returned with an indication of the appropriate action.

(MOD) **S11.37** When the examination with respect to No. **S11.32** leads to a favourable finding, the assignment shall be recorded in the Master Register indicating the administrations with which the coordination procedure has been completed.[1, 2] When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action, if Nos. **S11.32A** or **S11.33** do not apply.

ADD **S11.37.1** [1] When the agreement of the administrations affected has been obtained only for a specified period, the Bureau shall be notified accordingly and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned.

ADD **S11.37.2** [2] When a frequency assignment to a space station in the broadcasting-satellite service in a non-planned band is recorded in the Master Register, a note shall be entered in the remarks column indicating that such recording does not prejudge in any way the decisions to be included in the agreements and associated plans referred to in Resolution **507**.

NOC **S11.38**

MOD **S11.39** When the examination with respect to No. **S11.34** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the notice shall be returned to the notifying administration, with an indication of the appropriate action. However, notices under Appendices **S25**, **S26** and **S27** shall be treated as follows:

NOC **S11.39A**

(MOD) **S11.39B** When the examination under No. **S11.39A** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to No. **S11.39A**.

NOC **S11.39C**

(MOD) **S11.39D** When the examination under No. **S11.39C** leads to a favourable finding, the assignment shall be recorded in the Master Register. When the finding is unfavourable, the assignment shall be recorded in the Master Register with a symbol indicating that it shall cause no harmful interference to any frequency assignment which is either in conformity with the Allotment Plan or recorded in the Master Register with a favourable finding with respect to No. **S11.39C**.

ADD **S11.39E** In the case of a notice not in conformity with the Allotment Plan of Appendix **S25**, the assignment may be recorded provisionally in the Master Register on the condition that the administration has initiated the procedure of Appendix **S25** in accordance with § 1.23 of Section I of Appendix **S25**.

S11.40 Not used.

NOC **S11.41**

NOC **S11.42**

MOD **S11.43** In every case when a new assignment is recorded in the Master Register it shall, in accordance with the provisions of Article **S8** of this Chapter, include an indication of the finding reflecting the status of the assignment. This information shall also be published in the Weekly Circular.

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MOD **S11.43A** A notice of a change in the characteristics of an assignment already recorded, as specified in Appendix**S4**, shall be examined by the Bureau under Nos. **S11.31** to **S11.34**, as appropriate. Any change to the characteristics of an assignment that has been notified and confirmed as having been brought into use shall be brought into use within 5 years from the date of the notification of the modification. Any change to the characteristics of an assignment that has been notified but not yet brought into use shall be brought into use within the period provided for in No. **S11.44**.

MOD **S11.44** The notified date of bringing into use of any assignment to a space station of a satellite network shall be no later than five years following the date of receipt by the Bureau of the relevant information under No. **S9.1**. The notified date of bringing into use may be extended at the request of the notifying administration by not more than two years, only under the conditions specified under Nos. **S11.44B** to **S11.44I**. Any frequency assignment not brought into use within the required period shall be cancelled by the Bureau after having informed the administration at least 3 months before the expiry of this period.

ADD **S11.44A** A notice not conforming to No. **S11.44** shall be returned to the notifying administration with a recommendation to restart the advance publication procedure.

ADD **S11.44B** The notified date of bringing into use will be extended by the Bureau in accordance with No. **S11.44** if due diligence information required by Resolution **[GTPLEN2-1]** is provided for the satellite network; if the procedure for effecting coordination in accordance with Section II of Article **S9** as applicable has commenced; and if the notifying administration certifies that the reason for the extension is one or more of the following specific circumstances:

ADD **S11.44C** a) launch failure;

ADD **S11.44D** b) launch delays due to circumstances outside the control of the administration or operator;

ADD **S11.44E** c) delays caused by modifications of satellite design necessary to reach coordination agreements;

ADD **S11.44F** d) problems in meeting the satellite design specifications;

ADD **S11.44G** e) delays in effecting coordination after the assistance of the Bureau was requested under No. **S9.59**.

ADD **S11.44H** f) financial circumstances outside the control of the administration or the operator; or

ADD **S11.44I** g) *force majeure*.

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NOC **S11.45**

NOC **S11.46**

MOD **S11.47** All frequency assignments notified in advance of their being brought into use shall be entered provisionally in the Master Register. Any frequency assignment provisionally recorded under this provision shall be brought into use by the date specified in the notice, or by the date of expiry of the extension granted under No. **S11.44** or No. **S11.45**. Within thirty days of such an assignment being brought into use, the notifying administration shall so inform the Bureau. If the Bureau does not receive that confirmation within the above period, after sending a reminder, it shall cancel the entry. The Bureau shall however inform the administration concerned before taking such action.

MOD **S11.48** If, after the expiry of the period of five years, plus the extension specified in No. **S11.44**, as appropriate, from the date of receipt of the complete information referred to in No. **S9.1**, the administration responsible for the satellite network has not brought the frequency assignments to stations of the network into use, the corresponding information published under Nos. **S9.2B** and **S9.38**, as appropriate, shall be cancelled, but only after the administration concerned has been informed at least three months before the expiry date referred to in No. **S11.44**.

NOC **S11.49** Where the use of a recorded assignment to a space station is suspended for a period not exceeding eighteen months, the notifying administration shall, as soon as possible, inform the Bureau of the date on which such use was suspended and the date on which the assignment is to be brought back into regular use. This latter date shall not exceed two years from the date of suspension.

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ARTICLE S13

Instructions to the Bureau

Section I. Assistance to Administrations by the Bureau

MOD **S13.1** When an administration has difficulty in applying the procedures of Articles **S9** and **S11** and Appendices **S30**, **S30A** and **S30B**, the Bureau shall, upon request, endeavour to assist in such cases.

SUP **S13.2**

SUP **S13.3**

SUP **S13.4**

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ARTICLE S13

ADD **S13.12A** [*b)* whenever it appears from reliable information available that a recorded assignment has not been brought into regular operation in accordance with the notified required characteristics as specified in Appendix **S4**, or is not being used in accordance with those characteristics, the Bureau shall consult the notifying administration and, subject to its agreement [or in the event of non-response within three months of the dispatch of a reminder,] shall either cancel, or suitably modify, or retain the basic characteristics of the entry.]

SUP **S13.13**

(MOD) **S13.14** *c)* enter in the Master Register and publish in the Preface to the International Frequency List (IFL) all frequencies prescribed by these Regulations for common use;

(MOD) **S13.15** *d)* make appropriate entries in the Master Register resulting from its examinations of frequency assignment notices in accordance with Article **S11**;

(MOD) **S13.16** *e)* maintain and periodically update the Preface to the IFL.

MOD **S13.17A** The Bureau shall maintain master copies of all world frequency allotment or assignment plans contained in appendices to these Regulations, or adopted by world conferences convened by the Union, including, where applicable, the carrier-to-interference ratios, or margins, as appropriate, associated with each assignment or allotment, andincorporating any modifications resulting from the successful application of the relevant modification procedure, and shall provide such copies in an appropriate form for publication by the Secretary-General when justified by circumstances.

SUP **S13.20**

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ADD **Section IV. Board Documents**

ADD **S13.23A** The Bureau shall, where appropriate, prepare draft modifications or additions to the Rules of Procedure which shall be made available for comment before being submitted to the Board. One week beforehand, the draft agenda of each Board meeting shall be sent by facsimile, or mailed, to all administrations and shall also be made available in electronic form. At the same time, all documents which are both referenced in that draft agenda and available at that time shall be sent by facsimile, or mailed, to those administrations requesting them as well as simultaneously being made accessible in electronic form.

ADD **S13.23B** Within one week after a meeting of the Board, a summary of all decisions taken in that meeting, as well as the approved minutes of the preceding meeting, shall be published. These shall be circulated to administrations by means of a circular-letter from the Bureau and then made available in electronic form.

ADD **S13.23C** A copy of all documents considered at the Board's meetings, including the minutes, shall be available for public inspection by administrations in the offices of the Bureau and be available in electronic form.

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ARTICLE S14

MOD S14.2 For this purpose, the administration concerned shall submit a request for a review to the Bureau; it shall also cite the relevant provisions of the Radio Regulations and other references and shall state the action it seeks.

MOD S14.4 If the outcome of the review successfully resolves the matter with the requesting administration without adversely affecting the interests of other administrations, the Bureau shall publish an outline of the review, the arguments, the settlement and any implications affecting other administrations for the information of all Members of the Union. If this review results in a modification to a finding previously formulated by the Bureau, the Bureau shall re-apply the relevant steps of the procedure under which the previous finding had been formulated, including, if appropriate, removal of the corresponding entries from the Master Register or any consequential effect on notices subsequently received by the Bureau.

SUP S14.8 and S14.9

ARTICLE S19

MOD **S19.35** § 16. The Secretary-General shall be responsible for allocating additional maritime identification digits to countries[2] within the limits specified[3], provided that he is satisfied that the possibilities offered by the MIDs allocated to an administration will soon be exhausted despite judicious ship station identity assignment as outlined in Section VI, which should be in conformity with the relevant ITU-R and ITU-T Recommendations .

MOD **S19.99** § 39. When a station[1] in the maritime mobile service or the maritime mobile-satellite service is required to use maritime mobile service identities, the responsible administration shall assign the identity to the station in accordance with the provisions described in Nos.**S19.100** to **S19.126**; in so doing, it should take into account the relevant ITU-R and ITU-T Recommendations. In accordance with **S20.16,** administrations shall notify the Radiocommunication Bureau immediately when assigning maritime mobile service identities.

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ARTICLE S59

Provisional Application of the Radio Regulations

MOD S59.1 These Regulations, which complement the provisions of the Constitution and Convention of the International Telecommunication Union (Geneva, 1992), and as revised and contained in the Final Acts of the World Radiocommunication Conferences (Geneva, 1995 and Geneva, 1997) shall have provisional application, pursuant to Article54 of the Constitution, on the following basis.

MOD S59.2 The provisions of these Regulations, as revised by the World Radiocommunication Conference (Geneva, 1995), concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of**S21**, **S22** and Appendix **S4**, apply provisionally as of 1 January 1997.

ADD S59.3 The other provisions of these Regulations, as revised by the World Radiocommunication Conferences (Geneva, 1995, 1997), shall apply provisionally as of 1 January 1999, with the following exception:

ADD S59.4 – the revised provisions for which other effective dates of application are stipulated in Resolutions […].

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APPENDIX S4

Consolidated List and Tables of Characteristics for Use in the Application of the Procedures of Chapter SIII

ANNEX 1A

(to Appendix **S4**)

List of characteristics of stations in the terrestrial services[1]

SUP *ITEM 6C – Experimental station*

Symbol EX in this item for experimental station only.

ADD *ITEM 7AA – Type of modulation*

The choice of modulation is needed in order to specify if the requirement is to use DSB, SSB or any new broadcasting techniques recommended by ITU-R.

MOD *ITEM 8B – Radiated power (dBW)*

The radiated power expressed in dBW in one of the forms described in Nos. **S1.161** to **S1.163**. In the case of systems where automatic power control is applied, indicate the range of power control, expressed in dB relative to the transmitted power indicated above.

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[1] The Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences. Additional information on the items listed in this Annex together with an explanation of the symbols is to be found in the Preface to the International Frequency List.

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NOC *ITEM 9E – Height of antenna*

Information on height above ground level, in metres.

MOD *ITEM 9EA – Altitude of site above sea level*

Information on the altitude of the site above mean sea level, in metres (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments, and for all terrestrial stations in the frequency bands above 1 GHz that are shared between space radiocommunication and terrestrial radiocommunication services).

ADD *ITEM 9R – Slew angle*

The slew angle represents the difference between the azimuth of maximum radiation and the direction of unslewed radiation.

SUP *ITEM 10C – Seasons and solar activity*

The season or month of the year and the level of solar activity, expressed by appropriate symbols.

ADD *ITEM 10CA – Start date*

Used in the case that the requirement starts after the start of the schedule.

ADD *ITEM 10CB – Stop date*

Used in the case that the requirement stops before the end of the schedule.

ADD *ITEM 10CC – Days of operation*

Used when the station does not transmit every day of the week.

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ANNEX 1B

(to Appendix **S4**)

Table of characteristics to be submitted for stations in the terrestrial services

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	B
SYNC									X					X				SYNC
1A	X	X	X	X	X	X	X	X	X	X	X[5)]	X	X[5)]	X	X		X	1A
1B	+	+	+	+	+	+	+	+			X[5)]				+			1B
1C				+											X	+		1C
1D											X		X					1D
1E											X		X					1E
1G															O			1G
1H															X			1H
1X																X		1X
1Y																O		1Y
1Z																+		1Z
2C	X	X	X	X	X	X	X	X	X	X	X	X	X	X	+	X	X	2C
3A	X	X	X	X	X				X	O	O	O	O		X		X	3A
4A	X	X	X	X	X				X	X	X	X	X	X	X	+	X	4A
4B	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	4B
4C	X	X	X	X	X	*1)	*1)	*1)	X	X	X	X	X	X	X	+	X	4C
4D						*1)	*1)	*1)										4D
4E						*	*	*										4E
4F																	X	4F
4G									X									4G
5A				X		X	X											5A
5B				X		X	X											5B
5C				X		X	X										*	5C
5D		*2)	*2)												X	*3)	*	5D
5E	X	*	*		X											*		5E

X Mandatory * One of the items + Required in specific cases O Optional

1) (4C and 4D) or (4E).
2) (5D) or (5E and 5F).
3) (5D and 5F) or (5E and 5F).
5) May not be required with the new TerRaSys.

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Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
5F	X	*	*		X											*		5F
5G	+	+	+	+	+											+	+	5G
6A	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	6A
6B	+	+	X	X		X	X	+								X		6B
7A	X	X	X	X	X	X	X	X	X	X[5]	X[5]	X[5]	X[5]	X	X	X	X	7A
7AA															X			7AA
7B				X					X					X				7B
7C1									X[4]		X		X					7C1
7C2											X		X					7C2
7D												X						7D
7E				+[7]														7E
7F				+[7]														7F
8	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	8
8A	*	*	X	*	X	*	*	*	X					X	X	X	*	8A
8AB				+[7]														8AB
8B	*	*		*		*	*	*		X	X	X	X				*	8B
8BH										X	X	X	X					8BH
8BV										X	X	X	X					8BV
8D											X		X					8D
9	X	X	X	X	X				X	X	X	X	X		X	X	X	9
9A	X	X	X	X	X				X	X	X	X	X		X	X	X	9A
9AA														X				9AA
9AB	+	+	+	+	+				+						+	+	+	9AB
9B				+											X			9B
9C	+	+	+	+	+											+		9C
9CA														X				9CA
9D				+						X	X	X	X					9D
9E	+	+	+	+	+				X	X	X	X	X					9E
9EA	+	+	+	+	+					X	X	X	X					9EA
9EB										X	X	X	X					9EB
9EC										X	X	X	X					9EC

X Mandatory * One of the items + Required in specific cases O Optional

4) For low power channels.

5) May not be required with the new TerRaSys.

7) This information need only to be furnished when such information has been used as a basis to effect coordination with another administration. This information may be optionally provided in a request for coordination under Nos. **S9.16**, **S9.18** and **S9.19**.

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Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
9F														X				9F
9G	+	+	+	+	+			+							+	+		9G
9GH									X									9GH
9GV									X									9GV
9H									X	X[5)]	X[5)]	X[5)]		+		+		9H
9I									X					X				9I
9IA														X				9IA
9J				+, +[7)]											X	+		9J
9K				+[7)]														9K
9N												X[5)]						9N
9NA														X				9NA
9NH										X[6)]	X[6)]	X[6)]	X					9NH
9NV										X[6)]	X[6)]	X[6)]	X					9NV
9O														X	X	X		9O
9P														X				9P
9Q									X					X				9Q
9R															X			9R
9T1														X				9T1
9T2														X				9T2
9T3														X				9T3
9T4														X				9T4
9T5														X				9T5
9T6														X				9T6
9T7														X				9T7
9T8														X				9T8
9T9A														+				9T9A
9T9B														X				9T9B
9T9C														+				9T9C

X Mandatory * One of the items + Required in specific cases O Optional

5) May not be required with the new TerRaSys.

6) To be used in the future TerRaSys.

7) This information need only to be furnished when such information has been used as a basis to effect coordination with another administration. This information may be optionally provided in a request for coordinati under Nos. **S9.16**, **S9.18** and **S9.19**.

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Table of characteristics to be submitted for stations in the terrestrial services *(end)*

Notice type	AP1/A1					AP1/B		AP1/C	AP1/A2	AP1/A4		AP1/A5	AP1/A6	AP1/A7	AP2	AP5	AP1/A1	Notice type
Item No.	AL, NL LR, OE	FC, FP FA, BC FB	FD, FG	FX	SM	AM, ML MA, MO	MS, OD SA	All, except BC	BC	BC	BT	BC	BT	BC	BC	FC	FC (Art. **S11**)	Item No.
9T9D														+				9T9D
10A				+														10A
10B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	10B
10CA															O			10CA
10CB															O			10CB
10CC															O			10CC
10D																X		10D
10E																X		10E
10F																	X	10F
11	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	O	X	11
12A	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	12A
12B	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	12B

X Mandatory * One of the items + Required in specific cases O Optional

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APPENDIX S4

ANNEX 2A

(to Appendix **S4**)

Characteristics of Satellite Networks or Earth or Radio Astronomy Stations[1]

ADD **A.13 As appropriate, reference to the Special Section of the Bureau's Weekly Circular**

ADD a) providing the advance publication information required in accordance with No. **S9.1**;

ADD b) providing the coordination information required in accordance with No. **S9.7**;

ADD c) providing the information required in accordance with No. **S9.21**;

ADD d) providing the coordination information required in accordance with No. **S9.8**;

ADD e) providing the coordination information required in accordance with No. **S9.9**;

ADD f) providing the coordination information required in accordance with No. **S9.11**;

ADD g) providing the coordination information required in accordance with No. **S9.11A**;

ADD h) providing the information required in accordance with Article 6 of Appendix **S30B**.

...

B.4 Non-geostationary space station antenna characteristics

a) Isotropic gain of the antenna in the direction of maximum radiation (dBi) and the antenna radiation pattern.

b) In the case of a space station submitted in accordance with Resolution **46 (Rev.WRC-95)/** No. **S9.11A**:

- orientation of the satellite transmitting and receiving antenna beams and their radiation pattern;
- satellite antenna gain $G(\theta_e)$ as a function of elevation angle at a fixed point on the Earth;
- spreading loss (for a non-GSO satellite) as a function of elevation angle (to be determined by equations or provided in graphical format);
- maximum and average beam peak e.i.r.p./4 kHz and e.i.r.p./1 MHz for each beam;
- for the fixed-satellite service (space-to-Earth) in the band 6 700 - 7 075 MHz, calculated peak value of power flux-density produced within ±5 degrees inclination of the geostationary-satellite orbit.

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APPENDIX S4

Consolidated List and Tables of Characteristics for Use in the Application of the Procedures of Chapter SIII

ANNEX 2B (TO APPENDIX **S4**)

Table of characteristics to be submitted for space and radio astronomy services

A. General characteristics of the satellite network or the earth station

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.1.a	X	X	X	X	X		X	X	X	A.1.a	
A.1.b							X			A.1.b	
A.1.c								X		A.1.c	
A.1.d									X	A.1.d	
A.1.e.1						X				A.1.e.1	
A.1.e.2						X				A.1.e.2	X
A.1.e.3						X				A.1.e.3	
A.1.e.4										A.1.e.4	X
A.1.f	X	X	X	X	X	X	X	X	X	A.1.f	X
A.2.a	X	X	X	X	X	X	X	X	X	A.2.a	
A.2.b	X			X						A.2.b	
A.2.c										A.2.c	X
A.3			X	X	X	X	X	X		A.3	X
A.4.a.1	X			X			X	X	X	A.4.a.1	
A.4.a.2				X			X	X		A.4.a.2	
A.4.a.3				X						A.4.a.3	
A.4.a.4				X						A.4.a.4	
A.4.a.5				X						A.4.a.5	
A.4.b.1		X	X		X					A.4.b.1	
A.4.b.2		X	X		X					A.4.b.2	
A.4.b.3		X	X		X					A.4.b.3	
A.4.b.4		X	X		X					A.4.b.4	
A.4.b.5					X					A.4.b.5	
A.4.c						X				A.4.c	
A.5				X	X	X	X	X	X	A.5	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

* The application of this column is suspended pending the decision of WRC-99.

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Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
A.6				X	X	X	X	X	X	A.6	
A.7.a						X		X		A.7.a	
A.7.b						X		X		A.7.b	
A.7.c						X				A.7.c	
A.7.d						X		X		A.7.d	
A.8							X			A.8	
A.9							X			A.9	
A.10						X				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				**X**	**X**					A.13	

B. Characteristics to be provided for each satellite antenna beam and for each earth station antenna

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
B.1			X	X	X	X	X	X	X	B.1	
B.2			X	X	X	X			X	B.2	
B.3.a				X						B.3.a	
B.3.b.1				X						B.3.b.1	
B.3.b.2				X						B.3.b.2	
B.3.c				C						B.3.c	
B.3.d				X			X	X	X	B.3.d	
B.3.e				X						B.3.e	
B.3.f				X				X		B.3.f	
B.3.g.1							X	X	X	B.3.g.1	
B.3.g.2							X	X	X	B.3.g.2	
B.3.g.3							X	X	X[9)]	B.3.g.3	
B.3.g.4							X	X	X[9)]	B.3.g.4	
B.3.g.5							X	X	X[9)]	B.3.g.5	
B.3.g.6								X		B.3.g.6	
B.3.g.7							X			B.3.g.7	
B.4.a			X		X					B.4.a	
B.4.b			X		X					B.4.b	
B.5.a						X				B.5.a	
B.5.b						X				B.5.b	
B.5.c						X				B.5.c	
B.6										B.6	X

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

[9)] Only information on co-polar antenna characteristics is required.

* The application of this column is suspended pending the decision of WRC-99.

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C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.1	X	X	X						X	C.1	
C.2.a				X	X	X	X	X		C.2.a	
C.2.b										C.2.b	X
C.3.a				X	X	X		X		C.3.a	
C.3.b										C.3.b	X
C.4	X	X	X	X	X	X	X	X		C.4	X
C.5.a			X	X	X			X	X	C.5.a	
C.5.b						X				C.5.b	
C.5.c										C.5.c	X
C.6			X	X	X	X	X	X		C.6	
C.7.a			O	X	X	X	X	X		C.7.a	
C.7.b			O	C	C	`C				C.7.b	
C.7.c			O	C	C	C				C.7.c	
C.7.d			O	C	C	C				C.7.d	
C.8.a			X[1), 7)]	X[7)]	X[7)]	C[8)]				C.8.a	
C.8.b			X[1), 7)]	X[7)]	X[7)]	X				C.8.b	
C.8.c			O	X[6)]	X[6)]	X[6)]				C.8.c	
C.8.d				X[2)]	X[2)]					C.8.d	
C.8.e			O	X[6)]	X[6)]	X[6)]				C.8.e	
C.8.f			X[3)]							C.8.f	
C.8.g				C[4)]	C[4)]	C[4), 5)]				C.8.g	
C.8.h							X			C.8.h	
C.8.i								X		C.8.i	
C.8.j									X	C.8.j	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

1) Only the value of maximum power density is mandatory.

2) For transmission from the space station only.

3) For space-to-space relay only.

4) For transmission from the earth station only.

5) Not required for coordination under No.**S9.15**, **S9.17** or **S9.17A**.

6) Required, if applicable, for the type of transmission. If not applicable, a reason why it is not applicable is required.

7) One or the other of C.8.a or C.8.b is mandatory, but not both.

8) Only the value of total peak envelope power is required for coordination under No.**S9.15, S9.17** or **S9.17A**.

* The application of this column is suspended pending the decision of WRC-99.

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C. Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna *(end)*

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
C.9.a			O	C	C					C.9.a	
C.9.b							X	X		C.9.b	
C.9.c			X		X					C.9.c	
C.10.a			X	X	X					C.10.a	
C.10.b			X	X	X			X		C.10.b	
C.10.c.1			X	X	X			X	X	C.10.c.1	
C.10.c.2			X	X	X			X	X	C.10.c.2	
C.10.c.3			O	X	X			X	X	C.10.c.3	
C.10.c.4			X	X	X			X	X	C.10.c.4	
C.10.c.5			X	X	X				X	C.10.c.5	
C.10.c.6								X		C.10.c.6	
C.11.a	X[10)]	X[10)]	X	X	X					C.11.a	
C.11.b								X		C.11.b	
C.11.c							X		X	C.11.c	
C.11.d					X					C.11.d	
C.12									X	C.12	
C.13										C.13	X
C.14							X			C.14	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

[10)] Only the list of country or geographic designators or a narrative description of the service area shall be supplied.

D. Overall Link Characteristics

Items in Appendix	Advance publication of a geostationary-satellite network	Advance publication of a non-geostationary satellite network subject to coordination under Section II of Article **S9**	Advance publication of a non-geostationary-satellite network not subject to coordination under Section II of Article **S9**	Notification or coordination of a GSO network (including Appendix **S30B**)	Notification or coordination of a non-geostationary-satellite network	Notification or coordination of an earth station	Notice for space stations in the BSS under Appendix **S30** *	Notice for feeder-link stations under Appendix **S30A** *	Notice for stations in the FSS under Appendix **S30B**	Items in Appendix	Radio-astronomy
D.1				X						D.1	
D.2.a				X						D.2.a	
D.2.b				X						D.2.b.	

X Mandatory information O Optional information C This information need only be furnished when it has been used as a basis to effect coordination with another administration

* The application of this column is suspended pending the decision of WRC-99.

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APPENDIX S5

Identification of Administrations with Which Coordination Is to Be Effected or Agreement Sought Under the Provisions of Article S9

NOC 1. For the purpose of effecting coordination under Article **S9**, except in the case under No. **S9.21**, and for identifying the administrations with which coordination is to be effected, the frequency assignments to be taken into account are those in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category[1] of allocation, which might affect or be affected, as appropriate, and which are:

a) in conformity with No. **S11.31**[3]; and

b) either recorded in the Master Register with a favourable finding with respect to No. **S11.32**; or

c) recorded in the Master Register with an unfavourable finding with respect to No. **S11.32** and a favourable finding with respect to No. **S11.32A** or No. **S11.33**, as appropriate; or

d) coordinated under the provisions of Article **S9**; or

MOD *e)* included in the coordination procedure with effect from the date of receipt[3] by the Bureau, in accordance with No. **S9.34**, of those characteristics specified in Appendix **S4** as mandatory or required, or from the date of dispatch, in accordance with No. **S9.29**, of the appropriate information listed in Appendix **S4**; or

ADD *ebis)* where appropriate, in conformity with a world or regional allotment or assignment plan and the associated provisions;

MOD *f)* for terrestrial radiocommunication stations or earth stations operating in the opposite direction of transmission[4] and, in addition, operating in accordance with these Regulations, or to be so operated prior to the date of bringing the earth station assignment into service, or within the next three years from the date of dispatch of coordination data under No. **S9.29**, whichever is the longer, or from the date of the publication referred to in No. **S9.38**, as appropriate.

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MOD

2. For the application of No. **S9.21**, the agreement of an administration may be required with respect to the frequency assignments in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category of allocation, which may affect or be affected, as appropriate, and:

a) in cases involving a station in a space radiocommunication service with respect to any other station or involving a terrestrial radiocommunication station with respect to an earth station:

i) which are in conformity with No. **S11.31**, and comply with the relevant conditions listed in Section 1, paragraphs *b)* to *f)*; or

ii) for which the procedure under No. **S9.21** has been initiated, with effect from the date of receipt by the Bureau, in accordance with No. **S9.34**, of the basic characteristics specified in Appendix **S4**;

or

b) for terrestrial radiocommunication stations operating in accordance with these Regulations, or to be so operated prior to the date of bringing the other terrestrial station assignment into service, or within the next three months, whichever is the longer;

MOD

3. For each of the frequency assignments to a station of a terrestrial or space radiocommunication service referred to in paragraphs 1 and 2 above, the level of interference shall be determined using the method referred to in Table S5-1 which is appropriate to the particular case.

MOD

4. The assignment is considered to affect or be affected, as appropriate, and coordination must be sought under the procedure of Article **S9**, if:

MOD

a) the threshold levels given in Table S5-1 are exceeded; and

b) the condition specified in Table S5-1 is applicable.

5. Threshold values to determine whether coordination under No. **S9.11A** is required are given in Table S5-2.

6. No coordination is required:

MOD *a)* when the use of a new frequency assignment will not cause or suffer, as appropriate, in respect of any service of another administration, an increase in the level of interference above the threshold calculated in accordance with the method referred to in Tables S5-1 and S5-2; or

NOC *b)* to *g)*

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TABLE S5-1

Technical conditions for coordination
(see Article **S9**)

	Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/Condition	Calculation method	Remarks
MOD	No. **S9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit, in any space radiocommunication service, in a frequency band and in a Region where this service is not subject to a plan, in respect of any other satellite network using that orbit, in any space radiocommunication service in a frequency band and in a Region where this service is not subject to a plan, with the exception of the coordination between earth stations operating in the opposite direction of transmission	Any frequency band allocated to a space service, where this service is not subject to a plan	Value of $\Delta T/T$ exceeds 6%	Appendix **S8**	

MOD

No. **S9.8** GSO/GSO	A transmitting space station of the fixed-satellite service (FSS) using the geostationary-satellite orbit in a frequency band shared with the BSS on an equal primary basis, in respect of space stations of the latter service which are subject to the Plans in Appendix **S30**	11.7 - 12.2 GHz (R2) 12.2 - 12.7 GHz (R3) 12.5 - 12.7 GHz (R1)	i) There is an overlap in the necessary bandwidths of the space stations of FSS and BSS; and ii) the power flux-density (pfd) of the space station of the FSS exceeds the value given in Annex 4 of Appendix **S30** on the territory of another administration located in another Region	Check by using the assigned frequencies and bandwidths;	See also Article 7 of Appendix **S30**. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

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MOD

No. **S9.9** GSO/GSO	A station of the FSS in a frequency band shared on an equal primary basis with the feeder links of the BSS, which are subject to the Plans in Appendix **S30A**	17.7 - 18.1 GHz (R1) 17.7 - 18.1 GHz (R3) 17.7 - 17.8 GHz (R2)	i) Value of $\Delta T_S/T_S$ exceeds 4% (see Section I of Annex 4 of Appendix **S30A**); and ii) geocentric inter-satellite angular separation is less than 3° or greater than 150°	i) Case II of Appendix **S8** ii) Annex 1 of Appendix **S8**	The threshold/conditions do not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -137 dB (W/m^2/MHz) on the surface of the Earth at the equatorial limb. Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

MOD	No. **S9.11** GSO/terrestrial	A space station in the broadcasting-satellite service in any band shared on an equal primary basis with terrestrial services and where the broadcasting-satellite service is not subject to a plan, in respect of terrestrial services	620 - 790 MHz 1 452 - 1 492 MHz 2 310 - 2 360 MHz 2 520 - 2 655 MHz 2 655 - 2 670 MHz 12.5 - 12.75 GHz (R3) 17.7 - 17.8 GHz (R2) 21.4 - 22 GHz (R1, R3) 40.5 - 42.5 GHz 84 - 86 GHz	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.12** 1) Non-GSO/ Non-GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.12** 2) Non-GSO/GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using the geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	

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(MOD)	No. **S9.13** GSO/Non-GSO	A station in a satellite network using the geostationary-satellite orbit in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using a non-geostationary-satellite orbit, with the exception of coordination between earth stations operating in the opposite direction of transmission	See Table S5-2	Condition: Bandwidths overlap	Check by using the assigned frequencies and bandwidths	
MOD	No. **S9.14** Non-GSO/terrestrial, GSO/terrestrial	For a space station in a satellite network in the frequency bands for which a footnote refers to No. **S9.11A** in respect of stations of terrestrial services where threshold(s) is (are) exceeded	See Table S5-2	See **Section 1 of Annex 1**	See **Section 1 of Annex 1**	
(MOD)	No. **S9.15** Non-GSO/terrestrial	A specific earth station or a typical earth station in respect of terrestrial stations in frequency bands for which a footnote refers to No. **S9.11A** allocated with equal rights to space and terrestrial services, where the coordination area of the earth station includes the territory of another country	See Table S5-2	The coordination area of the earth station covers the territory of another administration	See Section 2 of Annex 1	

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MOD	No. **S9.16** terrestrial/ non-GSO	A transmitting station of a terrestrial service within the coordination area of an earth station in a non-geostationary-satellite network in frequency bands for which a footnote refers to No. **S9.11A**	See Table S5-2	Transmitting terrestrial station is situated within the coordination area of a receiving earth station	See Section 2 of Annex 1	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.15**
MOD	No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above 1 GHz allocated with equal rights to space and terrestrial services in respect of terrestrial stations, where the coordination area of the earth station includes the territory of another country with the exception of the coordination under No. **S9.15**	Any frequency band allocated to a space service, except those mentioned in the Plans of Appendix **S30A**	The coordination area of the earth station covers the territory of another administration	Appendix **S7** (For earth stations in the radiodetermination-satellite service (RDSS) in the bands 1 610 - 1 626.5, 2 483.5 - 2 500 and 2 500 - 2 516.5 MHz, see Remarks column) 1) The coordination area of aircraft earth stations is determined by increasing the service area by 1 000 km with respect to the aeronautical mobile service (terrestrial) or 500 km with respect to terrestrial services other than the aeronautical mobile service.	NOTE - For RDSS earth stations, a uniform coordination distance of 400 km corresponding to an airborne earth station shall be used. In cases where the earth stations are all ground-based, a coordination distance of 100 km shall be used.

No. **S9.17** GSO, non-GSO/ terrestrial (cont.)				2) For receiving earth stations in the meteorological-satellite service in frequency bands shared with the meteorological aids service, the coordination distance is considered to be the visibility distance as a function of the earth station horizon elevation angle for a radiosonde at an altitude of 20 km above mean sea level, assuming 4/3 Earth radius.	Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending the decision of the 1999 World Radiocommunication Conference on the revision of these two Appendices.

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MOD	No. **S9.17A** GSO, non-GSO/ GSO, non-GSO	A specific earth station in respect of other earth stations operating in the opposite direction of transmission in frequency bands allocated with equal rights to space radiocommunication services in both directions of transmission where the coordination area of the earth station includes the territory of another country or the earth station is located within the coordination area of a coordinated earth station, with the exception of the frequency bands subject to the Plans in Appendix **S30A**	Any frequency band allocated to a space service	The coordination area of the earth station covers the territory of another administration or the earth station is located within the coordination area of an earth station	i) For bands in Table S5-2, see Section 2 of Annex 1 ii) See Recommendations ITU-R IS.847, IS.848 and IS.849	
MOD	No. **S9.18** terrestrial/GSO, non-GSO	Any transmitting station of a terrestrial service in the bands mentioned in No. **S9.17** within the coordination area of an earth station, in respect of this earth station with the exception of the coordination under Nos. **S9.16** and **S9.19**	Any frequency band allocated to a space service**.**	Transmitting terrestrial station is situated within the coordination area of a receiving earth station	See remarks	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.17**

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MOD

No. **S9.19** terrestrial/GSO	A transmitting station of a terrestrial service in a frequency band shared on an equal primary basis with the BSS, except where the service is subject to the Plans in Appendix **S30**	Bands listed in No. **S9.11**	i) Necessary bandwidths overlap; and ii) the pfd of the terrestrial station at the edge of the broadcasting-satellite service service area exceeds the permissible level	i) Check by using the assigned frequencies and bandwidths	

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 375-E
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.6 **PLENARY MEETING**

SIXTH SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**
COM 6	DT/156	**APPENDIX S30 (WRC-97)** – Articles 3 to 7, 13 and 14 – Annexes 1, 2 and 6 **APPENDIX S30A (WRC-97)** – Articles 3 to 5 and 10 – Annex 3

A.-M. NEBES
Chairman of Committee 6

Annex: 21 pages

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APPENDIX S30 (WRC-97)

Provisions for All Services and Associated Plans for the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2)

...

ARTICLE 3

Execution of the Provisions and Associated Plans

(MOD) 3.1 The Member States of the Union in Regions 1, 2 and 3 shall adopt, for their broadcasting-satellite space stations[1] operating in the frequency bands referred to in this Appendix, the characteristics specified in the appropriate Regional Plan and the associated provisions.

(MOD) 3.2 The Member States of the Union shall not change the characteristics specified in the Regions 1 and Plan or in the Region 2 Plan, or bring into use assignments to broadcasting-satellite space stations or to stations in the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

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[1] In Region 2, such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with No. **S5.492** of the Radio Regulations.

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ARTICLE 4

Procedure for Modifications to the Plans

(MOD) 4.1 When an administration intends to make a modification[2] to one of the Regional Plans, i.e.:

a) to modify the characteristics of any of its frequency assignments to a space station[3] in the broadcasting-satellite service which are shown in the appropriate Regional Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; *or*

b) to include in the appropriate Regional Plan a new frequency assignment to a space station in the broadcasting-satellite service; *or*

c) to cancel a frequency assignment to a space station in the broadcasting-satellite service;

the following procedure shall be applied before any notification of the frequency assignment is made to the Radiocommunication Bureau (see Article 5 of this Appendix);

…

SUP 4.3.1.3

(MOD) 4.3.1.3 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification or having an assignment whose associated service area does not cover the whole of the territory of the administration, and in whose territory outside that service area the power flux-density from the broadcasting-satellite space station subject to this modification exceeds the prescribed limit as a result of the proposed modification; *or*

---

[2] The intention not to employ energy dispersal in accordance with paragraph 3.18 of Annex 5 shall be treated as a modification and thus subject to the appropriate provisions of this Article.

[3] The expression "frequency assignment to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position. See also Annex 7 for the orbital limitations.

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(MOD) 4.3.1.4 having a frequency assignment in the band 11.7 - 12.2 GHz in Region 2 or 12.2 - 12.5 GHz in Region 3 to a space station in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. [**S9.7**] of the Radio Regulations, or those of paragraph 7.2.1 of this Appendix;

(MOD) 4.3.1.5 whose services are considered to be affected.

...

SUP 4.3.3.3

(MOD) 4.3.3.3 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification or having an assignment whose associated service area does not cover the whole of the territory of the administration, and in whose territory outside that service area the power flux-density from the broadcasting-satellite space station subject to this modification exceeds the prescribed limit as a result of the proposed modification; *or*

(MOD) 4.3.3.4 having a frequency assignment in the band 12.5 - 12.7 GHz in Region 1 or 12.2 - 12.7 GHz in Region 3 to a space station in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. [**S9.7**] of the Radio Regulations or those of paragraph 7.2.1 of this Appendix; *or*

(MOD) 4.3.3.5 having a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 - 12.7 GHz in Region 3 with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment and which

a) is recorded in the Master Register, *or*

b) has been coordinated or is being coordinated under the provisions of Resolution **33**, *or*

c) appears in a Region 3 Plan to be adopted at a future administrative radio conference, taking account of modifications to that Plan which may be introduced in accordance with the Final Acts of the Conference;

(MOD) 4.3.3.6 whose services are considered to be affected.

...

4.5 Master copy of the Plans

MOD 4.5.1 *a)* The Bureau shall maintain an up-to-date master copy of the Regions 1 and 3 Plan taking account of the application of the procedure specified in this Article. The Bureau shall publish a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure in this Article.

...

ARTICLE 5

Notification, Examination and Recording in the Master Register of Frequency Assignments to Space Stations in the Broadcasting-Satellite Service

...

MOD *a)* with respect to its conformity with the Constitution, the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to *b)*, *c)* and *d)* below);

...

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ARTICLE 6

(MOD)

Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Stations Affecting Broadcasting-Satellite Frequency Assignments in the Frequency Bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2)[1]

...

Section II. Notification Procedure for Frequency Assignments

(MOD) 6.2.1 Any frequency assignment to a fixed, land or broadcasting station shall be notified to the Radiocommunication Bureau if the use of the frequency concerned is capable of causing harmful interference to the service rendered or to be rendered by a broadcasting-satellite station of any other administration, or if it is desired to obtain international recognition of the use of the frequency[1].

(MOD) 6.2.2 For this notification, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix **S4**, Annexes 1A and 1B to the Radio Regulations, which specifies the basic characteristics to be furnished as required. It is recommended that the notifying administration should also supply the additional data called for in that Appendix, together with such further data as it may consider appropriate.

...

---

[1] These procedures do not replace the procedures prescribed for terrestrial stations in Articles **S9** and **S11** of the Radio Regulations.

---

[1] The attention of administrations is specifically drawn to the provisions of Section I of this Article.

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Section III. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

(MOD) 6.3.1 Whatever the means of communication, including telegram, by which a notice is transmitted to the Bureau, it shall be considered complete if it contains at least the appropriate basic characteristics specified in Appendix **S4**, Annexes 1A and 1B to the Radio Regulations.

...

MOD 6.3.8 – with respect to its conformity with the Constitution, the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedure and the probability of harmful interference);

...

(MOD) 6.3.34 Any notice of a change in the basic characteristics of an assignment already recorded in the Master Register, as specified in Appendix **S4**, Annexes 1A and 1B to the Radio Regulations (except those entered in Columns 2c, 3 and 4a of the Master Register), shall be examined by the Bureau in accordance with the provisions of paragraphs 6.3.8 and 6.3.9 and, where appropriate, paragraph 6.3.10 and the provisions of paragraphs 6.3.12 to 6.3.32 inclusive shall be applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

...

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ARTICLE 7

Procedures for Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Fixed-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Region 2), 12.2 - 12.7 GHz (in Region 3) and 12.5 - 12.7 GHz (in Region 1), When Frequency Assignments to Broadcasting-Satellite Stations in Conformity with the Regions 1 and 3 Plan, or the Region 2 Plan, Respectively, Are Involved[1]

Section I. Procedure for the Advance Publication of Information on Planned Fixed-Satellite Systems

Publication of Information

(MOD) 7.1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure described in paragraph 7.2.1, where applicable, send to the Radiocommunication Bureau, not earlier than five years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix **S4**, Annexes 2A and 2B to the Radio Regulations.

...

Commencement of Coordination or Notification Procedure

(MOD) 7.1.8 In complying with the provisions of paragraphs 7.1.5 and 7.1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 7.2.1 or, where this is not applicable, the sending of its notices to the Bureau until five months after the date of the weekly circular containing the information listed in Appendix **S4**, Annexes 2A and 2B to the Radio Regulations on the relevant satellite network. However, in respect of those administrations with which difficulties have been resolved or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the five months mentioned above.

---

[1] These provisions do not replace the procedures prescribed in Articles **S9** and **S11** of the Radio Regulations when stations other than those of the broadcasting-satellite service are involved.

PINK PAGES

Section II. Coordination Procedures to Be Applied in Appropriate Cases

7.2.1 ...

(MOD) For this purpose, the administration seeking agreement shall send to any other such administration the information listed in Appendix **S4**, Annexes 2A and 2B to the Radio Regulations.

...

(MOD) 7.2.3 An administration seeking coordination under paragraph 7.2.1 shall at the same time send to the Bureau a copy of the request for coordination together with the information listed in Appendix **S4**, Annexes 2A and 2B to the Radio Regulations and the name(s) of the administration(s) whose agreement is sought. The Bureau shall determine on the basis of Annex 4 which frequency assignments in conformity with the appropriate Regional Plan are considered to be affected. The Bureau shall include the names of those administrations with the information received from the administration seeking coordination and shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system were published in accordance with Section I of this Article. When the weekly circular contains such information, the Bureau shall so inform all administrations by circular telegram.

...

Section III. Notification of Frequency Assignments

...

(MOD) 7.3.3 For any notification under paragraph 7.3.1 or 7.3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix **S4**, Annexes 2A and 2B to the Radio Regulations, the various Sections of which specify the basic characteristics to be furnished according to the case. The notifying administration shall furnish such further data as it considers appropriate.

...

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Section IV. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

(MOD) 7.4.1 Any notice which does not contain at least those basic characteristics specified in Appendix **S4**, Annexes 2A and 2B to the Radio Regulations shall be returned by the Bureau immediately, by airmail, to the notifying administration with the reasons therefor.

...

MOD 7.4.5.1 with respect to its conformity with the Constitution, the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedures and the probability of harmful interference);

...

(MOD) 7.4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix **S4**, Annexes 2A and 2B to the Radio Regulations (except the name of the station or the name of the locality in which it is situated or the date of bringing into use), shall be examined by the Bureau in conformity with paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and the provisions of paragraphs 7.4.7 to 7.4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.

...

ARTICLE 13

Interference

(MOD) 13.1 The Member States of the Union shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plans.

...

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ARTICLE 14

Period of Validity of the Provisions and Associated Plans

...

MOD

14.3 In any event, the provisions and associated Plans shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Constitution and Convention in force.

ANNEX 1

Limits for Determining Whether a Service of an Administration is Affected by a Proposed Modification to the Plans or When It is Necessary Under This Appendix to Seek the Agreement of Any Other Administration[1]

(See Article 4)

...

3. Limits to the change in the power flux-density to protect the broadcasting-satellite service in Regions 1 and 2 in the band 12.2 - 12.5 GHz and in Region 3 in the band 12.5 - 12.7 GHz

...

---

[1] With respect to this Annex, except for section 2 and sub-section 8 *b)*, the limits relate to the power flux-density which would be obtained assuming free-space propagation conditions.

With respect to sub-section 8 *b)* of this Annex, the limits relate to the power flux-density which would be obtained assuming clear-sky propagation conditions using the method contained in Annex 5.

With respect to section 2 of this Annex, the limit specified relates to the overall equivalent protection margin calculated in accordance with section 2.4.4 of Annex 5.

(MOD) With respect to paragraph 4.3.3.2 or 4.3.3.5 as appropriate, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in exceeding the power flux-densities given below, at any point in the service area affected.

...

4. Limits to the change in the power flux-density to protect the terrestrial services of administrations in Region 2

(MOD) With respect to paragraph 4.3.1.3, an administration in Region 2 shall be considered as being affected if the proposed modification to the Regions 1 and 3 Plan would result in exceeding a power flux-density, for any angle of arrival, at any point on its territory, of:

...

5. Limits to the change in the power flux-density to protect the terrestrial services of administrations in Regions 1 and 3[1]

(MOD) With respect to paragraph 4.3.3.3, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in the following power flux-density limits being exceeded:

...

[1] See section 3.18 of Annex 5.

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6. Limits to the change in the power flux-density of assignments in the Regions 1 and 3 Plan to protect the fixed-satellite service (space-to-Earth) in the band 11.7 - 12.2 GHz in Region 2, and of assignments in the Region 2 Plan to protect the fixed-satellite service (space-to-Earth) in the band 12.5 - 12.7 GHz in Region 1 and in the band 12.2 - 12.7 GHz in Region 3

(MOD) With respect to paragraph 4.3.1.4, an administration in Region 2 shall be considered as being affected if the proposed modification to the Regions 1 and 3 Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Regions 1 and 3 Plan at the time of entry into force of the Final Acts[3].

(MOD) With respect to paragraph 4.3.3.4, an administration in Region 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Region 2 Plan at the time of entry into force of the Final Acts[1].

...

7. Limits to the change in equivalent noise temperature to protect the fixed-satellite service (Earth-to-space) in Region 1 from modifications to the Region 2 Plan in the band 12.5 - 12.7 GHz

(MOD) With respect to paragraph 4.3.3.4, an administration of Region 1 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in:

...

---

[3] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

---

[1] Final Acts of the 1985 Conference.

8. Limits to the change in the power flux-density to protect the terrestrial services of other administrations

a) In Region 1 or 3:

(MOD) With respect to paragraph 4.3.1.3, an administration in Region 1 or 3 shall be considered as being affected if the consequence of the proposed modification of an existing assignment in the Regions 1 and 3 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Regions 1 and 3 Plan at the time of entry into force of the Final Acts[2]. The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed in sections 5 *a)* and 5 *b)* of this Annex applied to the frequency range 11.7 - 12.5 GHz.

(MOD) With respect to paragraph 4.3.1.3 in the case of an addition of a new assignment to the Regions 1 and 3 Plan, an administration in Region 1 or 3 is considered as being affected if the power flux-density on any part of its territory exceeds the limit expressed in sections 5 *a)* and 5 *b)* of this Annex applied to the frequency range 11.7 - 12.5 GHz.

b) In Region 2:

(MOD) With respect to paragraph 4.3.3.3, an administration in Region 2 shall be considered as being affected if the consequence of the proposed modification to an existing assignment in the Region 2 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from that frequency assignment in the Region 2 Plan at the time of entry into force of the Final Acts[1]. The same administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the following limit: –115 dB(W/m^2).

(MOD) With respect to paragraph 4.3.3.3 in the case of an addition of a new assignment to the Region 2 Plan, an administration in Region 2 is considered as being affected if the power flux-density on any part of its territory exceeds – 115 dB(W/m^2).

---

[2] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

---

[1] Final Acts of the 1985 Conference.

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ANNEX 2

Basic Characteristics to Be Furnished in Notices[2] Relating to Space Stations in the Broadcasting-Satellite Service[3]

(MOD) 1. Country and BR number in the case of Regions 1 and 3; country and beam identification in the case of Region 2.

...

ANNEX 6[1]

Criteria for Sharing Between Services

1. Protection requirements for sharing between services in the 12 GHz band

...

(MOD) 1.5 The specified values of protection ratio (i.e., the carrier-to-interference power ratio corresponding to a specified picture quality) are applicable, for planning purposes, to television signals of any of the several television standards.

---

[2] The Bureau shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Annex.

[3] In Region 2, only those notices relating to frequency assignments for space stations used for telemetry and tracking purposes associated with the Region 2 Plan shall be furnished in accordance with Appendix **S4**, Annexes 2A and 2B to the Radio Regulations.

---

[1] Sections 1 and 2 of this Annex are applicable when the services of Regions 1 or 3 are involved. Section 3 is applicable to all Regions.

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Wanted service [1]	Wanted signal [1]	Interfering service [1]	Interfering signal [1]	Protection requirements [2]	
				Total acceptable [3]	Single entry
BSS	TV/FM	BSS, FSS, FS, BS	TV/FM	*C/I* = 30 dB [4, 7]	*C/I* = 35 dB [4]
FSS	FDM/FM	BSS	TV/FM	*N* = 500 pW0p [8]	*N* = 300 pW0p
FSS	TV/FM	BSS, FSS	TV/FM	*C/I* = 32 dB [5]	*C/I* = 37 dB [5]
FSS	4φ-PSK	BSS, FSS	TV/FM	*C/I* = 30 dB	*C/I* = 35 dB
FSS	FDM/FM	FSS	FDM/FM	*N* = 1000 pW0p	*N* = 400 pW0p
FS	FDM/FM	BSS	TV/FM	*N* = 1000 pW0p	−125 dB(W/m^2/4 kHz) [6]
BS	TV/VSB	BSS	TV/FM	*C/I* = 50 dB	not applicable

NOTES: [1] BSS = broadcasting-satellite service; FSS = fixed-satellite service; BS = broadcasting service; FS = fixed service; TV = television; FM = frequency modulation; FDM = frequency division multiplex; 4φ-PSK = four-level phase shift keying; VSB = vestigial sideband.

[2] These limits include both up-link and down-link contributions.

[3] Values in dB are protection ratios for the sum of interfering signals. Values in pW0p represent interference noise in the worst telephone channels caused by the sum of interfering signals.

[4] For BSS satellites located at the interfaces of the Regions 1 and 3 Plan and the Region 2 Plan, the *C/I* ratios should be 1 dB higher.

[5] See ITU-R Recommendation S.483-2.

[6] This value may be suitably modified for tropical regions to take account of rain attenuation. Allowance may also be made for polarization discrimination.

[7] *C/I* = ratio of carrier-to-interfering signal.

[8] *N* = noise power.

1.6 ...

(MOD) *b)* quality of the wanted service (grade 4.5)[1];

...

2. Reference antenna diameter for a fixed-satellite earth station to be used in calculating interference from space stations in the broadcasting-satellite service

(MOD) 2.1 For antennas larger than 100 λ (2.5 m) in the fixed-satellite service, the gain of the side-lobes is given by the expression 32 – 25 log θ, where θ is the angle from the boresight (ITU-R Recommendation S.465-5). The side-lobe gain is independent of antenna diameter.

...

[1] Impairment grade on a 5-point scale as defined in ITU-R Recommendation BT.500-7.

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APPENDIX S30A (WRC-97)

Provisions and Associated Plans for Feeder Links for the Broadcasting-Satellite Service (11.7 - 12.5 GHz in Region 1, 12.2 - 12.7 GHz in Region 2 and 11.7 - 12.2 GHz in Region 3) in the Frequency Bands 14.5 - 14.8 GHz[1] and 17.3 - 18.1 GHz in Regions 1 and 3, and 17.3 - 17.8 GHz in Region 2

...

ARTICLE 3

Execution of the Provisions and Associated Plans

(MOD) 3.1 The Member States of the Union in Regions 1, 2 and 3 shall adopt for their feeder-link space and earth stations in the fixed-satellite service (Earth-to-space) in the frequency bands referred to in this Appendix the characteristics specified in the appropriate Regional Plan and the associated provisions.

(MOD) 3.2 Member States of the Union shall not change the characteristics specified in the Regions 1 and 3 Plan or in the Region 2 Plan, or bring into use assignments to receiving space stations or transmitting earth stations in the fixed-satellite service or to stations of the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

...

[1] This use of the band 14.5 - 14.8 GHz is reserved for countries outside Europe.

PINK PAGES

ARTICLE 4

Procedure for Modifications to the Plans

4.1 When an administration intends to make a modification to one of the Regional Plans, i.e. either:

a) to modify the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the appropriate Regional Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; *or*

b) to include in the Plan a new frequency assignment in the fixed-satellite service; *or*

c) to cancel a frequency assignment in the fixed-satellite service,

(MOD) the following procedure shall be applied before any notification of the frequency assignment is made to the Radiocommunication Bureau (see Article 5 of this Appendix and Resolution **42 (Rev.Orb-88)**).

4.1.1 Before an administration proposes to include in the Plan under the provisions of paragraph 4.1 *b)* a new frequency assignment for reception at a space station[1] or to include in the Plan a new frequency assignment for reception at a space station whose orbital position is not designated in the Plan to that administration, all of the assignments to the service areas involved should normally have been brought into service or have been notified to the Bureau in accordance with Article 5 of this Appendix. Should this not be the case, the administration concerned shall inform the Bureau of the reasons thereof.

...

(MOD) 4.2.1.2 having a frequency assignment in the band 17.7 - 18.1 GHz to an earth station in the fixed-satellite service (space-to-Earth), which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. [**S9.7**] of the Radio Regulations and which is located within the coordination area of the feeder-link fixed-satellite earth station; *or*

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[1] The expression "frequency assignment for reception to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.

4.2.1.3 having a frequency assignment in the bands 14.5 - 14.8 GHz or 17.7 - 18.1 GHz to a terrestrial station in use or intended to be brought into use within three years of the projected date of bringing the feeder-link modification into use, and which is located within the coordination area of the feeder-link fixed-satellite earth station; *or*

...

(MOD) 4.2.3.2 having a frequency assignment in the band 17.7 - 17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth), which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. [**S9.7**] of the Radio Regulations and which is located within the coordination area of the feeder-link fixed-satellite earth station; *or*

...

ARTICLE 5

Coordination, Notification, Examination and Recording in the Master International Frequency Register of Frequency Assignments to Feeder-Link Transmitting Earth Stations and Receiving Space Stations in the Fixed-Satellite Service

...

MOD 5.1.5 If an administration with which coordination is sought under paragraph 5.1.4 does not respond within three months, the administration intending to bring into use a frequency assignment to a feeder-link earth station shall notify this frequency assignment in accordance with paragraph 5.1.2 above.

...

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5.2 Examination and recording

5.2.1 The Bureau shall examine each notice:

a) with respect to its conformity with the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to *b)*, *c)*, *d)* and *e)* below); *and*

b) with respect to its conformity with the appropriate Regional Plan; *or*

c) with respect to its conformity with the appropriate Regional Plan, however, having characteristics differing from those in the Plan in one or more of the following aspects:

– use of a reduced e.i.r.p.,

– use of a reduced coverage area entirely situated within the coverage area appearing in the Plan,

MOD – use of other modulating signals in accordance with the provisions of Section 3.1.3 to Annex 5 of Appendix **S30 (WRC-97)**,

MOD – in the case of Region 2, use of an orbital position under the conditions specified in paragraph B of Annex 7 to Appendix **S30 (WRC-97)**,

MOD – in the case of Regions 1 and 3, use of an orbital position under the conditions specified in Section 3.15 of Annex 3 to Appendix **S30A (WRC-97)**[1]**,**

...

[1] The Bureau shall also apply this provision to paragraph 5.2.1 *c)* of Appendix **S30 (WRC-97)** for Regions 1 and 3.

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ARTICLE 10

Interference

MOD

10.1 The Member States of the Union shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plans.

...

ANNEX 3

Technical Data Used in Establishing the Provisions and Associated Plans and which Should be Used for their Application

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 376-E
27 November 1997
Original: French

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 5

SUMMARY RECORD

OF THE

ELEVENTH MEETING OF COMMITTEE 5

(ALLOCATIONS AND ASSOCIATED ISSUES)

Monday, 17 November 1997, at 1930 hours

Chairman: Mrs. V. RAWAT (Canada)

Subjects discussed		**Documents**
1	Documents submitted by ad hoc Group 3 (continued)	DT/88(Rev.1), DT/131
2	Consideration of country footnotes (continued)	40(Add.1)(Corr.5), 74(Add.1), 108(Add.2), 254, 272, 286
3	MSS and FSS issues (continued)	-

1 Documents submitted by ad hoc Group 3 (continued) (Documents DT/88(Rev.1), DT/131)

1.1 The **Chairman of ad hoc Group 3** introduced Document DT/131, noting that it proposed, among other things, that the Committee should upgrade the fixed service to primary in the band 40.5 - 42.5 GHz, and delete the proposed HDFS footnote designations (S5.547) from the bands 37 - 40 GHz and 40.5 - 42.5 GHz as currently identified in Document DT/88(Rev.1). In addition, three options were submitted for consideration by the Committee concerning the allocation of the band 40.5 - 42.5 GHz to the FFS. From the drafting point of view, the words "while recognizing that the adequacy of these limits is under study" should be added at the end of paragraph 7, and in the title "Proposals for consideration by Committee 5 regarding the allocation of the band 40.5 - 42.5 GHz to the fixed satellite service on a regular basis", the word "regular" should be replaced by "regional". Lastly, in the option 1 and option 2 tables, opposite "FIXED-SATELLITE (space-to-Earth)", there should be a reference to footnote ADD S5.551A, the text of which was given in Document DT/88(Rev.1).

1.2 The **delegate of Bulgaria** proposed an option 4 for Region 1 whereby the band 40 - 42.5 GHz would be allocated on a primary basis to the broadcasting and broadcasting-satellite services and on a secondary basis to the fixed and mobile services. There would be three footnotes, one for the countries in which the band 40.5 - 42.5 GHz was allocated on a primary basis to the fixed service, one for those in which it was allocated on a primary basis to the fixed-satellite service and one for those in which it was allocated on a primary basis to the mobile services.

1.3 The **Chairman** proposed that the Committee should first consider the band 37 - 40 GHz in Table 37 - 42.5 GHz in Document DT/88(Rev.1), in the light of paragraph 2 of Document DT/131, in which it was proposed that the references to footnote ADD S5.547 in the bands 37 - 40 GHz should be deleted.

1.4 Part 37 - 40 GHz of the Table, with the deletion of the references to footnote ADD S5.547, was **approved**.

1.5 After consulting the **Chairman of ad hoc Group 3**, the **Chairman** proposed that the Committee continue by considering the Table under Option 3 (Document DT/131), which would apply to Region 1.

1.6 The **delegates of the United Kingdom, Germany, Portugal, France, Norway** and **the Netherlands** were in favour of that option, provided footnote ADD S5.XXC was deleted.

1.7 The **delegates of Jordan** and **Israel** were in favour of Option 3, but wished the names of their countries to be given in footnote ADD S5.XXC.

1.8 There being no objections, the **Chairman** took it that the table in Option 3 was **approved** for Region 1 and that footnote ADD S5.XXC would be provisionally put in square brackets.

1.9 It was so **agreed**.

1.10 The **Chairman**, after consulting the **Chairman of ad hoc Group 3**, suggested that the Committee should consider Option 1 for Region 2, including footnote ADD S5.551A, the insertion of which had been proposed earlier.

1.11 The **delegate of the United States**, speaking on behalf of 15 of the 16 CITEL countries, and the **delegate of Canada** were in favour of Option 1.

1.12 At the request of the **delegate of France**, the names of the French overseas departments and territories would be added in footnote ADD S5.XXA.

1.13 Replying to the **representative of IUCAF**, who emphasized the need to protect the radio astronomy band just above the band 40.5 - 42.5 GHz, which was of particular importance in Regions 2 and 3, the **Chairman** pointed out that footnote ADD S5.551A and draft Resolution [COM5-16] were specifically concerned with that matter.

1.14 The **delegate of the United Kingdom**, reminding members that his Administration was not in favour of the introduction of the fixed satellite-service in the band 40.5 - 42.5 GHz, said that he would accept an allocation for Region 2 on condition that an additional footnote was added reading as follows: "In the band 40.5 - 42.5 GHz, the FSS shall not cause harmful interference to, or claim protection from, stations of the fixed service or broadcasting service in Region 1."

1.15 The **delegate of the United States** said that CEPT should no longer be attempting, at the present stage in the discussions, to control the options within the Regions. His Administration had asked for the Regions to be authorized to act in their own interests.

1.16 The **delegate of India** asked for Region 3 to be included in the footnote proposed by the delegate of the United Kingdom.

1.17 The **delegate of Canada** supported Option 1, but could not accept the footnote proposed by the delegate of the United Kingdom, which prejudged the outcome of the studies provided for in several draft Resolutions. Noting the existence of the broadcasting-satellite service in the band under consideration, for which no appropriate power flux-density limit had been set, he considered that the introduction of the fixed-satellite service in Region 2 would not involve any great change as compared with the current situation.

1.18 The **delegate of France** said that his country had territories and departments in Regions 2 and 3. He preferred Option 2, which, unlike Option 1, mentioned footnote ADD S5.XXB, which referred to Resolution [COM5-29], where it was specified in *resolves* 1 that the frequency allocations to the fixed-satellite service in the band 40.5 - 42.5 GHz would not enter into force before 1 January 2001.

1.19 The **delegate of Israel** pointed out that the words "space-to-Earth" should be inserted after the words "fixed-satellite service" in footnotes ADD S5.XXB and ADD S5.XXC.

1.20 The **delegate of Germany** supported the proposal by the delegate of the United Kingdom as amended by the delegate of India.

1.21 The **Chairman**, noting that most of the Region 2 countries preferred Option 1, suggested that the proposal made by the delegate of the United Kingdom should be discussed outside the meeting. With respect to Region 3, she asked the Chairman of ad hoc Group 3 which option would offer the best basis for discussion.

1.22 The **Chairman of ad hoc Group 3** considered that it would be preferable if participants were to express their views first on Option 1, and secondly on Option 2.

1.23 The **delegates of Japan, Malaysia** and **France** were in favour of Option 2.

1.24 The **delegates of New Zealand** and **Indonesia** also preferred Option 2, as did the **delegate of Australia**, who also said that he did not want the proposal by the delegate of the United Kingdom to be applied to Region 3.

1.25 The **delegates of India, the Democratic People's Republic of Korea** and **the Islamic Republic of Iran** preferred Option 3.

1.26 The **delegate of Papua New Guinea** preferred Option 1, but said that he would be able to accept Option 2.

1.27 The **delegate of Algeria** said that the choice by the Region 3 countries of an allocation to the fixed-satellite service would cause difficulties for many countries, such as Algeria, which took an active part in "regional" networks in which the Regions did not correspond to the ITU ones. ARABSAT, for example, would be at a disadvantage, since it covered both Regions 1 and 3. He asked for the name of his country to be added to footnote ADD S5.XXC on the same basis as that of Jordan.

1.28 At the request of the **Chairman**, the **Chairman of ad hoc Group 3** agreed to coordinate discussions on the three options during a suspension of the meeting. He pointed out that it would be logical for the three Regions to chose the same option.

1.29 Following informal discussions, the **Chairman of ad hoc Group 3** said that it had been accepted that Region 1 would apply option 3, Region 2 option 1 and Region 3 option 2. A certain number of arrangements had been arrived at. Footnote ADD S5.XXA would apply to Region 3. In order to take into account the requests of the Arab countries, it was proposed that the text of footnote ADD S5.XXB should be added to footnote ADD S5.XXC and that the names of countries that so wished should be listed in the brackets shown. Thus, in Region 3 and in the Arab countries of Region 1, the FSS was allocated on a primary basis on the understanding that the allocations would not enter into force before 1 January 2001 and would depend on the outcome of the studies made by ITU-R. He added that the delegate of the United Kingdom was willing to withdraw his proposed footnote if it was established that the power flux-density limits for the band 37.0 - 40.5 GHz would not be applied above 40.5 GHz.

1.30 The **Chairman** thanked the Chairman of ad hoc Group 3 and, for the sake of clarity, summed up the outcome of the discussions. Region 1 would be governed by the Option 3 Table and by footnote ADD S5.XXC as amended. Region 2 would be governed by the Option 1 Table and by footnotes ADD S5.551A and ADD S5.XXA. Region 3 would be subject to the Option 2 Table, to footnotes ADD S5.XXA, MOD S5.XXB and ADD S5.551A, and, in the case of Japan, to footnote ADD S5.XXX. It was understood that the power flux-density limits indicated in Table S21-4 for the band 37.0 - 40.5 GHz would not apply in the band 40.5 - 42.5 GHz.

1.31 The allocations, as stated by the Chairman, were **approved**.

1.32 On the proposal of the **representative of BR** and of the **delegate of the United Kingdom**, the title of draft Resolution [COM5-16] was amended to read: "Allocation to the fixed-satellite (space-to-Earth) service in the band 41.5 - 42.5 GHz and protection of the radio astronomy service in the adjacent bands".

1.33 On the proposal of the **delegate of the United Kingdom** and of the **Chairman**, *considering* a) was amended to read as follows: "that this Conference has added an allocation to the fixed-satellite (space-to-Earth) service in the band 41.5 - 42.5 GHz in Regions 2 and 3, and in Region 1 (ADD S5.551A), and that …".

1.34 Draft Resolution [COM5-16], as amended, was **approved**.

1.35 Following statements by the **representative of BR** and by the **delegate of Germany**, the **Chairman** proposed the addition of footnote ADD S5.551A in the Option 3 Table for Region 1. In response to a proposal by the **Chairman of ad hoc Group 3** and to a request for clarification from the **Chairman of Working Group 5A**, she proposed that the text of footnote S5.551A be reviewed outside the meeting with a view to possible editorial amendments.

1.36 It was so **agreed**.

Draft Resolution [COM5-17]

1.37 The **Chairman** proposed the deletion of the square brackets in *considering* a) and the addition of the words "in Regions 2 and 3, and in Region 1" with an indication in brackets of the appropriate footnote, in accordance with the decisions which the Committee had taken with respect to allocations.

1.38 It was so **agreed**.

1.39 The **Chairman of ad hoc Group 3**, referring to the Committee's decision not to apply power flux-density limits above 40.5 GHz, proposed that *resolves to invite ITU-R* 1 be amended to read as follows: "to undertake, as a matter of urgency, studies of appropriate criteria and methodologies for sharing, and power flux-density limits, between the fixed-satellite service …".

1.40 It was so **agreed.**

1.41 Draft Resolution [COM5-17], as thus amended, was **approved**.

Draft Resolution [COM5-28]

1.42 On the proposal of the **delegate of the United Kingdom** and after a brief exchange of views between him and the **delegate of the United States**, the **Chairman** proposed that *considering* f) be amended to read as follows: "that it may be useful to consider the identification of frequencies for high-density fixed service applications" and that, for the sake of consistency, the same amendment be made to the wording under *requests*.

1.43 It was so **agreed**.

1.44 Draft Resolution [COM5-28], as thus amended, was **approved**.

Draft Resolution [COM5-29]

1.45 On the proposal of the **delegate of the United States**, the **Chairman** proposed that *considering* a) be amended to reflect the allocation of the band 40.5 - 42.5 GHz which had been made to the FSS in Regions 2 and 3, with an indication of the appropriate footnote for Region 1.

1.46 It was so **agreed**.

1.47 On the proposal of the **delegate of the Republic of Korea**, which was supported by the **delegate of France** but opposed by the **delegate of the United States**, the **Chairman** proposed that a new *considering* c) be added in square brackets, repeating the text of f), as amended, of draft Resolution [COM5-28].

1.48 It was so **agreed**.

1.49 On the proposal of the **Legal Adviser** and the **Chairman**, it was **agreed** to amend *resolves* 1 to read as follows: "that the allocation to the fixed-satellite service in the band 40.5 - 42.5 GHz shall not be provisionally applied before 1 January 2001". The **Chairman of ad hoc Group 3** pointed out in that connection that *resolves* 1 of draft Resolution [COM5-11] in Document 274 should be brought into line with that wording.

1.50 That observation was **noted**.

1.51 The **Chairman** invited the delegate of the Republic of Korea, the delegate of the United States and all interested delegations to consult together outside the meeting on the desirability of the proposed addition of a *considering* c), and said that the approval of draft Resolution [COM5-29] would be deferred to a later meeting of the Committee.

2 Consideration of country footnotes (continued) (Documents 40(Add.1)(Corr.5), 74(Add.3), 108(Add.2), 254, 272, 286)

2.1 The **Chairman** said that the Plenary had decided, after considering a number of footnotes on an exceptional basis, that only footnotes corresponding strictly to an agenda item could still be considered by the Conference. Working Group PLEN-1 was taking note of footnotes that were to be considered at future conferences.

Document 74(Add.3)

2.2 The **delegate of Viet Nam** said that his delegation was too small to be able to attend all meetings and had therefore been unable to submit proposal VIN/74/7 within the time-limit. He wished the name of his country to be added to footnote S5.331 as Viet Nam made considerable use of the band 1 215 - 1 300 MHz for the aeronautical radionavigation service.

2.3 The **Chairman** said that in view of the rules set by the Plenary, she was unable to consider the request by Viet Nam.

Document 108(Add.2)

2.4 The **delegate of Nigeria** wished the name of his country to be included in the following footnotes: S5.323, S5.349, S5.495, S5.505 and S5.508. His delegation was also too small to be able to attend all the meetings, and he asked the Chairman to consider his Administration's request on an exceptional basis.

2.5 The **Chairman** said that she could not depart from the rules that had been laid down. She proposed, however, that proposal NIG/108/2 (MOD S.5.322), which in fact entailed the deletion of the name of Nigeria, should be taken into consideration. She was supported by the **delegates of Sweden** and **Germany**.

2.6 The **delegates of Zimbabwe** and **Tanzania** wished the names of their countries to be added to footnote MOD S5.322. Those requests were accepted.

2.7 MOD S5.322, as amended, was **approved**.

2.8 The other proposals in Document 108(Add.2) were not considered.

Document 254

2.9 The **Chairman** regretted that proposals SLV/254/1 and 3 could not be taken into consideration, because they had been submitted outside the statutory time-limit, and proposed that note be taken only of proposals SLV/254/2 and 4.

2.10 It was so **agreed**.

Document 272

2.11 The **Chairman** regretted that proposal EQA/272/1 (MOD S5.293) could not be taken into consideration, because it did not correspond strictly to item 1.9.1 of the Conference agenda.

Document 286

2.12 The **Chairman** noted that, with the exception of proposals COD/286/8 (MOD S5.393) and 9 (MOD S5.400), which, as they did not correspond to any item on the Conference agenda, could not be taken into consideration, all the other proposals only entailed the replacement of the name of Zaire by Democratic Republic of the Congo and could therefore be accepted.

2.13 With the exception of proposals COD/286/8 (MOD S5.393) and COD/286/9 (MOD S5.400), proposals COD/286/1 to 14 were **approved**.

Document 40(Add.1)(Corr.5)

2.14 Proposal IAP/40/220 (MOD S5.221), contained in Document 40(Add.1)(Corr.5), updating the proposal that had been submitted in Document 40(Add.1)(Corr.2), was **noted**.

3 MSS and FSS issues (continued)

3.1 The **Chairman of ad hoc Group 6** reminded the Committee that at the seventh meeting he had stated that, because amendments had been made to the MSS feeder links in the bands 19 and 29 GHz which might require immediate decisions by the Conference prior to the entry into force of the Final Acts, the Group had prepared a draft amendment to Resolution 120 (WRC-95). That text had been transmitted to all the delegations concerned, some of which had already given him their comments.

3.2 The **representative of BR** said that Committee 4 was working on parallel lines and was also preparing a draft resolution to cover all the provisions which were to enter into force immediately after the Conference. Being in favour of the preparation of a joint text for Committees 4 and 5, similar to Resolution 47 (WRC-95), the Chairman invited all the delegations concerned to submit their comments as soon as possible to the Chairman of ad hoc Group 6 and suggested that the work of the two Committees in that field be coordinated with a view to preparing a single draft resolution which could be submitted to Committee 5 at a later meeting.

3.3 It was so **agreed**.

The meeting rose at 2250 hours.

The Secretary:
J. LEWIS

The Chairman:
V. RAWAT

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 377-E
27 November 1997
Original: French

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 5

SUMMARY RECORD

OF THE

TWELFTH MEETING OF COMMITTEE 5

(ALLOCATIONS AND ASSOCIATED ISSUES)

Tuesday, 18 November 1997, at 0935 hours

Chairman: Mrs V. RAWAT (Canada)

Subjects discussed		**Documents**
1	Frequency band 450 - 460 MHz	DT/151
2	Documents submitted by ad hoc Group 3 (continued)	DT/131
3	Sixth report of Working Group 5B (continued)	262

1 Frequency band 450 - 460 MHz (Document DT/151)

1.1 The **delegate of Canada**, who had coordinated informal discussions on footnotes relating to allocations limited to the mobile-satellite service in the 400 MHz band, said that it had been agreed to strengthen the regulatory provisions aimed at ensuring protection for terrestrial services by amending two existing footnotes, namely Nos. S5.286B and S5.286C, so as to make them applicable to the three Regions.

1.2 The **delegate of Turkey**, observing that it was customary to refer first to allocations and subsequently to the rules applicable to such allocations, suggested that the order of the footnotes should be changed. He also wondered whether it might be desirable to combine footnotes ADD S5.286D and ADD S5.286E.

1.3 The **delegate of Canada** said that BR could subsequently change the order of the footnotes, and that it had been agreed to establish two separate footnotes (ADD S5.286D and ADD S5.286E) to refer to different frequency bands.

1.4 The **delegate of Syria** requested clarification of the meaning of the last sentence of footnote ADD S5.286E in regard to the protection of the mobile-satellite service allocations mentioned in footnotes S5.286B and S5.286C. The **delegate of Canada**, observing that Resolution 46 (Rev.WRC-95) applied to the coordination of mobile-satellite systems with other satellite systems, explained that it had been considered that amendment of footnotes S5.286B and S5.286C would ensure sufficient protection for terrestrial services, both fixed and mobile. The **Chairman** pointed out that footnotes ADD S5.286D and ADD S5.286E concerned allocations for uplinks to the mobile-satellite service in Region 2 and some countries in Region 3. Those allocations for uplinks were subject to the provisions of Resolution 46. If the delegate of Syria was seeking clarifications, that was probably because Region 1 had no allocation for uplinks. The **delegate of Syria** said that, if footnote ADD S5.286E concerned only coordination between non-GSO systems or between non-GSO systems and GSO systems, his delegation had no objection. On the other hand, if the footnote affected the fixed service or the mobile service, his delegation favoured the deletion of the last sentence, since it would be sufficient to note that what was involved was additional allocations, and four countries mentioned in the footnote belonged to Region 1. The **representative of BR** explained that the mobile-satellite service did not need to coordinate with the fixed and mobile services, as was indicated in footnotes MOD S5.286B and MOD S5.286C, and that the Resolution 46 coordination procedure applicable to the mobile-satellite service was limited to interactions between non-GSO mobile-satellite service systems, as was made clear by footnotes ADD S5.286D and S5.286E.

1.9 The **Chairman** suggested, in the interests of clarity, that the last part of the second sentence of footnotes ADD S5.286D and ADD S5.286E should be amended to read: "… and is limited to coordination between non-geostationary-satellite systems". As the **delegate of Germany** observed that those allocations concerned only non-GSO systems and that the application of Resolution 46 was also limited to non-GSO systems, she suggested that the first part of the second sentence of footnotes ADD S5.286D and ADD S5.286E should be amended to read: "The use of these bands by non-geostationary-satellite systems is subject to coordination …". The **representative of BR** observed that, if that phrase was inserted, Resolution 46 would no longer apply solely to primary allocations to the fixed service and the mobile service, but also to earth stations and stations of other terrestrial services, the allocations to which had different status.

1.10 The **delegate of Sweden** observed that, under the terms of No. S5.209 of the Radio Regulations, the use of the bands 455 - 456 MHz and 459 - 460 MHz by the mobile-satellite service

was limited to non-GSO systems. He asked whether the allocations on a primary basis set out in the Table for the bands in question for Region 2 differed from those indicated in the footnotes. The **representative of BR** replied that there was no difference between the mobile-satellite service allocations in the footnotes for band 454 - 455 MHz and those contained in the Table for Region 2. Resolution 46 applied equally to terrestrial fixed and mobile services in both cases. The **Chairman**, returning to the observation by the delegate of Sweden, said that the band 454 - 455 MHz should be taken into account in footnote S5.209.

1.11 It was **agreed** to amend footnote S5.209 to include the band 454 - 455 MHz and consequentially to modify all references to that footnote in the Tables of Frequency Allocations already approved, by adding the prefix MOD to S5.209.

1.12 The **delegate of France** suggested that, in No. S5.286A of the Radio Regulations, the band 455 - 456 MHz should be replaced by the band 454 - 456 MHz and that, in the table for the band 450 - 455 MHz, reference should be made to footnote S5.286A, as amended, in order to make it possible to delete all mention of Resolution 46 in footnotes ADD S.286D and ADD S.286E. The **delegate of Turkey** supported the French proposal and suggested the following wording for the end of the first sentence of footnotes ADD S5.286D and ADD S5.286E: "… on a primary basis, and the use of this band by the mobile-satellite service is limited to non-geostationary-satellite systems".

1.13 The **Chairman**, summing up the exchanges of views, said that footnote S5.286A would be amended to include the band 454 - 455 MHz and that all references to footnote S5.286A would be preceded by the symbol MOD in the Table of Frequency Allocations. The phrase referring to coordination under Resolution 46 in footnotes ADD S5.286D and ADD S5.286E would be deleted. All references to footnote S5.209 in the Tables of Frequency Allocations would also be preceded by the symbol MOD. The **delegate of Viet Nam** added that a reference to footnote MOD S5.209 should be inserted in the tables for the band 450 - 455 MHz.

1.14 It was so **agreed**.

1.15 The **delegate of Chile** said that the allocations in the band 454 - 455 MHz should retain the same status as the allocations in the band 455 - 456 MHz, since footnotes were in fact being used to give allocations a regional status. His delegation was opposed to the adoption of footnotes MOD S5.286B and MOD S5.286C, as set out in Document DT/151, and thought that the use of the band 454 - 455 MHz should be mentioned, for countries which so requested, in footnote ADD S5.286D.

1.16 The **delegate of Canada** said that the mobile-satellite service could be authorized only in the countries named in the footnotes. The amendment to footnotes S5.286B and S5.286C was designed to strengthen the regulatory nature of those provisions by ensuring that they were applied uniformly in the three Regions.

1.17 The **delegate of the United Kingdom** proposed that, to take account of the observation by the delegate of Chile, the first part of footnotes MOD S5.286B and MOD S5.286C should be amended to read: "The use of stations in the mobile-satellite service … and 459 - 460 MHz in the countries listed in Nos. S5.286D and S5.285E shall not …".

1.18 The **Chairman**, supported by the **delegate of Sweden**, observed that the reference to the countries listed in footnotes ADD S5.286D and ADD S5.286E was incomplete, since it should also be mentioned that 2 MHz of those allocations corresponded to Region 2, which would only complicate matters. She pointed out that the allocations were sufficiently clearly defined in the table and in the footnotes.

1.19 The **delegate of Colombia** was also of the opinion that footnotes MOD S5.286B and MOD S5.286C related to allocations in the bands 455 - 456 MHz and 459 - 460 MHz, and not to additional allocations. Concerning the latter, footnotes ADD S5.286D and ADD S5.286E listed countries having additional allocations in those bands and the conditions for use of such allocations by the countries concerned. The **Chairman** said that any explanatory wording that might have to be inserted in the footnotes should be taken on as consequential action resulting from the adoption of the footnotes, not as amendments to them.

The **delegates of Lebanon** and **Malawi** asked that the names of their countries be deleted from the list in footnote ADD S5.286E.

1.20 Document DT/151, as amended, was **approved**.

2 Documents submitted by ad hoc Group 3 (continued) (Document DT/131)

2.1 The **Chairman of ad hoc Group 3** said that the discussions focusing on footnote S5.551A and on the difficulties encountered by BR in interpreting and applying that text had resulted in a proposal to amend the footnote to read: "In making assignments to stations in the fixed-satellite service (space-to-Earth) using the band 41.5 - 42.5 GHz, administrations should be guided by the results of the studies referred to in Resolution [COM5-16]". In response to a query by the **representative of IUCAF** about the situation that would be created if the studies in question could not be completed, the **Chairman of ad hoc Group 3** pointed out that Resolution [COM5-16] provided that a report on the results of the studies would be submitted to WRC-99, which allowed a period of at least two years. He added that the second part of the proposal dealt precisely with Resolution [COM5-16], where a paragraph *urges administrations* 1 would be inserted with the following wording: "not to implement fixed-satellite systems in the band 41.5 - 42.5 GHz until technical and operational means have been identified to protect the radio astronomy service from harmful interference in the band 42.5 - 43.5 GHz". The current wording under *urges administrations* would then be numbered 2.

2.2 The **delegate of the Netherlands** considered that the original text of footnote S5.551A, as contained in Document DT/88(Rev.1), constituted a more definite regulatory prohibition and protected the radio astronomy service better than the new version of Resolution [COM5-16]. The **delegate of India** was also in favour of maintaining the original text of footnote S5.551A. The **Chairman** recalled that the original text of the footnote posed problems for BR and that, in any event, the studies would produce results by 1999 and the frequency allocations would not be made before 2001.

2.3 The **delegate of the United States** acknowledged the concerns expressed with regard to the radio astronomy service and suggested that the wording proposed by the Chairman of ad hoc Group 3 as *urges administrations* 1 should be converted into a *resolves*.

2.4 The **delegates of Germany** and **the Netherlands** favoured retention of the original text of footnote S5.551A, with the adoption of the United States proposal concerning Resolution [COM5-16]. The **delegate of Sweden** considered that the amendment proposed by the Chairman of ad hoc Group 3 for footnote S5.551A, which was to add the phrase "In making assignments to stations in the fixed-satellite service", was absolutely necessary because it made the footnote comprehensible and applicable and took account of the difficulties encountered by BR. The **Chairman of ad hoc Group 3** took the view that, if Resolution [COM5-16] was strengthened in accordance with the United States proposal, it was enough for footnote S5.551A to say that "Use of

the fixed-satellite service (space-to-Earth) allocations in the band 41.5 - 42.5 GHz is subject to Resolution [COM5-16]".

2.5 The **Chairman** suggested that the latest version of footnote S5.551A proposed by the Chairman of ad hoc Group 3 should be approved and that Resolution [COM5-16] should be amended in accordance with the United States proposal.

2.6 It was so **agreed**.

2.7 The **Chairman of ad hoc Group 3** said that the final outstanding issue in respect of Document DT/131 concerned the proposal to insert, under *considering* in Resolution [COM5-29], a point c) similar to *considering* f) of Resolution [COM5-28]. In his view, that amendment would be better placed in Resolution [COM5-17]. The **delegate of the Republic of Korea** supported that proposal. The **Chairman** therefore suggested that a new *considering* c) should be inserted in Resolution [COM5-17] with the following wording: "that it may be useful to consider the identification of the spectrum range for high-density fixed service applications"; consequential editorial amendments would then be made to the other *considering* paragraphs.

2.8 It was so **agreed**.

2.9 The **delegate of the United Kingdom** said that, in *considering* c) of Resolution [COM5-28], which was based on a European proposal, "cause" should be replaced by "result in", "or receive interference" by "the fixed-satellite service", "other service" by "fixed service", and "each service" by "the fixed-satellite service".

2.10 The **Chairman of ad hoc Group 3**, said that, in view of the decisions taken with regard to the 40 GHz band, the Committee was no longer required to take a decision on Document 312.

2.11 The **delegate of Oman** said that the authors of Document 317 withdrew their proposal concerning footnote S5.316.

2.12 The **Chairman** said that the delegate of Malaysia had informed her of his intention to submit a statement, for insertion in the summary record of the meeting, concerning the footnotes to allocations in the 55 GHz band for intersatellite links, in order to indicate that the notices already being processed by BR would remain subject to the existing procedure and would not be covered by the new footnotes. The Committee had thus completed its consideration of the work of Working Group 5C.

3 Sixth report of Working Group 5B (continued) (Document 262)

3.1 The **Chairman** suggested that sections 2 and 3 of Document 262 should be referred to the Plenary.

3.2 It was so **agreed**.

The meeting rose at 1155 hours.

The Secretary:
J. LEWIS

The Chairman:
V. RAWAT

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 378-E
20 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

NOTE BY THE CHAIRMAN OF COMMITTEE 4

RESOLUTION [PLEN-X]

IMPLEMENTATION OF ANNEX 5 TO APPENDIX S30 (Rev.WRC-97) AND ANNEX 3 TO APPENDIX S30A (Rev.WRC-97)

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that this Conference has modified the Plan for the BSS in the frequency bands 11.7 - 12.2 GHz in Region 3 and 11.7 - 12.5 GHz in Region 1, as well as the Plan for feeder links for the BSS in the frequency bands 14.5 - 14.8 GHz and 17.3 - 18.1 GHz in Regions 1 and 3, using the updated technical criteria as contained in Annex 5 to Appendix **S30 (Rev.WRC-97)** and Annex 3 to Appendix **S30A (Rev.WRC-97)**;

b) that this Conference decided that the provisions of the Radio Regulations, as revised by WRC-97, shall provisionally apply as from 1 January 1999;

c) that there is a need to apply the same technical criteria for processing new Article 4 submissions, so as to avoid problems of parallel set of technical criteria,

resolves to instruct the Bureau

to apply, as of 22 November 1997, the technical data contained in Annex 5 to Appendix **S30 (Rev.WRC-97)** and Annex 3 to Appendix **S30A (Rev.WRC-97)** to the submissions under Articles 4 and 5 of these Appendices.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 379-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.7 **PLENARY MEETING**

SEVENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**
COM 6	296(Add.1)	**ANNEX 2 TO APPENDIX 30 (S30)** **ANNEX 2 TO APPENDIX 30A (S30A)**
	353	**RESOLUTION PLEN-3 (WRC-97)**
	367+Corr.1	**RESOLUTION GTPLEN1-3 (WRC-97)** **RESOLUTION GTPLEN1-4 (WRC-97)**
	288 (B.6)	**RESOLUTION COM5-14 (WRC-97)**
	367	**RESOLUTION 720 (WRC-95)**

A.-M. NEBES
Chairman of Committee 6

Annex: 18 pages

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ANNEX 2

(to Appendix 30 (S30))

(NOC) 12. Space station transmitting antenna characteristics:

(MOD) *d)* sense of polarization, and, in the case of a linear polarization, the angle (in degrees) measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the wave as seen from the satellite in the direction of the nominal boresight or aim point as defined under item 8 above;

(NOC) 14. Modulation characteristics:

(ADD) *i)* in the case of a digital modulation, the effective and transmitted bit/symbol rates.

(ADD) 22. Connection between Earth-to-space and space-to-Earth frequencies in the network in the case of Region 2.

(ADD) 23. Description of the group(s) required in the case of non-simultaneous emissions.

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ANNEX 2

(to Appendix 30A (S30A))

(NOC) 1.6 Modulation characteristics:

(ADD) *i)* in the case of a digital modulation, the effective and transmitted bit/symbol rates.

(NOC) 2.6 Earth station transmitting antenna characteristics:

(MOD) *f)* sense of polarization, and, in the case of a linear polarization, the angle (in degrees) measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the wave as seen from the satellite in the direction of the nominal boresight or aim point as defined under items 3.4 *e)* or 3.4 *f)* below;

(NOC) 3.4 Space station receiving antenna characteristics:

(MOD) *d)* sense of polarization, and, in the case of a linear polarization, the angle (in degrees) measured counter-clockwise in a plane normal to the beam axis from the equatorial plane to the electric vector of the waves as seen from the satellite in the direction of the nominal boresight or aim point as defined under items 3.4 *e)* or 3.4 *f)* below;

(ADD) 4. Connection between Earth-to-space and space-to-Earth frequencies in the network in the case of Region 2.

(ADD) 5. Description of the group(s) required in the case of non-simultaneous emissions.

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RESOLUTION PLEN-3 (WRC-97)

REVIEW AND POSSIBLE REVISION OF THE 1997 BSS PLANS FOR REGIONS 1 AND 3

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that it has adopted a revision of the BSS Plans for Regions 1 and 3 providing capacity for all new countries in accordance with Resolutions **524 (WARC-92)** and **531 (WRC-95)**;

b) that certain countries requested that a replanning be undertaken in order to increase the Plan capacity so as to provide a channel capacity large enough to permit the economical development of a broadcasting-satellite system;

c) the increasing number of applications under Article **4** for modifications involving additions to the Plans;

d) the rights of all Member States to equitable access to the spectrum allocated to satellite broadcasting, and that Article **44** of the Constitution provides, *inter alia*, that "Members shall bear in mind that radio frequencies and the geostationary-satellite orbit are limited natural resources and that they must be used rationally, efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to both",

resolves

1 that an inter-conference representative group (IRG) shall be established in accordance with Annex 2;

2 that the Director of the Radiocommunication Bureau shall present the results of the IRG's studies to [WRC-99] regarding the feasibility of increasing the minimum assigned capacity for countries in Regions 1 and 3 to around ten analogue-equivalent channels, based on the planning principles in Annex 1;

3 that [WRC-99] should consider the results of the above studies and, if the conclusion is that such replanning is feasible, initiate an appropriate revision for completion no later than 2001,

invites ITU-R

to study, as a matter of urgency, the technical possibilities for increasing the minimum capacity assigned to all Region 1 and 3 countries in the Plans for Regions 1 and 3 contained in Appendices **30** and **30A**, in cooperation with the IRG and in accordance with the principles set out in Annex 1,

invites the Council to recommend to the 1998 Plenipotentiary Conference

to consider convening a world radiocommunication conference no later than 2001 to revise those parts of the Plans in Appendices **S30** and **S30A** applying to Regions 1 and 3, subject to consideration by [WRC-99] of the results of the studies carried out by the IRG,

instructs the Secretary-General

to bring this Resolution to the attention of the Council, with a view to undertaking, at competent conferences, a review of the studies and, if necessary, a revision of the relevant parts of Appendices **S30** and **S30A** and associated provisions of the Radio Regulations.

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ANNEX 1

Principles for the review and possible revision of the 1997 BSS Plans for Regions 1 and 3

The 1997 World Radiocommunication Conference, reviewed the planning principles proposed by several administrations and those adopted by WRC-95 in Resolution 531, and agreed to establish an inter-conference representative group (IRG) to carry out studies in accordance with the principles given below.

These principles are to be used in assessing the possibilities for meeting the objectives in this Resolution.

1) Provide, for all countries, a minimum capacity equivalent to around ten analogue channels while maintaining the same proportionality adopted by WARC-77.

2) Planning is to be based mainly on national coverage.

3) Protect notified assignments which are in conformity with Appendices 30 and 30A, which have been brought into use and for which the date of bringing into use has been confirmed to the Bureau.

4) In order to avoid obsolescence of the plans, caused by technical assumptions becoming out of date, ensure that the Plan is established with a view to achieving long-term flexibility.

5) Leaving capacity for future additional requirements.

6) Consider, for planning, whether a complete digital approach may be appropriate in the future and, if so, provide for the simultaneous operation of analogue and digital systems, if necessary during a defined time-scale.

7) Ensure that the integrity of the Region 2 Plans and their associated provisions is preserved, by providing the same protection to the assignments contained in those Plans as now received under the relevant provisions of the Radio Regulations, and by not requiring more protection from assignments in the Region 2 Plans than that currently provided under the Radio Regulations.

8) Ensure compatibility between the broadcasting-satellite service in Regions 1 and 3 and services having allocations in the planned bands in all three Regions.

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ANNEX 2

Inter-conference representative group

WRC-97 has resolved that an inter-conference representative group (IRG) be established to study the feasibility of increasing the minimum capacity for countries in Regions 1 and 3 to around the equivalent of ten analogue channels in accordance with the principles set out in Annex 1.

The IRG should be structured to consist of:

- a supervisory policy group open to participation by all Members States, but endeavouring to ensure adequate representation of administrations from all ITU regions;
- the Bureau, assisted by a group of technical experts (GTE) and working under the guidance of the supervisory policy group. Members of the GTE should be drawn from all Sector Members on the basis of technical expertise.

JWP 10-11S is encouraged to contribute to the studies requested of ITU-R, as appropriate.

Requests for additional studies by the IRG

1) Annex 7 of Appendix 30

The IRG is requested to examine Annex 7 in the light of its studies for possible revision of the BSS Plans and with respect to the decisions taken by WRC-97, such as the reduction of downlink e.i.r.p. Its advice on the relevance of that Annex in providing protection to all services sharing the plan bands, and particularly the Region 2 BSS Plans, should be reported to [WRC-99].

2) Avoidance of monopolization of the BSS resource

The IRG is requested to consider concerns identified by WRC-97: modifications of the Plans for additional requirements or subregional systems should not lead to monopolization of the use of the bands by a country or a group of countries. Advice on how to address these concerns should be reported to [WRC-99].

Requests for studies by ITU-R

ITU-R is requested to study and provide advice to the IRG on the following subjects.

1) Appropriate technical criteria for the studies addressing the following:

- digital-to-digital protection ratios;
- digital-to-analogue protection ratios;
- analogue-to-digital protection ratios;
- digital emission masks;

and associated calculation methods.

2) A possible reduction in e.i.r.p. and related C/N ratio and link budget margins, as a means of alleviating BSS/terrestrial compatibility constraints.

3) Appropriate feeder-link e.i.r.p. and receiver noise temperature.

4) Comparison of alternative polarization options.

5) The suitability of the minimum earth receive elevation angles used by WARC-77.

Request to ITU

ITU is requested to provide the necessary assistance to facilitate the active participation of developing countries, especially the LDCs, in both the supervisory policy group and the technical group of experts of the IRG.

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RESOLUTION GTPLEN1-3 (WRC-97)

AGENDA FOR THE 1999 WORLD RADIOCOMMUNICATION CONFERENCE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that in accordance with Nos. 118 and 126 of the Convention of the International Telecommunication Union (Geneva, 1992), the general scope of the agenda for a world radiocommunication conference should be established four years in advance and a final agenda shall be established two years before the conference;

b) Article **13** of the Constitution of the International Telecommunication Union (Geneva, 1992) regarding the competence and scheduling of world radiocommunication conferences and Article **7** of the Convention (Geneva, 1992) regarding their agendas;

c) the relevant Resolutions and Recommendations of previous world administrative radio conferences (WARC) and world radiocommunication conferences (WRC),

recognizing

a) that this Conference has identified a number of urgent issues requiring further examination by the 1999 World Radiocommunication Conference (WRC-99);

b) that in preparing this agenda, many proposals from administrations could not be included and have had to be deferred to future conference agendas,

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resolves

to recommend to the Council that a world radiocommunication conference be held in late 1999[1] for a period of four weeks, with the following agenda:

1 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, taking account of the results of WRC-97, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action in respect of the following topics:

1.1 requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, in accordance with Resolution **26 [(Rev.WRC-97)]**;

1.2 to finalize remaining issues in the review of Appendix **S3** to the Radio Regulations with respect to spurious emissions for space services, taking into account Recommendation **66 (Rev.WRC-97)** and the decisions of WRC-97 on adoption of new values, due to take effect at a future time, of spurious emissions for space services;

1.3 to consider the results of ITU-R studies in respect of Appendix **S7 [28]** on the method for the determination of the coordination area around an earth station in frequency bands shared among space services and terrestrial radiocommunication services, and take the appropriate decisions to revise this Appendix;

1.4 to consider issues concerning allocations and regulatory aspects related to Resolutions **[COM5-11], [COM5-12]**, **[COM5-16], [COM5-17]**, **[COM5-28]** and **[COM5-29]**;

1.5 to consider regulatory provisions and possible additional frequency allocations for services using high altitude platform stations, taking into account the results of ITU-R studies conducted in response to Resolution **[COM5-7]**;

1.6 issues related to IMT-2000;

1.6.1 review of spectrum and regulatory issues for advanced mobile applications in the context of IMT-2000, noting that there is an urgent need to provide more spectrum for the terrestrial component of such applications and that priority should be given to terrestrial mobile spectrum needs, and adjustments to the Table of Frequency Allocations as necessary;

1.6.2[2] identification of a global radio control channel to facilitate multimode terminal operation and worldwide roaming of IMT-2000;

1.7 review the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view to protecting the operational, distress and safety communications, taking into account Resolution **[COM4-9]**;

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[1] See Resolution [GTPLEN1-2].

[2] The text of this item has not been finalized.

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1.8 to consider regulatory and technical provisions to enable earth stations of the maritime mobile-satellite service to operate in the fixed-satellite service networks in the bands 3 700 - 4 200 MHz and 5 925 - 6 425 MHz, including their coordination with other services allocated in these bands;

[1.9 review of the use of the bands in the frequency range 1.5 - 1.7 GHz by the mobile-satellite service, taking into account Resolutions **[COM5-22]** and **[COM5-XX]**;]

1.10 to consider results of ITU-R studies carried out in accordance with Resolution **[COM5-24]** and take appropriate action on this subject;

1.11 to consider constraints on existing allocations and to consider additional allocations on a worldwide basis for the non-GSO/MSS below 1 GHz , taking into account the results of ITU-R studies conducted in response to Resolutions No. **214 (Rev.WRC-97)** and **[COM5-25]**;

1.12 to consider the progress of studies on sharing between feeder links of non-geostationary satellite networks in the mobile-satellite service and geostationary-satellite networks in the fixed-satellite service in the bands 19.3 - 19.7 GHz and 29.1 - 29.5 GHz, taking into account Resolution No. **121 (Rev. WRC-97)**;

1.13 on the basis of the results of the studies in accordance with Resolutions **[COM5-18], [COM5-19]** and **[COM5-23]**:

1.13.1 review and, if appropriate, revise the power limits appearing in Articles **S21** and **S22** in relation to the sharing conditions among non-GSO FSS, GSO FSS, GSO BSS, space sciences and terrestrial services, to ensure the feasibility of these power limits and that these limits do not impose undue constraints on the development of these systems and services;

1.13.2 consider the inclusion of limits similar to those in Articles **S21** and **S22** in other frequency bands, or other regulatory approaches to be applied in relation to sharing situations;

1.14 review the results of the studies on the feasibility of implementing non-GSO MSS feeder links in the 15.43 - 15.63 GHz in accordance with Resolution **[COM5-8]**;

1.15 issues related to the radionavigation-satellite service:

1.15.1 to consider new allocations to the radionavigation-satellite service in the range from 1 to 6 GHz required to support developments;

1.15.2 to consider the addition of the space-to-space direction to the radionavigation-satellite service allocations in the bands 1 215 - 1 260 MHz and 1 559 - 1 610 MHz;

1.15.3 to consider the status of allocations to services other than the radionavigation-satellite (**S5.355** and **S5.359**) in the band 1 559 - 1 610 MHz;

1.16 to consider allocation of frequency bands above 71 GHz to the earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution **[COM5-1]**;

1.17 to consider possible worldwide allocation for the earth exploration-satellite (passive) and space research (passive) services in the band 18.6 - 18.8 GHz, taking into account the results of the ITU-R studies;

1.18 consider the use of new digital technology for the maritime mobile service in the band 156 - 174 MHz and consequential revision of Appendix **S18 [18]**, taking into account Resolution **[COM4-3]**;

1.19 to consider the report of the IRG submitted by the Director of the Radiocommunication Bureau in accordance with Resolution [**COM4-22**] and determine whether to initiate replanning for completion by a subsequent competent conference;

1.20 consider the report from the Radiocommunication Bureau on results of the analysis in accordance with Resolution **[COM4-20]** and take appropriate actions;

2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations which have been communicated by the 1999 Radiocommunication Assembly, in accordance with Resolution **28 (WRC-95)**; and decide whether or not to update the corresponding references in the Radio Regulations, in accordance with principles contained in the Annex to Resolution **27 (Rev.WRC-97)**;

3 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;

4 in accordance with Resolution **[GTPLEN1-1]**, to review the Resolutions and Recommendations of previous conferences with a view to their possible revision, replacement or abrogation;

5 to review, and take appropriate action on, the report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention (Geneva, 1992);

6 to identify those items requiring urgent actions by the radiocommunication study groups in preparation for the 2001 World Radiocommunication Conference (WRC-01);

7 in accordance with Article 7 of the Convention (Geneva, 1992):

7.1 to consider and approve the report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-97;

7.2 to recommend to the Council items for inclusion in the agenda for WRC-01, and to give its views on the preliminary agenda for the 2003 Conference and on possible agenda items for future conferences,

further resolves

8 to recommend to the Council that extra budgetary and conference resources be provided so that the following items can be included in this agenda for WRC-99:

8.1 to consider the regulatory and technical provisions for the quasi-geostationary satellite networks;

8.2 to examine the spectrum requirements for telemetry, tracking, and telecommand of fixed-satellite service networks operating with service links in the frequency bands above 17 GHz;

8.3 to review the use of the frequency band 415 - 526.5 kHz by the aeronautical radionavigation and maritime mobile services;

8.4 to review the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view to meeting the changing needs of these services;

8.5 to consider possible extension of the allocation to the mobile-satellite service (Earth-to-space) on a secondary basis in the band 14.0 - 14.5 GHz to cover aeronautical applications as stipulated in Resolution **[COM5-2]**;

8.6 to consider the provision of up to 3 MHz of frequency spectrum for the implementation of telecommand links in the space research and space operation services in the frequency range between 100 MHz and 1 GHz, taking into account Resolution **[COM5-1]**;

8.7 to consider provision of up to 6 MHz of frequency spectrum to the earth exploration-satellite service (active) in the frequency band 420 - 470 MHz, in accordance with Resolution **[COM5-13]**;

8.8 consideration of changes to the allocations in Region 3 for the band 1 350 - 1 400 MHz to permit co-primary use by the fixed service;

invites the Council

to finalize the agenda and arrange for the convening of WRC-99 and to initiate as soon as possible the necessary consultation with Member States,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-99,

instructs the Secretary-General

to communicate this Resolution to concerned international and regional organizations.

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RESOLUTION GTPLEN1-4 (WRC-97)

PRELIMINARY AGENDA FOR THE 2001 WORLD RADIOCOMMUNICATION CONFERENCE

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that in accordance with Nos. 118 and 126 of the Convention of the International Telecommunication Union (Geneva, 1992), the general scope of the agenda for the 2001 World Radiocommunication Conference (WRC-01) should be established four years in advance;

b) Article 13 of the Constitution of the International Telecommunication Union (Geneva, 1992) regarding the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention (Geneva, 1992) regarding their agendas;

c) the relevant Resolutions and Recommendations of previous world administrative radio conferences and world radiocommunication conferences,

resolves to give the view

that the following items should be included in the preliminary agenda of WRC-01, to be held in late 2001:

1 to take appropriate action in respect of those urgent issues that were specifically requested by the 1999 World Radiocommunication Conference (WRC-99);

2 on the basis of proposals from administrations and the Report of the Conference Preparatory Meeting, and taking account of the results of WRC-99, to consider and take appropriate action in respect of the following topics:

2.1 requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, taking into account Resolution **26 (WRC-97)**;

2.2 consideration of Article **S25** concerning the amateur and amateur-satellite services;

2.3 issues related to Appendix **S3**:

2.3.1 to consider the results of studies regarding the boundary between spurious and out-of-band emissions;

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2.3.2 to consider the inclusion of general limits for out-of-band emissions in the Radio Regulations, in particular with regard to whether it is appropriate to do so, taking into account the results of ITU-R studies;

2.4 review of the frequency and channel arrangements in the MF and HF bands allocated on a primary basis to the maritime-mobile service, taking into account the use of new digital technology, in accordance with Resolution **[COM4-10]**;

2.5 to review in Appendix **S2 [7]** the Table of Transmitter Frequency Tolerances, taking into account the frequency tolerance limits specified in Recommendation ITU-R SM.1045;

2.6 to consider the status of allocations to the radiolocation service in the bands around 3.0 GHz and around 5.5 GHz; [the date of a conference is under discussion];

2.7 sharing between the FSS and FS in the 19 GHz band, when used bidirectionally by the FSS to provide feeder links for non-geostationary satellite systems in the mobile-satellite service, in accordance with Resolution **[XXX]**;

2.8 to consider spectrum requirements for wideband aeronautical telemetry in the band between 3 and 30 GHz;

2.9 review of allocations to the space-research service (deep space) (space-to-Earth) and the inter-satellite service in the frequency range 32 - 32.3 GHz with a view to improving the sharing conditions between these services;

2.10 to consider Appendix **S13** and Resolution **331 (Rev.WRC-97)** with a view to their deletion and, if appropriate, consider related changes to Chapter SVII and other provisions of the Radio Regulations as necessary, taking into account the continued transition to the Global Maritime Distress and Safety System (GMDSS);

2.11 to consider the results of studies, and take necessary actions relating to:

2.11.1 the exhaustion of the maritime mobile service identity numbering resource (Resolution **[COM4-5]**);

2.11.2 shore-to-ship distress communication priorities (Resolution **[COM4-11]**);

2.12 consideration of the need to realign the allocations to the amateur, amateur-satellite and broadcasting services around 7 MHz on a worldwide basis, taking into account Recommendation **718 (WARC-92)**;

2.13 examination of the adequacy of the frequency allocations for HF broadcasting from about 4 MHz to 10 MHz, taking into account the seasonal planning procedures adopted by WRC-97, and to consider bringing forward the date of availability of the HF bands allocated by WARC-92 to the broadcasting service in response to Resolution **COM4-16** and Resolution **COM4-14**;

3 to consider the results of the studies related to the following with a view to considering them for inclusion in the agendas of future conferences:

3.1 Resolution **528 (WARC-92)**;

3.2 possible allocations in the frequency bands above 275 GHz;

3.3 potential for sharing around 4 300 MHz between radio altimeters and space-based passive earth sensors;

3.4 additional allocations on a worldwide basis for the non-GSO/MSS with service links operating below 1 GHz in accordance with Resolution **[COM5-14]**;

3.5 allocations on a worldwide basis for feeder links in bands around 1.4 GHz to the non-geostationary mobile-satellite services with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution **[COM5-15]**;

3.6 use of frequency adaptive systems in the MF/HF bands in accordance with Resolution **[COM4-7]**;

3.7 allocation of the frequency band 14.5 - 14.8 GHz to the fixed-satellite service (Earth-to-space) in Region 3 (expansion of FSS to include other than feeder links of the BSS);

4 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations which have been communicated by the 2001 Radiocommunication Assembly, in accordance with Resolution **28 (WRC-95)**; and decide whether or not to update the corresponding references in the Radio Regulations, in accordance with the principles contained in the Annex to Resolution **27 (Rev.WRC-97)**;

5 to consider such consequential changes and amendments to the Radio Regulations as may be necessitated by the decisions of the Conference;

6 in accordance with Resolution **[GTPLEN1-1]**, to review those Resolutions and Recommendations of the previous conferences with a view to their possible revision, replacement or abrogation;

7 to review, and take appropriate action on, the report from the Radiocommunication Assembly submitted in accordance with Nos. 135 and 136 of the Convention of the ITU (Geneva, 1992);

8 to identify those items requiring urgent action by the radiocommunication study groups;

9 in accordance with Article 7 of the Convention of the ITU (Geneva, 1992):

9.1 to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-99;

9.2 to recommend to the Council items for inclusion in the agenda for the 2003 World Radiocommunication Conference,

invites the Council

to consider the views given in this Resolution,

instructs the Director of the Radiocommunication Bureau

to make the necessary arrangements to convene meetings of the Conference Preparatory Meeting and to prepare a report to WRC-01,

instructs the Secretary-General

to communicate this Resolution to concerned international and regional organizations.

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RESOLUTION COM5-14 (WRC-97)

STUDIES RELATING TO CONSIDERATION OF ALLOCATIONS IN THE BROADCASTING BAND 470 - 862 MHz TO NON-GEOSTATIONARY MOBILE-SATELLITE SERVICES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that the agenda of this Conference included consideration of the adoption of additional allocations for non-geostationary mobile-satellite services (non-GSO MSS);

b) that the Report of the 1997 Conference Preparatory Meeting (CPM-97) stated that the Radiocommunication Bureau has identified at least 23 non-GSO MSS networks at frequencies below 1 GHz, at some state of coordination under Resolution 46, and that many of the proposed networks cannot be implemented in the existing allocations because there is not enough spectrum;

c) that CPM-97 considered the protection requirements for analogue television in the band 470 - 862 MHz against a narrow-band MSS signal in the most sensitive and least sensitive portions of an analogue television channel and the protection requirements for a digital television channel, based on existing ITU-R Recommendations (BT.655-4, BT.417-4 and IS.851-1);

d) that CPM-97 stated that the protection ratios for a narrow-band interfering signal in the least sensitive parts of an analogue television channel are to be verified by further studies;

e) that CPM-97 stated the region of lower protection requirements and commensurately higher permissible interfering power flux-density levels as being 100 kHz from the band edges of an analogue television channel, at least in some countries;

f) that CPM-97 stated that the interfering effects of a non-GSO MSS transmission will depend on its specific characteristics (e.g. duty-cycle, duration, periodicity, etc.), that interference contributions from sources other than MSS (even those from other broadcasting stations) have to be taken into account, that slightly lower values of field strength to be protected may need to be assumed in countries where television networks are relatively sparse, and that studies on sharing are necessary;

g) that the permissible aggregate interfering power flux-density resulting from these protection requirements, in some portions of an analogue television channel, may be useful in determining the feasibility of sharing with non-GSO MSS transmitter space-to-Earth links;

PINK PAGES

h) that these bands are also allocated in part to fixed and mobile terrestrial systems and radionavigation systems;

i) that, in many countries, the channels assigned for analogue television may also be used for digital television, and that during the period of parallel operation of analogue and digital television networks the usage of this band for television will increase,

noting

a) that on completion of studies, parts of the bands now allocated to the broadcasting service between 470 MHz and 862 MHz might be considered suitable for worldwide allocation to non-GSO MSS space-to-Earth transmissions;

b) that the bandwidth required in these television channels may be 1-2% of the total band 470 - 862 MHz to be shared with the above systems;

c) the need to protect the radio astronomy service in the band 608 - 614 MHz against interference from MSS transmissions, including unwanted emissions,

resolves

1 to invite ITU-R to carry out studies to determine operational and technical means that may facilitate co-frequency sharing between narrow-band non-GSO MSS (space-to-Earth) transmissions and the services to which the band 470 - 862 MHz is allocated, including the bands where the broadcasting service is also allocated;

2 to invite a future competent conference to consider, on the basis of the results of the studies referred to in *resolves* 1, the possibility of making additional allocations on a worldwide basis for non-GSO MSS, taking into account, in particular, *considering* h) and i) above,

urges administrations

to participate actively in such studies, with the involvement of interested parties.

SUP RESOLUTION 720 (WRC-95)

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 380-E
27 November 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

SUMMARY RECORD

OF THE

TENTH MEETING OF COMMITTEE 4

(REGULATORY AND ASSOCIATED ISSUES)

Monday, 17 November 1997, at 1940 hours

Chairman: Mr. E. GEORGE (Germany)

Subjects discussed		**Documents**
1	Third report of Working Group 4A	248(Rev.1)
2	Fourth report of Working Group 4A	295
3	Fifth report of Working Group 4A	304
4	Second to sixth reports of Working Group 4C	268, 285, 301, 302, 303
5	Reports of Working Group 4D	276, 296, 305

1 Third report of Working Group 4A (Document 248(Rev.1))

1.1 The **Chairman of Working Group 4A**, introducing Document 248(Rev.1), reported completion of the Group's work. The Working Group had reviewed Annexes 1A and 1B to Appendix S4 from the point of view of their consistency with other provisions of the Radio Regulations, and had taken into account the note from the Chairman of Working Group 4C, relating to HF broadcasting.

1.2 The **Chairman** invited the Committee to consider Document 248(Rev.1).

1.3 The **Chairman of Working Group 4A**, supported by the **delegate of the United States**, in response to a question by the **Chairman of Working Group 4C** on the proposed deletion of item 10C in Annex 1A, explained that the deletion had been proposed on the advice of the Bureau, which would not be examining the probability of harmful interference relating to fixed services in the unplanned HF bands, as decided by the WRC-95.

1.4 The proposed texts in Document 248(Rev.1) were **approved**.

2 Fourth report of Working Group 4A (Document 295)

2.1 The **Chairman of Working Group 4A**, introducing Document 295, drew attention to Attachment 1 which concerned the text of Articles S8, S13 and S14 of the simplified Radio Regulations. Consensus had only been reached on the contentious issue of Article S8 after intensive informal discussions. He indicated that the delegate of the United Arab Emirates, speaking on behalf of the Arab group of countries, had reserved his position regarding No. S13.12A. The text of No. S13.17A remained pending, awaiting the decision of Working Group 4D concerning the contents of the Plans annexed to Appendices S30 and S30A. Attachment 2 to Document 295 contained the revised text of Nos. S19.35 and S19.99, which took account of the discussion in Plenary, while the revised version of Resolution 13 (WRC-95) appeared in Attachment 3. In Attachment 4, the Working Group proposed deletion of certain resolutions and recommendations.

2.2 Regarding other issues related to coordination and notification, the Working Group, in § 4 of its report, proposed that the Conference instruct the Radiocommunication Bureau to update Appendix 27Aer.2 to reflect the appropriate geographical and political changes and the new scheme for designation of emissions, without altering the substance of those provisions. On the problem of identification of tropospheric scatter systems in the fixed service (Recommendation 100(Rev.WRC-95)), Working Group 4A endorsed the BR's suggestion to use the symbol "ST" as an indicator. He suggested that those two proposals should be submitted to the Plenary.

2.3 The proposals in §§ 4.1 and 4.2 of Document 295 were **approved**.

2.4 The **Chairman** invited the Committee to consider Attachments 1-4 to Document 295.

2.5 The texts for Article S8 were **approved**.

2.6 Referring to Article S13, the **representative of BR** observed that the French versions of Nos. S13.12A, S13.17A and S13.23B should be aligned with the English versions.

2.7 The **delegate of the United Arab Emirates,** speaking on behalf of the countries of the Arab group, reserved his position regarding ADD S13.12A, requesting that the matter be discussed further to take account of the Arab position contained in Document 76. Supported by the **delegate of the Islamic Republic of Iran**, he requested the deletion of the stipulation of a non-response within three months of dispatch of a reminder.

2.8 The **delegate of the United States,** supported by the **delegates of Luxembourg, the United Kingdom, the Netherlands, Japan** and **Canada**, opposed that request on the grounds that some cut-off date was required.

2.9 In response to the **Chairman's** enquiry as to whether a six-month deadline would be acceptable, the **delegate of the United Arab Emirates** suggested that, in order to give him time for discussion with the other Arab administrations, the contentious phrase should be placed in square brackets for decision by the Plenary.

2.10 It was so **agreed**.

2.11 The texts for Article S13, as amended, as well as the texts for Article S19, draft revised Resolution 13 (WRC-95) and the list of resolutions and recommendations proposed for deletion were **approved**.

3 Fifth report of Working Group 4A (Document 304)

3.1 The **Chairman of Working Group 4A** said that Document 304 contained the text of Article S9 revised to bring it into line with other provisions of the Radio Regulations, on the basis of the Committee's decisions taken in regard to Document 284 and reflecting some decisions taken by Working Group PLEN-2. The Group had also considered issues identified by RA-97 relating to the revised ITU-R Recommendations incorporated by reference and, on the basis of the Annex to Resolution 27 (WRC-95), proposed updating a series of references in the Radio Regulations, as set out in § 2 of Document 304. He added that a revised text of Resolution 27 was being prepared and would be submitted shortly.

3.2 The **Chairman** invited the Committee to consider Article S9, as set out in Attachment 1 to Document 304, and drew attention to ADD A.S9.4, which took the form of a new footnote.

3.3 The **Chairman of Working Group 4D** said that he had dispatched a note (Document DT/146) to the Chairman of Working Group 4A indicating to him that Document 284, concerning the methodology for treatment of procedural and regulatory questions relating to Appendices 30 and 30A, contained two items of relevance to the latter Group and sought clarification on whether that document had been taken into account.

3.4 The **delegate of the United States,** speaking as Chairman of the Drafting Group of Working Group 4A**,** explained that only the third subparagraph of Document 284 had been discussed.

3.5 In response to the **Chairman's** call for suggestions for the relevant regulatory language, the **delegate of the United States** proposed that the appropriate wording should be drawn from the note against S9.8 and S9.9.

3.6 It was so **agreed**.

3.7 The **delegate of Mexico**, supported by the **delegates of Tonga** and **Japan** and the **Chairman of Working Group 4A**, recalled the decision taken in the Working Group to replace "Space Networks" by "Satellite Networks" in ADD A.S9.4.

3.8 ADD A.S9.4, as amended, was **approved**.

3.9 Referring to Section I, the **delegate of Brazil** suggested the removal of the square brackets from MOD S9.1.

3.10 It was so **agreed.**

3.11 Following a brief discussion on MOD S9.3, it was decided that "basic" would be deleted from the penultimate line but that the remainder of the struck out part of that sentence would be restored.

3.12 MOD Section I (Advance Publication of Information on Satellite Networks or Satellite Systems - General), as amended, was **approved.**

3.13 Referring to Section II, the **delegate of the United States** proposed the deletion of "mobile" from MOD S9.15 and its retention in NOC S9.17.

3.14 It was so **agreed**.

3.15 The **delegate of France** suggested that No. S9.12 (omitted from the text in error) should read "… with the exception of coordination between earth stations operating in the opposite direction of transmission" to make it consistent with MOD S9.7 and MOD S9.13.

3.16 It was so **agreed.**

3.17 The **representative of BR** suggested the deletion of "coordinated" before "earth stations" in MOD S9.17A.

3.18 It was so **agreed.**

3.19 The **delegate of Brazil** proposed that footnote 6 to No. S9.19, which was identical to footnote 4 to Nos. S9.8 and S9.9, should be amended by the replacement of the words "suspended pending" by "pending until". Footnote 4 stipulated that the application of Nos. S9.8 and S9.9 with respect to Articles 6 and 7 of Appendices S30 and S30A was suspended pending a decision of WRC-99. In 1999, however, No. S9.19 would be revisited with a view to the incorporation of Articles 6 and 7 of Appendix 30. The two situations were thus somewhat different, and the footnotes should reflect that fact.

3.20 The **delegates of Japan** and **the United States** endorsed that proposal.

3.21 The **delegate of Luxembourg,** supported by the **delegate of Canada,** suggested that footnote 6 should be deleted, since its effect would be to defer the application of No. S9.19 to non-planned services.

3.22 The **delegate of France** endorsed the Brazilian proposal. No. S9.19 set out a procedure applicable to the entire broadcasting-satellite service, both planned and non-planned. The suspension of its application, as envisaged in footnote 6, would mean that the non-planned services would not be covered.

3.23 The **representative of BR** said that the problem undoubtedly arose from the fact that S9.19 covered the transmitting stations that had to be coordinated with all broadcasting-satellite services. The provision now before the Committee covered only the non-broadcasting part of the services, and no footnote was needed for that. A footnote was needed, however, to cover transmitting stations of terrestrial services in a frequency band shared on an equal primary basis with those broadcasting-satellite services that were subject to the Appendix 30 Plan. In fact, No. S9.19 should have been split into two, to deal with the two distinct cases. However, the deletion of the footnote would be in order.

3.24 Footnote 6 to MOD S9.19 was **deleted**.

Section II (Procedures for effecting coordination), as amended, was **approved**.

4 Second to sixth reports of Working Group 4C (Documents 268, 285, 301, 302, 303)

4.1 The **Chairman of Working Group 4C** said that the Group had completed its work, having reached consensus after arduous discussion, on HF broadcasting issues. The results were set out in Documents 268 and 279. He drew attention to the fact that the proposals by the Working Group with respect to Article S12, reflected in § 1 of the sixth and final report of the Working Group (Document 303), implied changes to the third series of texts submitted by Committee 4 to the Editorial Committee (Document 279).

4.2 The **Chairman** invited the Committee to consider the second report of Working Group 4C, contained in Document 268.

Draft Recommendation [4C-A]

4.3 The **Chairman of Working Group 4C** suggested, in accordance with § 3 of the sixth report of the Working Group, that the word "[exclusively]", in the title and in *considering* a) and d) should be deleted. He also suggested the use of lower case letter "p" for the word "principles" in *considering* a).

4.4 It was so **agreed**.

4.5 Draft Recommendation [4C-A], as amended, was **approved**.

Draft Resolution [COM4-6]

4.6 The **Chairman of Working Group 4C** observed that the purpose of draft Resolution [COM4-6], dealing with information relevant in the application of Article S12, was to convey information to the Bureau with regard to the development of the Rules of Procedure. He drew attention to *requests the Director of the Telecommunication Development Bureau*, in which the Director of BDT was requested to consider the provision of the necessary funding, to assist developing countries in implementing the coordination procedure.

4.7 Following comments by the **delegates of Cuba** and **Mexico,** it was **agreed** that the Spanish version of *urges administrations* 2) and *requests the Director of the Telecommunication Development Bureau* would be aligned with the English.

4.8 With those editorial corrections, draft Resolution [COM4-6] was **approved**.

4.9 The **Chairman** invited the Committee to consider the third report of Working Group 4C, contained in Document 285.

Draft Resolution [COM4-14]

4.10 The **Chairman of Working Group 4C** said that draft Resolution [COM4-14], dealing with the survey called for in revised Resolution 517 (HFBC-87), responded to the need for statistics on HF broadcast transmitters and receivers. He drew attention to the *resolves* paragraph, which indicated the desirability of having the results of the first survey on the subject available to WRC-99, but because it was possible that the next Conference would be held in the year 2000, the reference to it had been placed in square brackets.

4.11 The draft Resolution was **approved**.

4.12 The **Chairman** invited the Committee to consider the fourth report of Working Group 4C, contained in Document 301.

Review of resolutions and recommendations in accordance with Resolution 94 (WARC-92)

4.13 The **Chairman of Working Group 4C** said that the Working Group had considered all the resolutions and recommendations relating to HF broadcasting and was proposing the deletion of ten resolutions and six recommendations, and the modification of one resolution and two recommendations.

4.14 The proposed action with respect to the listed resolutions and recommendations was **approved** on the understanding that Resolution 39 is proposed for deletion, as already agreed and reflected in Document 245.

Draft revised Resolution 517 (HFBC-87)

4.15 The **Chairman of Working Group 4C** said that revised Resolution 517 (HFBC-87) had been modified to embrace the development of spectrum-efficient modulation techniques. In the Annex to that Resolution, the year 2015 was retained as the date for the definitive cessation of double-sideband emissions. Meanwhile, the transition period that had commenced in 1987 was to continue. In the Resolution, reference was made, in *resolves* 2, to the need for statistics on the worldwide distribution of single-sideband transmitters and receivers.

4.16 Draft revised Resolution 517 (HFBC-87) was **approved**.

Draft revised Recommendation 503 (Rev.HFBC-87)

4.17 The **Chairman of Working Group 4C** said that the square brackets in *recommends that administrations* 1 should be removed. In *invites administrations* the number 205-2 should be replaced by BS.702-1, and all the square brackets should be removed.

4.18 Draft revised Recommendation 503 (Rev.HFBC-87), as editorially corrected, was **approved**.

Draft revised Recommendation 515 (HFBC-87)

4.19 The **Chairman of Working Group 4C** observed that draft revised Recommendation 515 (HFBC-87) took account of the decision to refer to other spectrum-efficient modulation techniques wherever single-sideband operation was mentioned.

4.20 Draft revised Recommendation 515 (HFBC-87) was **approved**.

4.21 The **Chairman** invited the Committees to consider the fifth report of Working Group 4C, contained in Document 302.

Draft Resolution [COM4-16]

4.22 The **Chairman of Working Group 4C** recalled that the Working Group had been unable to agree on the early introduction of HF broadcasting in the WARC-92 extension bands. One of the reasons for the failure to reach agreement was the lack of information on the current use of those bands by the fixed and mobile services. The draft Resolution therefore called upon the Director of the Radiocommunication Bureau to gather information in order to present a report to CPM-99 and

WRC-99. That measure would enable administrations, in the interim between CPM-99 and WRC-99, to evaluate the information gathered with a view to making their proposals to WRC-99 on the status to be given to the broadcasting service in each of the additional HF bands.

4.23 Following comments by the **delegates of Spain** and **Italy**, it was **agreed** to place in square brackets the references to WRC-99, as had been done elsewhere.

4.24 Draft Resolution [COM4-16], as amended, was **approved**.

4.25 The **Chairman** invited the Committee to consider the sixth and final report of Working Group 4C, contained in Document 303.

4.26 Referring to the proposed MOD S5.134 in § 4 of Document 303, the **delegate of Syria**, supported by the **delegates of Egypt** and **Algeria**, said that, since it appeared that short-wave transmission and reception equipment would not be available for single-sideband operation, it seemed inappropriate to emphasize the latter in the text, which also seemed to pre-empt decisions to be taken by a later conference.

4.27 The **Chairman of Working Group 4C**, speaking also as the **delegate of the United Kingdom**, and supported by the **delegates of the United States, New Zealand, Mexico, the Netherlands** (on behalf of the CEPT countries), **Australia** (on behalf of the APT countries) and **Brazil**, supported the proposed text of MOD S5.134.

4.28 The **Chairman** said that he took it that, since a majority was in favour of the text as it stood, the Committee could approve MOD S5.134, on the understanding that the delegations of Syria, Egypt and Algeria could reserve their positions and revert to the matter in a Plenary Meeting if they so wished.

4.29 It was so **agreed**, the consequential deletion of S5.135 and S5.148 being **approved**.

4.30 The **Chairman of Working Group 4C**, referring to § 7 of Document 303, said that it appeared, from informal discussions with a number of administrations, that 1 June 1998 might be too early for the entry into force of Article S12, and that 1 January 1999 might be more appropriate.

4.31 It was **agreed**, following a suggestion by the **Chairman**, to leave the subject of dates for discussion in the Plenary.

4.32 On that understanding, and subject to editorial deletion of square brackets in § 5, the proposals set out in Document 303 were **approved**.

5 Reports of Working Group 4D (Documents 276, 296, 305)

5.1 The **Chairman** invited the Committee to consider Document 276.

5.2 The **Chairman of Working Group 4D** introduced draft Resolution [COM4-15], dealing with measures to solve the incompatibility between BSS in Region 1 and FSS in Region 3. Referring to the text within square brackets at the end of the first indent of *resolves* 1 and of *resolves* 2, he pointed out that no agreement had been reached about the exact date.

5.3 The **delegate of Austria** proposed that the words "the assignments" at the beginning of that indent of *resolves* 1 should be amended to read "the BSS assignments".

5.4 The **member of RRB** said that to remove the square brackets concerned while retaining the text might lead to confusion, because the time of inclusion of modifications and additions in the Regions 1 and 3 BSS Plans would differ from the time of entry into force of the Final Acts of WRC-97.

5.5 The **delegate of Pakistan** said that the square brackets should remain until Article 7 of Appendix 30 had been discussed.

5.6 The **delegate of United States** supported retention of the square brackets around the text. She also proposed that the words "whichever occurs earlier" should be added at the end of that text.

5.7 The **representative of BR** said that the title of the Resolution implied that the purpose was merely to assist administrations in negotiating with one another; the text had no regulatory impact with regard to coordination requirements. There had been agreement, in Working Group 4D and in Committee 4, on the principle of protection of the BSS Plan by other services and the Region 2 Plan, and vice versa, and matters relating to coordination obligations would be reflected in the final documentation of Committee 4. In his view, it would be better to delete the text in question.

5.8 It was **agreed** to delete the text between square brackets.

5.9 Draft Resolution [COM4-15], as amended, was **approved**.

5.10 The **Chairman** invited the Chairman of Working Group 4D to introduce Documents 296 and 305.

5.11 The **Chairman of Working Group 4D** said that Document 296 contained Working Group 4D's proposed changes to Annex 2 to Appendix 30 and Annex 2 to Appendix 30A. Document 305, the fifth report of Working Group 4D, was a further progress report.

5.12 The **Chairman** invited the Committee to consider Document 305. He took it that the Committee noted §§ 1 and 3, and that § 2 would remain pending.

5.13 It was so **agreed**.

5.14 The **Chairman of Working Group 4D**, referring to § 4 following an observation by the **delegate of Spain**, said that the final sentence had been added at the request of the Luxembourg delegation, so as to ensure that systems to which a reduction of 5 dB had already been applied since the 1977 Plan would not be subject to a further 8 dB reduction.

5.15 The **representative of BR** explained that application of the 8 dB reduction would in any case be subject to the Rules of Procedure. He suggested that it should be left to RRB to review the procedure and make the requisite revisions. In WRC-99, Annex 7 would be reviewed, and appropriate action would be taken at that time.

5.16 The **delegate of the United States** proposed that the words "applied only to systems with" should be replaced by "measured relative to".

5.17 The **delegate of Luxembourg** said, in response to a suggestion by the **Chairman of Working Group 4D**, that the sentence should in any case be retained. In view of the original decision, at WRC-95, to make an average reduction of 5 dB, the question of a differential had arisen. He would have preferred 8 dB to 3 dB; since, however, no agreement had been reached in Working Group 4D, he had stressed that the text of Annex 7 should be retained as it stood, with a specific reference to the 1977 Plan.

5.18 The **Vice-Chairman of RRB** suggested that it should be left to the Board to carry out a detailed study of the matter, and that the sentence should be retained, but with the words "applied only to systems with" amended to read "measured relative to average".

5.19 It was so **agreed**.

5.20 The **Chairman**, referring to § 5, said that he took it that the Committee agreed to the use of the EPM method and that the words "in Regions 1 and 3" should be added after "to Appendices 30 and 30A". In that connection, the Committee would have before it, the following day, the text of a draft Resolution on the subject of the EPM method.

5.21 It was so **agreed**.

5.22 On that understanding, Document 305, as amended, was **approved**.

5.23 The **Chairman** invited the Committee to consider Document 296, which contained proposed changes to Annex 2 to Appendix 30 (S30) and Annex 2 to Appendix 30A (S30A).

5.24 The proposed changes (S30A) were **approved**.

The meeting rose at 2300 hours.

The Secretary:
T. GAVRILOV

The Chairman:
E. GEORGE

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 381-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

B.17 **PLENARY MEETING**

SEVENTEENTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **first reading**:

Source	**Document**	**Title**
COM 5 and COM 6	281 265 (B.3)	**ARTICLE S5** – Footnotes

A.-M. NEBES
Chairman of Committee 6

Annex: 12 pages

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NOTE BY THE CHAIRMAN OF COMMITTEE 5

The footnotes listed are those considered by Committee 5, either under agenda item 1.1 or on the exceptional basis decided by the Plenary at its third meeting on 6 November 1997. The footnotes for which consideration was postponed by the Plenary during its consideration of Document 265/B.3 at its fifth meeting on 13 November 1997 are included. Those footnotes which are considered by the Chairman of Committee 5 as pertaining to another WRC-97 agenda item are marked with an asterisk.

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ADD S5.87A *Additional allocation:* in Uzbekistan, the band 526.5 - 1 606.5 kHz is also allocated to the radionavigation service on a primary basis.

MOD S5.99 *Additional allocation:* in Saudi Arabia, Bosnia and Herzegovina, Iraq, Libya, Uzbekistan, Slovakia, the Czech Republic, Romania, Slovenia, Chad, Togo and Yugoslavia, the band 1 810 - 1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD S5.164 *Additional allocation:* in Albania, Germany, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Côte d'Ivoire, Denmark, Spain, Finland, France, Gabon, Greece, Ireland, Israel, Italy, Jordan, Lebanon, Libya, Liechtenstein, Luxembourg, Madagascar, Mali, Malta, Morocco, Mauritania, Monaco, Nigeria, Norway, the Netherlands, Poland, Syria, the United Kingdom, Senegal, Slovenia, Sweden, Switzerland, Swaziland, Togo, Tunisia, Turkey and Yugoslavia, the band 47 - 68 MHz ~~and~~, in Romania, the band 47 -58 MHz, and in the Czech Republic the band 66 - 68 MHz, are also allocated to the land mobile service on a primary basis. However, stations of the land mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, existing or planned broadcasting stations of countries other than those mentioned in connection with the band.

***MOD S5.221** Stations of the mobile-satellite service in the band 148 - 149.9 MHz shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services operating in accordance with the Table of Frequency Allocations in the following countries: Albania, Algeria, Germany, Saudi Arabia, Australia, Austria, Bahrain, Bangladesh, Barbados, Belarus, Belgium, Benin, Bosnia and Herzegovina, Brunei Darussalam, Bulgaria, Cameroon, China, Cyprus, Congo, the Republic of Korea, Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, ~~Honduras,~~ Hungary, India, the Islamic Republic of Iran, Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakstan, Kenya, Kuwait, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, Philippines, Poland, Portugal, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the United Kingdom, Russia, Senegal, Sierra Leone, Singapore, Slovenia, Sri Lanka, South Africa, Sweden, Switzerland, Swaziland, Tanzania, Chad, Thailand, Togo, Tonga, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Viet Nam, Yemen, Yugoslavia, Zambia, and Zimbabwe.

MOD **S5.237** *Additional allocation:* in the Congo, Eritrea, Ethiopia, Gambia, Guinea, Libya, Malawi, Mali, Senegal, Sierra Leone, Somalia, Tanzania and Zimbabwe, the band 174 - 223 MHz is also allocated to the fixed and mobile services on a secondary basis.

SUP **S5.244**

MOD **S5.259** *Additional allocation:* in Germany, Austria, Cyprus, the Republic of Korea, Denmark, Egypt, Spain, France, Greece, Israel, Italy, Japan, Jordan, Malta, Morocco, Monaco, Norway, the Netherlands, Syria and Sweden, the band 328.6 - 335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **S9.21**.

MOD **S5.271** *Additional allocation:* in Azerbaijan, Belarus, China, Estonia, Georgia, India, Latvia, Lithuania, Kyrgyzstan, Turkmenistan and Ukraine, the band 420 - 460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

MOD **S5.275** *Additional allocation:* in Bosnia and Herzegovina, Croatia, Estonia, Finland, Latvia, The Former Yugoslav Republic of Macedonia, Libya, Slovenia and Yugoslavia, the bands 430 - 432 MHz and 438 - 440 MHz are also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **S5.276** *Additional allocation:* in Afghanistan, Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burkina Faso, Burundi, Egypt, the United Arab Emirates, Ecuador, Eritrea, Ethiopia, Greece, Guinea, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Liechtenstein, Malaysia, Malta, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Democratic People's Republic of Korea, Singapore, Somalia, Switzerland, Tanzania, Thailand, Togo, Turkey and Yemen, the band 430 - 440 MHz is also allocated to the fixed service on a primary basis and the bands 430 - 435 MHz and 438 - 440 MHz are also allocated to the mobile, except aeronautical mobile, service on a primary basis.

MOD **S5.277** *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, the Congo, Djibouti, ~~Estonia,~~ Gabon, Georgia, Hungary, Kazakstan, Latvia, Mali, Moldova, Mongolia, Niger, Uzbekistan, Pakistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russia, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430 - 440 MHz is also allocated to the fixed service on a primary basis.

MOD **S5.290** *Different category of service:* in Afghanistan, Armenia, Azerbaijan, Belarus, China, Georgia, Japan, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Russia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 460 - 470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. **S5.33**), subject to agreement obtained under No. **S9.21**.

MOD **S5.296** *Additional allocation:* in Germany, Austria, Belgium, Cyprus, Denmark, Spain, Finland, France, Ireland, Israel, Italy, Libya, Malta, Morocco, Monaco, Norway, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland, Swaziland and Tunisia, the band 470 - 790 MHz is also allocated on a secondary basis to the land mobile service, intended for applications ancillary to broadcasting. Stations of the land mobile service in the countries mentioned in this footnote, shall not cause harmful interference to existing or planned stations operating in accordance with the Table of Frequency Allocations in countries other than those listed in this footnote.

SUP **S5.310**

MOD **S5.312** *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Latvia, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russia, Tajikistan, Turkmenistan and Ukraine, the band 645 - 862 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

SUP **S5.313**

MOD **S5.314** *Additional allocation:* in Austria, Italy, Uzbekistan, the United Kingdom and Swaziland, the band 790 - 862 MHz is also allocated to the land mobile service on a secondary basis.

MOD **S5.316** *Additional allocation:* in Germany, Bosnia and Herzegovina, Burkina Faso, Cameroon, Côte d'Ivoire, Croatia, Denmark, Egypt, Finland, Israel, Kenya, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Monaco, Norway, the Netherlands, Portugal, Syria, Sweden, Switzerland and Yugoslavia, the band 790 - 830 MHz, and in these same countries and in Spain, France, Gabon and Malta, the band 830 - 862 MHz, are also allocated to the mobile, except aeronautical mobile, service on a primary basis. However, stations of the mobile service in the countries mentioned in connection with each band referred to in this footnote shall not cause harmful interference to, or claim protection from, stations of services operating in accordance with the Table in countries other than those mentioned in connection with the band.

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MOD S5.322 In Region 1, in the band 862 - 960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. **S5.10** to **S5.13**) excluding Algeria, Egypt, Spain, Libya, Morocco, Nigeria, ~~and~~ South Africa, Tanzania and Zimbabwe, subject to agreement obtained under No. **S9.21**.

MOD S5.323 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Latvia, ~~Lithuania,~~ Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russia, Tajikistan, Turkmenistan and Ukraine, the band 862 - 960 MHz is also allocated to the aeronautical radionavigation service on a primary basis ~~until 1 January 1998. Up to this date, the aeronautical radionavigation service may use the band, subject to agreement obtained under No. **S9.21**. After this date, the aeronautical radionavigation service may continue to operate on a secondary basis~~. Such use is subject to agreement obtained under Article **14/S9.21** with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of its lifetime.

MOD S5.330 *Additional allocation:* in Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Morocco, Mozambique, Nepal, Nigeria, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo and Yemen, the band 1 215 - 1 300 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD S5.338 In Azerbaijan, Bulgaria, Georgia, Mongolia, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Turkmenistan and Ukraine, the existing installations of the radionavigation service may continue to operate in the band 1 350 - 1 400 MHz.

MOD S5.347 *Different category of service:* in Bangladesh, Bosnia and Herzegovina, Botswana, Bulgaria, Burkina Faso, Cuba, Denmark, Egypt, Greece, Ireland, Italy, Jordan, Kenya, Mozambique, Portugal, Sri Lanka, Swaziland, Yemen, Yugoslavia and Zimbabwe, the allocation of the band 1 452 - 1 492 MHz to the broadcasting-satellite service and the broadcasting service is on a secondary basis until 1 April 2007.

MOD S5.349 *Different category of service:* in Saudi Arabia, Azerbaijan, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, France, Georgia, the Islamic Republic of Iran, Iraq, Israel, Kazakstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Mongolia, Oman, Qatar, Syria, Kyrgyzstan, Romania, Turkmenistan, Ukraine, Yemen and Yugoslavia, the allocation of the band 1 525 - 1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **S5.33**).

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MOD **S5.350** *Additional allocation:* in Azerbaijan, Georgia, Kyrgyzstan, Turkmenistan and Ukraine, the band 1 525 - 1 530 MHz is also allocated to the aeronautical mobile service on a primary basis.

MOD **S5.355** *Additional allocation:* in Bahrain, Bangladesh, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the bands 1 540 - 1 645.5 MHz and 1 646.5 - 1 660 MHz are also allocated to the fixed service on a secondary basis.

MOD **S5.369** *Different category of service:* in Angola, Australia, Burundi, Eritrea, Ethiopia, India, the Islamic Republic of Iran, Israel, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syria, Senegal, Sudan, Swaziland, Togo, Zaire and Zambia the allocation of the band 1 610 - 1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. **S5.33**) subject to agreement obtained under No. **S9.21** from countries not listed in this provision.

MOD **S5.381** *Additional allocation:* in Afghanistan, Costa Rica, Cuba, India, the Islamic Republic of Iran, Malaysia, Pakistan and Sri Lanka, the band 1 690 - 1 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **S5.382** *Different category of service:* in Saudi Arabia, Armenia, Austria, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Georgia, Guinea, Hungary, Iraq, Israel, Jordan, Kazakstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Mauritania, Moldova, Mongolia, Oman, Uzbekistan, Poland, Qatar, Syria, Kyrgyzstan, Romania, Russia, Somalia, Tajikistan, Tanzania, Turkmenistan, Ukraine, Yemen and Yugoslavia, the allocation of the band 1 690 - 1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **S5.33**), and in the Democratic People's Republic of Korea, the allocation of the band 1 690 - 1 700 MHz to the fixed service is on a primary basis (see No. **S5.33**) and to the mobile, except aeronautical mobile, service is on a secondary basis.

MOD **S5.384** *Additional allocation:* in India, Indonesia and Japan, the band 1 700 - 1 710 MHz is also allocated to the space research service (space-to-Earth) on a primary basis.

MOD **S5.387** *Additional allocation:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russia, Tajikistan, Turkmenistan and Ukraine, the band 1 770 - 1 790 MHz is also allocated to the meteorological-satellite service on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD **S5.393** *Additional allocation:* in the United States, ~~and~~ India and Mexico, the band 2 310 - 2 360 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial sound broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to the provisions of Resolution **528 (WARC-92)**.

MOD **S5.400** *Different category of service:* in Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, the Islamic Republic of Iran, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syria, Sudan, Swaziland, Togo, Zaire and Zambia, the allocation of the band 2 483.5 - 2 500 MHz to the radiodetermination-satellite service (space-to-Earth) is on a primary basis (see No. **S5.33**) subject to agreement obtained under No. **S9.21** from countries not listed in this provision.

MOD **S5.412** *Alternative allocation:* in Azerbaijan, Bulgaria, Georgia, Kyrgyzstan, Turkmenistan and Ukraine, the band 2 500 - 2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD **S5.422** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, the Central African Republic, the Congo, Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kazakstan, Lebanon, Malaysia, Mali, Morocco, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Romania, Russia, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen, Yugoslavia, Zaire and Zambia, the band 2 690 - 2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

MOD **S5.428** *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Georgia, Kazakstan, Mongolia, Poland, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 3 100 - 3 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD **S5.429** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, China, the Congo, the Republic of Korea, the United Arab Emirates, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Syria, Democratic People's Republic of Korea and Yemen, the band 3 300 - 3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.

MOD S5.430 *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Georgia, Mongolia, Poland, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 3 300 - 3 400 MHz is also allocated to the radionavigation service on a primary basis.

MOD S5.432 *Different category of service:* in the Republic of Korea, Indonesia, Japan and Pakistan, the allocation of the band 3 400 - 3 500 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. **S5.33**).

SUP S5.434

MOD S5.437 *Additional allocation:* in Germany and Norway, the band 4 200 - 4 210 MHz is also allocated to the fixed service on a secondary basis.

MOD S5.439 *Additional allocation:* in China, the Islamic Republic of Iran and Libya, the band 4 200 - 4 400 MHz is also allocated to the fixed service on a secondary basis.

MOD S5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Georgia, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Turkmenistan and Ukraine, the band 5 250 - 5 350 MHz is also allocated to the radionavigation service on a primary basis.

MOD S5.450 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Georgia, the Islamic Republic of Iran, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Turkmenistan and Ukraine, the band 5 470 - 5 650 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

MOD S5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, the Central African Republic, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Democratic People's Republic of Korea, Singapore, Swaziland, Tanzania, Chad, and Yemen, the band 5 650 -5 850 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD S5.454 *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 5 670 - 5 725 MHz to the space research service is on a primary basis (see No. **S5.33**).

***MOD S5.464** *Different category of service:* in Bangladesh, Benin, Burkina Faso, Cameroon, China, the Central African Republic, ~~Côte d'Ivoire,~~ Egypt, France, Guinea, ~~India,~~ the Islamic Republic of Iran, Italy, ~~Japan,~~ Libya, Mali, ~~Niger,~~ Pakistan, ~~Senegal,~~ Somalia, Sudan, ~~Sweden,~~ Tanzania, Zaire and Zambia, the allocation of the band 8 025 - 8 400 MHz to the Earth exploration-satellite service (space-to-Earth) is on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD S5.466 *Different category of service:* in Israel, Malaysia, Singapore and Sri Lanka, the allocation of the band 8 400 - 8 500 MHz to the space research service is on a secondary basis (see No. **S5.32**).

MOD S5.468 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guyana, Indonesia, the Islamic Republic of Iran, Iraq, Jamaica, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, Qatar, Syria, Democratic People's Republic of Korea, Senegal, Singapore, Somalia, Swaziland, Tanzania, Chad, Togo, Tunisia and Yemen, the band 8 500 - 8 750 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD S5.477 *Different category of service:* in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, the Islamic Republic of Iran, Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, Democratic People's Republic of Korea, Singapore, Somalia, Sudan, Sweden, Trinidad and Tobago, and Yemen, the allocation of the band 9 800 -10 000 MHz to the fixed service is on a primary basis (see No. **S5.33**).

MOD S5.478 *Additional allocation:* in Azerbaijan, Bulgaria, Georgia, Kazakstan, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Turkmenistan and Ukraine, the band 9 800 - 10 000 MHz is also allocated to the radionavigation service on a primary basis.

MOD S5.480 *Additional allocation:* in Brazil, Costa Rica, Ecuador, Guatemala, ~~and~~ Honduras and Mexico, the band 10 - 10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

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MOD S5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Georgia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kazakstan, Kuwait, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Pakistan, Qatar, Kyrgyzstan, Democratic People's Republic of Korea, Romania, Russia, Tajikistan, Turkmenistan, Ukraine, Yemen and Yugoslavia, the band 10.68 - 10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

MOD S5.494 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Cameroon, the Central African Republic, the Congo, Côte d'Ivoire, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Ghana, Guinea, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Madagascar, Mali, Morocco, Mongolia, Nigeria, Qatar, Syria, Senegal, Somalia, Sudan, Chad, Togo, Yemen and Zaire, the band 12.5 - 12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD S5.495 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Denmark, France, Greece, Liechtenstein, Monaco, Norway, Uganda, Portugal, Romania, Slovenia, Switzerland, Tanzania, Tunisia and Yugoslavia, the band 12.5 - 12.75 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis.

MOD S5.496 *Additional allocation:* in Austria, Azerbaijan, Georgia, Kyrgyzstan, Turkmenistan and Ukraine, the band 12.5 - 12.75 GHz is also allocated to the fixed service and the mobile, except aeronautical mobile, service on a primary basis. However, stations in these services shall not cause harmful interference to fixed-satellite service earth stations of countries in Region 1 other than those mentioned in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries mentioned in this footnote. The power flux-density limit at the Earth's surface given in Article **S21**, Table S21-4 for the fixed-satellite service shall apply on the territory of the countries mentioned in this footnote.

MOD S5.500 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, the Lebanon, Madagascar, Malaysia, Mali, Malta, Morocco, Mauritania, Nigeria, Pakistan, Qatar, Syria, Senegal, Singapore, Sudan, Chad and Tunisia, the band 13.4 - 14 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD **S5.501** *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Georgia, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom, Turkmenistan and Ukraine, the band 13.4 - 14 GHz is also allocated to the radionavigation service on a primary basis.

MOD **S5.505** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, Syria, the Democratic People's Republic of Korea, Senegal, Singapore, Somalia, Sudan, Swaziland, Tanzania, Chad and Yemen, the band 14 - 14.3 GHz is also allocated to the fixed service on a primary basis.

MOD **S5.508** *Additional allocation:* in Germany, Austria, Bosnia and Herzegovina, France, Greece, Ireland, Iceland, Italy, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Portugal, the United Kingdom, Slovenia, Switzerland, Turkey and Yugoslavia, the band 14.25 - 14.3 GHz is also allocated to the fixed service on a primary basis.

MOD **S5.511** *Additional allocation:* in Saudi Arabia, Bahrain, Bosnia and Herzegovina, Cameroon, Egypt, the United Arab Emirates, Guinea, the Islamic Republic of Iran, Iraq, Israel, Kuwait, Lebanon, Libya, Pakistan, Qatar, Syria, Slovenia, Somalia and Yugoslavia, the band 15.35 - 15.4 GHz is also allocated to the fixed and mobile services on a secondary basis.

MOD **S5.512** *Additional allocation:* in Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Brunei Darussalam, Cameroon, the Congo, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, the Islamic Republic of Iran, Jordan, Kuwait, Libya, Malaysia, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Slovenia, Somalia, Sudan, Swaziland, Tanzania, Chad, Yemen and Yugoslavia, the band 15.7 - 17.3 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD **S5.514** *Additional allocation:* in Algeria, Germany, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Bosnia and Herzegovina, Cameroon, Costa Rica, El Salvador, the United Arab Emirates, Finland, Guatemala, Honduras, India, the Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan, Sweden, and Yugoslavia, the band 17.3 - 17.7 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits given in Nos. **S21.3** and **S21.5** shall apply.

MOD S5.521 *Alternative allocation:* in Germany, Denmark, the United Arab Emirates, Greece, Slovakia and the Czech Republic, the band 18.1 - 18.4 GHz is allocated to the fixed, fixed-satellite (space-to-Earth) and mobile services on a primary basis (see No. **S5.33**). The provisions of No. **S5.519** also apply.

MOD S5.524 *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Islamic Republic of Iran, Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Democratic People's Republic of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo, Tunisia and Zaire, the band 19.7 - 21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service in the band 19.7 - 21.2 GHz and of space stations in the mobile-satellite service in the band 19.7 - 20.2 GHz where such allocation to the mobile-satellite service is on a primary basis in the latter band.

MOD S5.542 *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, the Islamic Republic of Iran, Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, the Philippines, Qatar, Syria, Democratic People's Republic of Korea, Somalia, Sudan, Sri Lanka and Chad, the band 29.5 - 31 GHz is also allocated to the fixed and mobile services on a secondary basis. The power limits specified in Nos. **S21.3** and **S21.5** shall apply.

MOD S5.545 *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Mongolia, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 31 - 31.3 GHz to the space research service is on a primary basis (see No. **S5.33**).

***MOD S5.549** *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Egypt, the United Arab Emirates, Gabon, Indonesia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Malaysia, Mali, Malta, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Togo, Tunisia, Yemen and Zaire, the band 33.4 - 36 GHz is also allocated to the fixed and mobile services on a primary basis.

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MOD **S5.550** *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 34.7 - 35.2 GHz to the space research service is on a primary basis (see No. **S5.33**).

MOD **S5.557** *Additional allocation:* in Japan, the band 54.25 - 58.2 GHz is also allocated to the radiolocation service on a primary basis.

MOD **S5.564** *Additional allocation:* in Germany, Argentina, Spain, Finland, France, India, Italy and the Netherlands, the band 261 - 265 GHz is also allocated to the radio astronomy service on a primary basis.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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PLENARY MEETING

NOTE BY THE CHAIRMAN OF COMMITTEE 4

ADDITIONAL AGENDA ITEM FOR WRC-99

The following agenda item should be added to the WRC-99 agenda:

1.21 to consider the issues related to the application of provisions Nos. **S9.8**, **S9.9** and **S9.17** and the corresponding parts of Appendix **S5** with respect to Appendices **S30** and **S30A**, with a view to possible suppression of Articles 6 and 7 of Appendices **S30** and **S30A**, taking also into consideration Recommendation **35 (WRC-95)**.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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COMMITTEE 4

SUMMARY RECORD

OF THE

ELEVENTH MEETING OF COMMITTEE 4

(REGULATORY AND ASSOCIATED ISSUES)

Tuesday, 18 November 1997, at 0940 hours

Chairman: Mr. E. GEORGE (Germany)

Subjects discussed		**Documents**
1	Sixth report of Working Group 4A	311
2	Seventh report of Working Group 4A	319

1 Sixth report of Working Group 4A (Document 311)

1.1 The **Chairman of Working Group 4A** introduced Document 311, which set forth the results of a review of Article S11 to ensure its consistency with other provisions of the Radio Regulations, taking into account the decisions of Committee 4 and Working Group PLEN-1. Some further amendments would be needed in the light of decisions taken at the Committee's previous meeting.

1.2 The **Chairman** invited the Committee to consider the proposed text of Article S11 as contained in Attachment 1 to Document 311.

MOD Title of Article S11, MOD A.S11.1 and Table

1.3 **Approved**.

ADD A.S11.2

1.4 The **Chairman of Working Group 4A** suggested that the words "and satellite systems" should be inserted after "those satellite networks" to be consistent with the decision taken by the Committee at its tenth meeting in connection with Article S9.

1.5 It was so **agreed** and ADD A.S11.2, as amended, was **approved**.

MOD S11.14

1.6 The **Chairman of Working Group 4A** recalled that the word "exclusively" had been placed between square brackets pending a decision by Committee 4 on the outcome of work in Working Group 4C. In the light of the decision taken, the term "[exclusively]" could now be deleted.

1.7 The **delegate of Burkina Faso** having expressed the view that the word "exclusively" should be retained, the **Chairman** said that he would not reopen debate on the matter, which had been discussed extensively in Working Group 4C. The **delegate of Niger**, pointing to the difficulties encountered by smaller delegations in attending all meetings, requested an explanation of the reasons for the decision taken on the matter. The **delegate of the Netherlands**, in the absence of the Chairman of Working Group 4C, explained that the use of the word "exclusively" would effectively exclude some of the WARC-79 extension bands from Article S12, which was clearly not the intent of Working Group 4C.

1.8 The **delegate of Burkina Faso** reserved the right to revert to the matter in a Plenary Meeting.

1.9 Subject to that reservation, MOD S11.14, as amended, was **approved**.

MOD S11.18, MOD S11.21, ADD S11.21A

1.10 **Approved**.

MOD S11.22

1.11 The **delegate of Cuba** said that the word "coordinated" before the words "earth station" should be deleted, in accordance with the Committee's decision concerning Appendix S5. The **representative of BR** suggested, for the sake of clarity, that the phrase "operating in the opposite direction of transmission" should be added at the end of the provision. The **delegate of the United States** endorsed the proposed amendments.

1.12 The **Chairman** said that, unless he heard any objection, he would take it that the text of MOD S11.22, as amended, was acceptable to the Committee.

1.13 It was so **agreed**.

ADD S11.22.1, (MOD) S11.23, S11.20.1 to S11.23.1, MOD S11.24, MOD S11.25, ADD S11.26, MOD S11.27, MOD S11.31.3, NOC S11.32A, NOC S11.32A.1, NOC S11.33

1.14 Approved.

MOD S11.36

1.15 Following an exchange of views between the **delegate of Cuba**, the **Chairman** and the **delegate of the United Kingdom** on an amendment proposed by the latter, it was **agreed** to retain the text of the provision MOD S11.36 as it stood.

(MOD) S11.37, ADD S11.37.1, NOC S11.38, MOD S11.39, NOC S11.39A, NOC S11.39B, NOC S11.39C, NOC S11.39D, ADD S11.39E, S11.40, NOC S11.41, NOC S11.42, MOD S11.43

1.16 Approved.

MOD S11.43A

1.17 The **Chairman of Working Group 4A** said that the square brackets around the figure 5 in the second sentence should be deleted.

1.18 It was so **agreed**.

1.19 The **delegate of the Islamic Republic of Iran** objected to the text of MOD S11.43A as it stood, suggesting the insertion of the words "which is not subject to the Plans in Appendices 30 and 30A" after the words "Any change to the characteristics of an assignment", to make it quite clear that the assignments in those Plans were not taken into consideration.

1.20 The **delegate of Japan** referred to the first explanatory note to the title of Article S11 (MOD A.S11.1), which gave a clear indication of where Appendices 30 and 30A should apply. The **delegate of Luxembourg** added that the amendment proposed by the delegate of the Islamic Republic of Iran could be misleading as it would imply that the only case where Appendices 30 and 30A should not apply was to MOD S11.43A.

1.21 The **delegate of the Islamic Republic of Iran** said that he had similar concerns regarding subsequent provisions that also had a bearing on Appendices 30 and 30A, in particular ADD S11.44B, which referred to Resolution [GTPLEN 2-1]. In his view, it would be preferable to exclude any reference to those appendices in Article S11 pending the outcome of WRC-99.

1.22 The **Chairman** observed that there were a number of outstanding issues relating to draft Resolution GTPLEN 2-1 which would have to be taken up in a Plenary Meeting.

1.23 The **delegate of Luxembourg** said that the fact there were references to the broadcasting-satellite service in draft Resolution [GTPLEN 2-1] did not mean that the whole of Article S11 concerned that service. When finalizing draft Resolution [GTPLEN 2-1], it should be made clear that the link with Appendices 30 and 30A was only in terms of the application of relevant procedures.

1.24 The **Chairman** referred the delegate of the Islamic Republic of Iran to the second explanatory note to the title of Article S11 (ADD A.S11.2), which indicated the networks and systems to which the draft Resolution should apply.

1.25 The **delegate of the Islamic Republic of Iran** said that he feared nonetheless that if draft Resolution [GTPLEN 2-1] was adopted by the Conference, the link between the BSS services and Appendices 30 and 30A might be misunderstood at future world radiocommunication conferences.

1.26 The **delegate of Canada**, supported by the **delegate of the United States**, suggested that it might be sufficient for future conferences to take into account the summary record of the meeting, which reflected the intent of the Committee.

1.27 The **Chairman** said that if he heard no objection he would take it that the Committee wished to retain the text of MOD S11.43A, as amended by the Chairman of Working Group 4A, on the understanding that the points raised by the delegate of the Islamic Republic of Iran would be taken up in a Plenary Meeting in connection with Resolution [GTPLEN 2-1].

1.28 It was so **agreed**.

MOD S11.44

1.29 The **delegate of Tonga** said that he had no difficulty with the proposal to reduce to five years the time-frame for bringing a satellite network into use and welcomed the option of a two-year extension, which would be found particularly useful by the smaller developing countries. However, he had reserved his position regarding MOD S11.44 which, as currently worded, did not allow for the launch of a replacement satellite in the event of an unsuccessful first launch and, as a result, in such cases administrations would effectively forfeit their right. That was plainly not the intent of MOD S11.44. For the provision was not intended to deal with paper satellites, as some delegates might claim - there were provisions on administrative due diligence for that purpose - but with real satellites. He therefore proposed that in the first sentence the words "any assignment" should read "a first assignment", and that the last sentence should be deleted.

1.30 In the discussion that followed, the **delegates of Bulgaria** and **Israel** expressed support for the amendments proposed by the delegate of Tonga. The **delegate of the United Kingdom** objected to the proposal by the delegate of Tonga, on the grounds that the matter had already been discussed extensively in Working Group 4A, where the proposal had not received any support. The **delegate of the United States** pointed out that the matter had also been discussed at WRC-95, which had come down in favour of the words "any assignment". The **delegates of Syria, Brazil, Luxembourg, Canada** and **Japan** stated their preference for retaining the current wording of MOD S11.44. The **Chairman** observed that there were more objections than expressions of support for the Tongan delegate's proposal.

1.31 The **delegate of Mexico**, referring to the second sentence of MOD S11.44, pointed out that in accordance with the Committee's earlier decision, the reference "No. S11.44B" should be amended to read "Nos. S11.44B - S11.44I". He drew attention to an editorial amendment required in the same sentence, in the Spanish version.

1.32 The **representative of BR** endorsed the Mexican delegate's proposal to amend the reference to S11.44B.

1.33 The **Chairman** said that the Mexican delegate should take up any editorial amendments concerning the Spanish version with the Editorial Committee. Unless he heard any objection, he would take it that the Committee accepted the other amendment proposed by the Mexican delegate.

1.34 It was so **agreed**.

ADD S11.44A

1.35 Approved.

ADD S11.44B

1.36 The **delegate of Greece** drew attention to the fact that the cross-reference between No. S11.44 and draft Resolution [GTPLEN2-1] in ADD S11.44B might prove misleading, for the procedure referred to in *resolves* 2 of the draft Resolution was based on the original wording of No. S11.44 and not the amended version before the Committee. Furthermore, it should be made clear that ADD S11.44B would apply provisionally following the closure of the Conference pending the entry into force of the simplified Radio Regulations. That could be done either by amending the relevant part of the draft Resolution or the explanatory footnote (ADD A.S11.2) in Document 311 on the subject.

1.37 Following a discussion in which the **delegates of Greece** and **Luxembourg**, the **representative of BR** and the **Chairman** took part, it was **agreed** that all interested delegations should hold consultations with a view to reaching a solution.

1.38 Following informal consultations, the **delegate of Greece** explained that he could agree to the text of ADD S11.44B as set out in Document 311, subject to the satisfactory rewording of *resolves* 2 of draft Resolution [GTPLEN2-1] and the maintenance of a transitional period for the application of that draft Resolution. He reserved the right to return to the matter should his conditions not be met.

1.39 On that understanding, ADD S11.44B was **approved**.

ADD S11.44C, ADD S11.44D, ADD S11.44E, ADD S11.44F

1.40 Approved

ADD S11.44G

1.41 The **delegate of the United Kingdom** suggested that, for clarity, the provision should be reworded as follows: "e) delays in effecting coordination after the assistance of the Bureau has been requested under S9.59". The **delegates of Luxembourg, France** and **the Netherlands** expressed support for that amendment.

1.42 The **delegate of Tonga** recalled that the provision was the result of a proposal by his delegation following extensive discussion in Working Group PLEN-2 on problems that might be encountered by developing countries in implementing satellite network projects. While not wishing to delay the work of the Committee, he expressed his reservation regarding the amendment to that provision proposed by the delegate of the United Kingdom.

1.43 Subject to that reservation, ADD S11.44G, as amended, was **approved**.

ADD S11.44H, ADD S11.44I, NOC S11.45, NOC S11.46, MOD S11.47, MOD S11.48

1.44 Approved.

SUP S11.49

1.45 In response to a query by the **delegate of Saudi Arabia**, the **Chairman of Working Group 4A** confirmed that the provision was proposed for deletion.

1.46 The **delegate of Malaysia** objected to the proposed deletion of the provision as, in the event of satellite failure, the two-year notification period would afford administrations the time they needed to negotiate with suppliers and to carry out repairs.

1.47 That objection having been noted, SUP S11.49 was **approved**.

2 Seventh report of Working Group 4A (Document 319)

2.1 The **Chairman of Working Group 4A** said that Document 319 contained the results of the review carried out by the Working Group in respect of Appendices S4 (Annexes 2A and 2B) and S5 to the simplified Radio Regulations. Referring to Table S5-1 on technical conditions for coordination (in Attachment 2), he pointed out that, as a result of the decision taken at the previous meeting of the Committee, the underlined remarks relating to No. S9.19 (in the last column) should be deleted. A number of texts in the "Remarks" column had been left in square brackets as there had been insufficient time for debate in the Working Group. However, the delegate of the United States, former Chairman of ad hoc Group 4, had chaired informal discussions with the interested parties and he would report to the Committee on the progress made at those meetings. The proposed modification to Article S13 in relation to Document 284 was to be found in Attachment 3. The proposed modifications to revised Resolution 33 (WARC-79), contained in Attachment 4, called for the deletion of Resolution 48 (WRC-95) and the abrogation of Resolution 46 (Rev.WRC-95) from the date of the provisional application of the Radio Regulations as revised by WRC-97, until which time a revised version of Resolution 46 would continue to apply. Resolution 27 (WRC-95) had also been modified by the Working Group, as shown in Attachment 5, although concerns had been raised in respect of access to ITU-T Recommendations by the ITU-R Sector and it had been felt that there might be a need to consider the question of availability along with the examination of recommendations which might be subject to incorporation by reference. The delegate of Syria had reserved his position with respect to the mention of the ITU-T Recommendations in revised Resolution 27. Attachment 6 contained draft Resolution [COM4-17] on the publication of the Weekly Circular. The square brackets around the word "Weekly" denoted the need to find a new name for the new circulars which were to be produced on a fortnightly basis. A review of the provisional application of the Radio Regulations (Article S59) appeared in Attachment 7, with draft Resolution [COM4-18] on the provisional application of certain provisions modified by WRC-97 and transitional arrangements. The dates in the draft Resolution had been left in square brackets, for decision by the Plenary. Certain parts of the draft Resolution also remained in square brackets because they included references to provisions yet to be decided upon by the Conference. The delegations of Algeria, the Islamic Republic of Iran, Saudi Arabia and Tonga had reserved their positions in regard to those provisions. Finally, Working Group 4A was of the opinion that the amount of work involved in preparation for WRC-99 justified activating the Special Committee on Regulatory/Procedural Matters.

2.2 The **Chairman** invited the Committee to consider Attachment 1.

Annex 2A to Appendix S4

2.3 Approved.

Annex 2B to Appendix S4

2.4 Following a comment by the **delegate of Luxembourg**, the **representative of BR** confirmed that Working Group 4D had decided to maintain the Annex 2 data (from Appendices 30 and 30A) for the application of Appendices S30 and S30A. In order to avoid confusion, a footnote could be added to the table in respect of the two columns referring to those Appendices, suspending the application of the columns pending a decision by a future competent conference.

2.5 It was so **agreed**.

2.6 The **delegate of Japan**, supported by the **delegate of the United States**, remarked that there was discrepancy between the headings in the third and fourth columns of part A of the table, referring to advanced publication of a non-geostationary satellite network, and the corresponding headings in parts B, C and D.

2.7 The Chairman **suggested** that the relevant headings of parts B, C and D of the table should be aligned with the headings in part A.

2.8 It was so **agreed**.

2.9 Attachment 1 to Document 319, as amended, was **approved**.

2.10 The **Chairman** invited the Committee to consider Attachment 2.

2.11 The **representative of BR** explained that there were inconsistencies in the numbering of the footnotes to Table S5-1A approved at WRC-95 (renumbered Table S5-2 in the texts of the present Conference); the Bureau would assist in reviewing and correcting the numbering. Table S5-2 would also be updated by the Bureau, in consultation with the Radio Regulations Board, to cover additional space services.

Appendix S5

2.12 The **delegate of Luxembourg**, referring to MOD 6 *a*), said that the text of paragraphs 6 *b*) to 6 *g*), to which no change had been made, should also appear.

2.13 Following a comment by the **delegate of Spain**, the **Chairman** confirmed that paragraph 1 of the Spanish text would be aligned with the English version.

2.14 The **delegate of the Islamic Republic of Iran** reserved the right to comment on the proposed modifications to Appendix S5 in conjunction with the discussion on Attachment 7.

2.15 The text of Appendix S5, as editorially amended, was **approved**.

Table S5-1 (Technical conditions for coordination)

2.16 The **delegate of the United States** said that it was the intention of the informal group engaged in discussion of the text remaining in square brackets to conclude its deliberations before the following meeting of Committee 4. With the indulgence of the Committee, he would report on the outcome of the discussions at that stage.

2.17 It was so **agreed**.

2.18 The **Chairman** invited the Committee to consider Attachment 3.

Article S13

2.19 Approved.

2.20 The **Chairman** invited the Committee to consider Attachment 4.

Draft revised Resolution 33 (WARC-79)

2.21 The **delegate of Indonesia** said that, in principle, he fully agreed with the simplification of the Radio Regulations. He was concerned, however, that some administrations might experience difficulties in applying the procedures of Articles S9 to S14. Developing countries, in particular, would require assistance in implementing coordination procedures. He could not agree, therefore, to the deletion of Sections A, B and C, and he proposed that the full text of Resolution 33 (WARC-79) should be maintained.

2.22 The **Chairman** referred to the amendment to Article S13, set out in Attachment 3, in which provision was made for administrations to request assistance from the Bureau with regard to applying the procedures of Articles S9 and S11 and Appendices S30, S30A and S30.

2.23 The **delegates of Kenya, Tanzania, Trinidad and Tobago, the Islamic Republic of Iran, Egypt, Pakistan, Saudi Arabia, Syria, Algeria, Tonga, Mauritania, Bahrain, Morocco, Viet Nam** and **Zimbabwe** concurred with the views expressed by the delegate of Indonesia.

2.24 The **delegate of Luxembourg**, supported by the **delegates of the United Kingdom, Japan, Portugal, France, Australia, the Netherlands, Canada, Malta, Russia** and **Mexico**, said that the substance of Sections A, B and C of Resolution 33 had been included in Article S9, as reflected in Document 324. If the Resolution was to remain unchanged, it would be necessary to review Article S9 yet again in order to avoid duplication. He was therefore in favour of the amendments set out in Attachment 4.

2.25 The **Chairman** observed that a majority of speakers had wished to retain Resolution 33 in its original form, but that many had supported the proposed revised version. However, a decision to retain Resolution 33 without modification would have serious repercussions on Article S9, which had already been approved and transmitted to the Plenary meeting. He therefore suggested taking action similar to that proposed in connection with Resolution 46 in § 3 of Document 319, namely that as soon as the modifications to Article 9 entered into force provisionally, Resolution 33 in its original form would be abrogated and the new provisions of Articles S9 and S11 would enter into force, thus avoiding any regulatory inconsistency between the provisions.

2.26 The **delegates of Luxembourg, the United Kingdom** and **the Netherlands** supported the Chairman's suggestion.

2.27 The **delegate of Algeria** considered that, although there was a clear link between the simplified Radio Regulations and the content of Resolution 33, further consideration would have to be given to the Chairman's suggestion. That view was supported by the **delegates of Syria, the Islamic Republic of Iran, Saudi Arabia, Indonesia** and **Trinidad and Tobago**, the latter saying that his Administration would be issuing a relevant document later in the day.

2.28 It was **agreed** that discussion of Attachment 4 would be deferred.

2.29 The **Chairman** invited the Committee to consider Attachment 5.

Draft revised Resolution 27 (WRC-95)

2.30 The **delegate of Syria** maintained the reservation which his delegation had expressed in Working Group 4A with respect to the reference to "ITU-T Recommendations" in draft revised Resolution 27 and requested that the matter be raised in the Plenary meeting.

2.31 It was so **agreed**.

2.32 Draft revised Resolution 27 (WRC-95) was **approved**.

2.33 The **Chairman** invited the Conference to consider Attachment 6.

Draft Resolution [COM4-17]

2.34 The **Chairman of Working Group 4A** said that the Working Group had approved the proposal that publication of the Weekly Circular should take place on a fortnightly basis, but had placed the title of the publication in square brackets, pending consideration of the draft Resolution by the Committee.

2.35 At the suggestion of the **Chairman**, and on the basis of *instructs the Director of the Radiocommunication Bureau* 7, it was **agreed** that the square brackets around the word "Weekly" should be removed and that the title "Weekly Circular" should be maintained, pending consideration of an appropriate title by the Director of the Radiocommunication Bureau.

2.36 In response to a proposal by the **delegate of Niger** that the last operative paragraph should be amended to read "*requests the Secretary-General* to provide suitable software and/or hardware for the least developed countries requesting it", the **Chairman** suggested that, as that proposal had financial implications, it would be appropriate to raise it in the Plenary Meeting.

2.37 The **Chairman** invited the Committee to consider Attachment 7.

Article S59 (MOD S59.1, MOD S59.2, ADD S59.3)

2.38 The **delegate of the Islamic Republic of Iran** recalled that his delegation had proposed a draft resolution which had received some support, concerning the date of entry into force of the Final Acts of WRC-95, and which was still on the agenda of the Plenary Meeting. He expressed reservations concerning ADD S59.3, in particular the fact that two dates of entry into force of the revised Radio Regulations were proposed. In view of the large number of modifications, additions and deletions concerning the Articles listed in subparagraph a), which delegations had not had sufficient time to examine in detail, and in view of his delegation's concern with regard to Articles S5, S9 and S11, he requested the deletion of the date 1 June 1998 in square brackets in subparagraph a) and the retention of 1 January 1999 as the date of application for all of the Regulations as revised by WRC-97. The **delegate of Indonesia** endorsed those remarks.

2.39 The **Legal Adviser** suggested that, as additional sub-items might be added to S59.3 following discussions in Committee 5, the subparagraphs might be renumbered S59.4, S59.5, etc. He also suggested that the words "effective dates" in subparagraph b) might be replaced by "effective dates of application".

2.40 The **delegate of Viet Nam** stated his preference for a single date of application. Failing that, he requested that all provisions to be applied as from 1 June 1998 and from 1 January 1999 should be listed clearly in Article S59.

2.41 The **delegate of Tonga** reiterated his delegation's previous reservation concerning Article S59.

2.42 The **delegate of Russia**, observed that Committee 5, in the context of its proposals in relation to certain footnotes in Article 5, would also be putting forward dates of entry into force under Article S59. It was his delegation's understanding that the application of Article 59 would not be extended to those footnotes of Article 5 of which the dates of entry into force were to be changed by WRC-97.

2.43 The **delegate of Spain** said that he was not in favour of linking the provisional implementation of the revised Radio Regulations with the provisional application of resolutions pertaining to certain parts of the Radio Regulations. He therefore proposed deleting subparagraph b) of ADD S59.3.

2.44 The **Legal Adviser** said that, the proposal by the delegate of Spain would confuse the issue, because if Article 59 contained no enumeration of the exceptions with their exact date of application, it would not be clear which provision was applicable at any given time.

2.45 The **delegate of Spain** reserved his right to raise the matter of subparagraph b) in Plenary.

2.46 The **Chairman** said that the discussion on the dates of entry into force should take place in the Plenary Meeting.

2.47 The **Vice-Chairman of RRB** requested the Chairman to draw the attention of the Plenary meeting to the fact that approval of the two dates of entry into force (1 June 1998 and 1 January 1999), with a period of only six months between them could have practical difficulties as well as financial implications. As certain provisions had been revised by both conferences, this would mean publishing Rules of Procedure valid for only half a year and two different sets of Radio Regulations.

2.48 The **Chairman**, stressing the importance of endeavouring to establish a single date of entry into force, suggested that Article S59 should be transmitted to the Plenary, with the provisional renumbering of the paragraphs of S59.3 suggested by the Legal Adviser, and drawing attention to the remarks made by the Vice-Chairman of RRB.

2.49 It was so **agreed**.

Resolution [COM4-18]

2.50 The **delegate of Tonga** reiterated his previous reservation concerning Resolution [COM4-18].

2.51 The **delegate of the United States** said that his delegation would be issuing Document 320 relating to that resolution later in the day.

2.52 The **Chairman** suggested deferring examination of Resolution [COM4-18], which dealt with the provisional application of certain provisions of the Radio Regulations and transitional arrangements, until the next meeting.

2.53 It was so **agreed**.

The meeting rose at 1245 hours.

The Secretary:
T. GAVRILOV

The Chairman:
E. GEORGE

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 4

SUMMARY RECORD

OF THE

TWELFTH MEETING OF COMMITTEE 4

(REGULATORY AND ASSOCIATED ISSUES)

Tuesday, 18 November 1997, at 1440 hours

Chairman: Mr. E. GEORGE (Germany)

Subject discussed		**Documents**
1	Seventh report of Working Group 4A (continued)	319, 320

1 Seventh report of Working Group 4A (continued) (Documents 319, 320)

Draft revised Resolution 33 (WARC-79) (continued)

1.1 The **Chairman** invited the Committee to resume debate of draft revised Resolution 33 (WARC-79), as contained in Attachment 4 to Document 319.

1.2 The **delegate of Algeria** said that Resolution 33, unchanged (as it appeared in Document 2 (3)), contained a number of principles applicable to the broadcasting-satellite service in non-planned bands, in particular the key principle embodied in the second sentence of § 6.4 of Section C. He could only contemplate acceptance of revised Resolution 33 as proposed in Document 319 if that key principle was reproduced elsewhere in the Radio Regulations, the most appropriate place being in Article 11, as a new footnote ADD S11.37.2 to No. S11.37, reading as follows: "When a frequency assignment to a broadcasting-satellite station in a non-planned band is recorded in the Master International Frequency Register, a note must be added to indicate that such recording does not prejudge in any way the decisions to be included in the agreements and associated plans referred to in Resolution 507."

1.3 The **Chairman** suggested that the substance of Algeria's proposal should be retained, but in the form of a new *resolves* 2 in revised Resolution 33 itself rather than as a new footnote.

1.4 The **delegates of Indonesia**, **Saudi Arabia**, **Mauritania**, **Nigeria**, **the Islamic Republic of Iran, Lebanon**, **Cuba**, **Qatar**, **Mali** and **the United Arab Emirates** supported the proposal put forward by Algeria for a new footnote; so too did the **delegate of Tanzania**, who added that Resolution 33 should be left unchanged.

1.5 The **delegate of Tonga**, supported by the **delegate of Pakistan**, said that, while he had no objection to Algeria's proposal, he wished to express a strong reservation with regard to any provisions adopted with retroactive effects that might be detrimental to the interests of administrations with other networks duly notified to the Radiocommunication Bureau in accordance with the provisions in force at the time of notification and awaiting treatment in the coordination queue.

1.6 The **delegates of Kenya** and **Malaysia** said that they supported the Algerian proposal but shared the concerns expressed by the delegate of Tonga.

1.7 The **delegate of the United Kingdom** said that he could see no reason to introduce references to Resolution 33 in the simplified Radio Regulations, since Sections A, B and C of Resolution 33 had already been incorporated in the simplified Radio Regulations. Resolution 33 should be abrogated when the simplified Radio Regulations came into force.

1.8 The **delegate of Luxembourg**, having recalled his delegation's wish for Resolution 33 to be revised, endorsed the Chairman's suggestion with a view to satisfying Algeria's concerns.

1.9 The **delegate of New Zealand** endorsed the United Kingdom's comments and supported the Chairman's suggestion; the **delegate of Canada** also supported the Chairman's suggestion, but said that he would prefer to see the proposed texts in writing before approving them.

1.10 The **delegate of Tonga**, noting that several delegations had supported his position, said that Document 332, which was being put forward by Trinidad and Tobago for consideration by the Conference but was not yet available, might address some of the concerns he had voiced.

1.11 The **delegate of Algeria** said that the key principle covered by his proposal should be spelt out as clearly and prominently as possible for the benefit of administrations, the Radiocommunication Bureau and the Radio Regulations Board, and therefore should be incorporated in the Radio Regulations rather than in a resolution. His proposal would make the simplified Radio Regulations even clearer, which was their ultimate objective.

1.12 The **Chairman** said that, in the light of the overwhelming support that had been expressed for it, the Algerian proposal should be accepted by the Committee and referred to the Plenary for final approval. The **representative of France** supported that proposal.

1.13 ADD S11.37.2, as proposed by the delegate of Algeria, was **approved**.

1.14 The **delegate of the United Kingdom** warned that there might be some duplication between provisions being adopted by the Committee and others in the simplified Radio Regulations. He drew particular attention to Nos. S9.7, S9.11 and S9.19. Such duplication would have to be eliminated once all changes were available for consideration in the three working languages.

1.15 The **Chairman** asked the meeting whether, having approved ADD S11.37.2, it could now approve draft revised Resolution 33 as contained in Document 319.

1.16 The **delegates of Algeria**, **Trinidad and Tobago**, **Malaysia** and **Syria** reserved their position until Document 332 became available for consideration. So too did the **delegate of Tonga**, who reiterated his earlier reservations with regard to the possible harm that retroactive application of new or modified provisions might cause to networks awaiting treatment in the coordination queue.

1.17 The **delegate of Tanzania** said that new footnote ADD S11.37.2 and the draft revision of Resolution 33 appeared to satisfy most of his country's concerns, but he wished to be sure that all procedures previously covered by Resolution 33 were being maintained.

1.18 The **delegate of Luxembourg** expressed support for new footnote ADD S11.37.2, and for draft revised Resolution 33 as contained in Document 319. He observed that the date of entry into force of the draft revised Resolution should be the same as that of the simplified Radio Regulations, rather than the closing date of the Conference.

1.19 The **Chairman** agreed, and confirmed that Resolution 33 (WARC-79) would remain in force until the simplified Radio Regulations came into force. The reservations expressed by delegates would be noted but, in order to make headway, he suggested that the Committee should now approve draft revised Resolution 33 as contained in Document 319 and thus refer it to Plenary for final consideration.

1.20 Draft revised Resolution 33 (WARC-79) was **approved**.

Proposed deletion of Resolution 48 (WRC-95) and interim application of revised Resolution 46 (Rev.WRC-95)

1.21 The **Chairman** drew attention to two outstanding issues for the Committee's consideration under § 3 of the report of the Chairman of Working Group 4A, at the beginning of Document 319. The first was the deletion of Resolution 48 (WRC-95); the second, as he confirmed in response to comments by the **delegate of Canada**, was the interim implementation of revised Resolution 46 until the Radio Regulations, as revised by WRC-97, came into provisional application. He confirmed to the **delegate of Saudi Arabia** that final approval of revised Resolution 46 would be the Plenary's prerogative.

1.22 The deletion of Resolution 48 (WRC-95) and the interim application of revised Resolution 46 (Rev.WRC-95) were **approved**.

1.23 The **delegate of Canada** observed that some of the proposals before Committee 5 had a bearing on those before Committee 4, for example with regard to Resolution 46, Article S21 and Appendix S5. He stressed the need for the two Committees to ensure that all their work was brought together harmoniously.

Reactivation of the Special Committee on Regulatory/Procedural Matters

1.24 The **Chairman** said that, if he heard no objection, he would take it that the Committee could endorse § 6 of the report of the Chairman of Working Group 4A, to the effect that the amount of expected work relating to the study of regulatory/procedural matters in preparation for WRC-99 justified reactivation of the Special Committee on Regulatory/Procedural Matters.

1.25 It was so **agreed**.

Draft Resolutions [COM4-18] and [COM4-X]

1.26 Following a comment by the **delegate of the United States**, the **Chairman** suggested that the Committee should consider draft new Resolution [COM4-X] contained in Document 320 before taking up Resolution [COM4-18] contained in Document 319 since both dealt with provisional application of provisions of the Radio Regulations modified by WRC-97 and the former catered for the provisions relating to the terrestrial services referred to in *resolves* 1 of the latter.

1.27 It was so **agreed**.

1.28 The **delegate of the United States**, introducing Document 320, said that draft Resolution [COM4-X] sought to make Article S11 (Nos. S11.24 and S11.26) provisionally applicable to high-altitude platform stations. The draft Resolution was otherwise comparable to Resolution [COM4-18].

1.29 The **delegate of the United Kingdom** said that reference should be made to high-altitude platform stations in the title of the draft Resolution.

1.30 It was so **agreed**.

1.31 On that understanding, draft Resolution [COM4-X] was **approved**.

1.32 The **delegate of Spain** said that he wished to reserve his position on Nos. S11.24 and S11.26, and his right to return to those provisions when draft Resolution [COM4-X] was taken up in Plenary.

1.33 The **Chairman** invited the Committee to consider Resolution [COM4-18] contained in Attachment 7 to Document 319.

1.34 Following an explanation by the **Chairman of Working Group 4A**, the **Chairman** suggested that the square brackets around *considering* d) and *resolves* 6 should be retained until Committee 5 had completed its consideration of draft revised Resolution 46 (Rev.WRC-95).

1.35 It was so **agreed**.

1.36 The **delegate of the United States** said that, since draft Resolution [COM4-X] had just been approved, the references to Nos. S11.24 and S11.26 could be deleted from *resolves* 1 of Resolution [COM4-18].

1.37 It was so **agreed**.

1.38 The **delegate of Luxembourg** said that a reference to No. S11.47 should be included in *resolves* 1. Following a query by the **delegate of Syria**, he explained that the text of that provision referred to No. S11.44, and it was important to ensure that all the linked provisions came into force at the same time.

1.39 The **Chairman** suggested that Nos. S11.44C - S11.44I should also be referred to in *resolves* 1, as those provisions were linked to No. S11.44B. He also suggested that "No. S11.xx" should be deleted and the words "as revised by WRC-97" added after "Article S11" to make it clear that the revised provisions would apply.

1.40 It was so **agreed**.

1.41 The **delegate of Greece** said that, for the sake of completeness, reference should also be made to A.S11.2 in *resolves* 1. The **Chairman** noted that there was no support for that proposal.

1.42 The **delegate of Tonga** reiterated his view that all the provisions of the revised and simplified Radio Regulations should come into force at the same time. He would therefore reserve his position concerning Resolution [COM4-18] as a whole.

1.43 The **delegate of the Islamic Republic of Iran** said that his country would reserve the right not to accept provisions with an early date of entry into force, since all the provisions of the Final Acts should enter into force on the same date.

1.44 With reference to an observation by the **representative of INTELSAT** as to the maximum time period from the date of receipt of the advance publication information to bringing the frequency assignments into use, referred to in *resolves* 3 of Resolution [COM4-18], the **delegate of Luxembourg** explained that reference had to be made to both No. 1550 and Resolution [GTPLEN2-1] since the former applied to all networks whereas the latter only applied to some services. Furthermore, the year 2003 had been established as a cut-off date for the receipt of information for those networks subject to Resolution [GTPLEN2-1].

1.45 In response to a comment by the **delegate of Malaysia**, who wondered whether administrations that had filed networks prior to 22 November 1997 would have to adopt due diligence procedures until the year 2003, the **Chairman** said that decisions on such networks would be taken on an individual basis; the period of extension would be the shorter of the periods specified in No. 1550 and Resolution [GTPLEN2-1].

1.46 The **delegate of Tonga** said that the extension period was more likely to be that specified in No. 1550 than any period specified in Resolution [GTPLEN2-1]. He proposed that, in *resolves* 3, the text "and Resolution [GTPLEN2-1] if applicable, whichever date comes earlier" should be placed in square brackets, since Resolution [GTPLEN2-1] had not yet been approved.

1.47 It was so **agreed**.

1.48 In response to comments by the **delegates of Saudi Arabia** and **the United Kingdom**, the **Chairman** said that, exceptionally, a date had been approved in draft new Resolution [COM4-X]. However, the dates specified in Resolution [COM4-18] should remain in square brackets until the Resolution was discussed in the Plenary.

1.49 Resolution [COM4-18], as amended, was **approved**.

The meeting rose at 1555 hours.

The Secretary:
T. GAVRILOV

The Chairman:
E. GEORGE

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 385-E
27 November 1997
Original: French

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 3

SUMMARY RECORD

OF THE

SECOND AND LAST MEETING OF COMMITTEE 3

(BUDGET CONTROL)

Tuesday, 18 November 1997, at 0930 hours

Chairman: Mr. M. LANDSMANN (Ukraine)

Subjects discussed		**Documents**
1	Approval of the summary record of the first meeting of the Committee	145
2	Draft report of the Committee to the Plenary	DT/149

1 Summary record of the first meeting of the Committee (Document 145)

1.1 The summary record of the Committee's first meeting (Document 145) was **approved**.

2 Draft report of the Committee to the Plenary (Document DT/149)

2.1 At the request of the **delegate of Spain**, the **Chairman** said that the English, French and Spanish versions of Document DT/149 would be harmonized with regard to the last column of Table 2 in Annex 3.

2.2 In reply to a question by the **delegate of the United States**, the **Secretary** said that the report of the Chairman of Joint Working Group COM3/PLEN-1, as reproduced in Annex 3 to Document DT/149, was in fact an updated version of Document DT/110(Rev.1). The final version of the financial implications would not be produced before the end of the Conference, when all the financial implications of the decisions taken were known.

2.3 The **Chairman**, introducing Document DT/149, said that, to date, seven of the 11 entities and international organizations not exempted from defraying the expenses of WRC-97 had notified their contribution, totalling 4.5 units, as their share of Union expenses, i.e. 46 350 Swiss francs.

2.4 The **delegate of the United States** sought clarification of the last paragraph of § 5.2, in which the Secretary-General was requested to study measures to limit the number of copies of documents made available to delegations, including the introduction of cost-recovery mechanisms for additional copies.

2.5 The **delegate of Canada** said that such a request was consistent with Resolution 39 (Kyoto, 1994) on strengthening the financial base of the Union, and that the principle of cost recovery, which had been the subject of an ITU-2000 recommendation, had in fact been accepted by the Council. It would probably be necessary, in the future, to make more extensive use of cost-recovery mechanisms, particularly with regard to documentation.

2.6 The **Secretary** drew attention, in that connection, to the table on page 2 of Document DT/149, according to which the number of pages reproduced would probably be three times higher than the volume provided for in the 1996-1997 budget. The situation was made all the more awkward by the fact that the appropriation ceiling for the other budget headings had already been reached or even exceeded.

2.7 The **delegate of Spain** said that a discriminating approach should be applied in limiting the number of copies of documents, taking into account the importance of the documents, their volume and the number of members of each delegation. He therefore proposed that the first sentence of the last paragraph of § 5.2 should read: "The Secretary-General is requested to study measures to limit the number of copies of some of the documents …".

2.8 The **representative of the BR** said that a degree of flexibility had already been shown at the Conference. He did not doubt that the Council, which would have the task of taking decisions on the subject, would also be capable of flexibility.

2.9 The **Chairman of Joint Working Group COM3/PLEN-1**, introducing his report on the financial implications of WRC-97 decisions (Annex 3 to Document DT/149), emphasized that the estimate of the additional resources required for post-Conference work was provisional and would be subject to upward adjustment at the end of the Conference. He hoped that the budget adopted by the Council would be sufficient to finance the additional work, including BSS planning/replanning, which would be very expensive. On the other hand, the publication of the Weekly Circular on

CD-ROM should lead to substantial savings, the exact amount of which was not yet known but should be of the order of 120 000 Swiss francs for the first year and 230 000 Swiss francs for subsequent years.

2.10 The **representative of the BR** said that No. S9.30, if adopted, would require BR to publish all requests for coordination within a period of three months. The application of that provision would entail substantial expenses which were not set out in Table 1 of Annex 3 to Document DT/149. He therefore proposed that the words "in particular with respect to the BSS replanning and the timely publication of coordination requests (see S9.30)" should be inserted in the second line of § 7.4 of the draft report, after the word "Conference".

2.11 The **delegate of Spain** pointed out, with regard to the Weekly Circular, that Committee 4 had accepted the principle of a fortnightly publication, which would produce additional savings.

2.12 The **delegate of Canada** said that it should also be pointed out, in § 7.4, that in view of the large number of questions included in the WRC-99 agenda, the appropriation of 500 000 Swiss francs proposed by the Council for the preparatory work for that Conference would probably be totally inadequate.

2.13 The **delegate of the United States** said that the attention of the 1998 Plenipotentiary Conference should be drawn to the question of the surfeit of items placed on the WRC agenda and the extremely high cost of implementing WRC decisions.

2.14 The **delegate of Canada** observed that Working Group PLEN-1 had one day earlier approved a draft Resolution emphasizing the need to establish realistic agendas and envisaging the possibility of lengthening the interval between WRCs.

The **Chairman** said that the proposals and comments that had been made would be duly taken into account.

The meeting rose at 1030 hours.

The Secretary:
A. TAZI-RIFFI

The Chairman:
M. LANDSMANN

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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27 November 1997
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 5

SUMMARY RECORD

OF THE

THIRTEENTH AND LAST MEETING OF COMMITTEE 5

(ALLOCATIONS OF ASSOCIATED ISSUES)

Tuesday, 18 November 1997, at 1830 hours

Chairman: Mrs. V. RAWAT (Canada)

Subjects discussed		**Documents**
1	Documents submitted by Working Group 5B	263(Rev.1), 290 + Corr.1, 294(Rev.2) + Corr.1
2	Application of footnotes ADD S5.556A and ADD S5.556B	205
3	Closure of the work of the Committee	-

1 Documents submitted by Working Group 5B (Documents 263(Rev.1), 290 and Corr.1, 294(Rev.2) and Corr.1)

1.1 The **Chairman** invited delegations to make general comments on Documents 290 and 294(Rev.2), which reflected the finely balanced compromise reached by Working Group 5B after very lengthy discussions.

1.2 The **delegate of South Africa** said that the compromise, which had his delegation's support, placed GSO and non-GSO FSS systems on an equal footing. That would stimulate competition and the development of new technology and would lead to an expansion in the supply of services, from which all countries, and developing countries in particular, would stand to benefit. However, power flux-density limits had been proposed to protect GSO FSS and BSS systems in the Ku band (10 - 18 GHz) and in other bands not covered by Resolution 118 (WRC-95), it being clearly understood that those limits were provisional and that WRC-99 could change them, if necessary, in the light of the in-depth studies to be carried out by ITU-R.

1.3 The **delegates of Canada, Indonesia, Mali, the United Kingdom, France, Lebanon, Cape Verde, Colombia** (on behalf of CITEL)**, Japan, Qatar, Senegal, Israel, Albania, Australia, Tonga** and **Russia** associated themselves with the views expressed by the delegate of South Africa and supported the compromise proposed by Working Group 5B.

1.4 The **delegate of the Islamic Republic of Iran** said that his delegation reserved the right to contest in Plenary the method of calculating the equivalent power flux-density figures given in Tables S22-1 and S22-2 in Document 294(Rev.2).

1.5 The **delegate of the United States** said that his delegation, being aware of its responsibilities, would join in the compromise, albeit with some reluctance. It feared that the limits imposed on power-flux density would impede the development of new technology and the implementation of new systems and regretted the proposal to include such limits in the Radio Regulations. The United States Administration would actively endeavour, in the context of ITU-R and the preparations for WRC-99, to have the limits changed in such a way as to encourage technological development. He added that the United States Federal Communications Commission had given equal treatment to the three major companies working on non-geostationary satellite network projects.

1.6 The **delegate of Syria** said that his delegation supported the introduction of new telecommunication technology provided that it was used in strict conformity with the provisions of Resolution 25 (WRC-95) and that the Plans provided for in Appendices 30, 30A and 30B of the Radio Regulations and existing terrestrial networks and satellite networks were protected. His delegation would have preferred not to include the figures given in Documents 290 and 294(Rev.1) in the Radio Regulations since it was not clear that they would permit the interests of the Syrian Administration to be protected. However, in view of the provisional nature of the figures, his delegation was prepared to join in the compromise.

1.7 The **delegate of Luxembourg** made the following statement:

"Among the general comments on Documents 290 and 294 with their respective revisions and corrigenda, Luxembourg expresses reservations on certain aspects of these proposals. Luxembourg plans to have the first commercial Ka-band satellite serving the whole of Europe next year. It is and has always been supportive of regulations and procedures enabling new technology and competition among systems sharing the spectrum. Particular attention is drawn to one aspect of the text for discussion, namely the question of retroactivity. Luxembourg firmly believes that any new

legislative or regulatory provisions should always look forwards and not backwards, and its delegation accordingly has strenuously sought to have this principle govern the deliberations in Committees 4 and 5 and they have urged that administrations should be allowed to process their satellite network filings to completion, on the basis of the rules that were in place at the time when the networks were filed. Changing of the status of filings in the middle of the process and in a retroactive manner is not in accordance with the normal principles by which most legal systems are established. Luxembourg does not accept the adoption at WRC-97 of provisions which have retroactive impact. We reserve our rights to raise this matter in Plenary.

Furthermore, with regard to the details of Documents 290 and 294 with their respective revisions and corrigenda, Luxembourg expresses a reservation on the issue that power flux-density limits would not be established for the band 18.6 - 18.8 GHz, and in particular on the retroactive application of certain provisions in footnote S5.523A and in Resolution [COM5-27] *resolves* 1 and 2."

1.8 The **Chairman** declared the general debate closed and invited the Committee to consider Document 294(Rev.2) and its Corrigendum 1.

1.9 In reply to the **delegate of Luxembourg**, who asked whether it would be possible in ADD S5.441A to extend the 17.8 - 18.6 GHz (space-to-Earth) range to 18.8 GHz in order to include a band of great importance for geostationary satellites, the **Chairman** said that, in the light of current studies by ITU-R, the originators of the compromise had decided to limit the range to 18.6 GHz. The **delegate of Luxembourg** then reserved his delegation's position on the proposed addition.

1.10 In response to the **delegate of India,** who drew attention to the reference to Appendix S30B in MOD S5.441 and asked whether draft Resolution [COM5-18] had taken into account the possible revision of that Appendix, the **delegate of France**, coordinator of the document, referred participants to Table S22-3, which took into consideration not only the 3 m antenna diameter corresponding to the provisions of Appendix S30B but also other diameters that might be used in the future, thereby allowing for a possible revision of the Appendix.

1.11 In response to the **delegate of Syria**, who wished to propose the addition of a footnote in order to protect existing or planned services pending the completion of current ITU-R studies, the **Chairman** suggested that it would be preferable to avoid involving the Committee in a drafting exercise at the present stage and to defer any such initiative until the draft Resolutions were considered.

1.12 The **delegate of the Islamic Republic of Iran** said, with reference to MOD S5.516 and ADD S5.487A, that his delegation could not support that type of provision and reserved the right to raise the matter in Plenary.

1.13 In response to the **delegate of Syria**, who was concerned about the appropriateness of the phrase "limited to non-geostationary-satellite systems" in ADD S5.487A since it gave the impression that other systems were excluded, the **Chairman** acknowledged that such was not the case. She proposed that editorial amendments should be dealt with informally.

1.14 It was so **agreed**.

1.15 The **delegate of Russia**, referring to MOD S22.2, said that mention should be made alongside the fixed-satellite service of the broadcasting-satellite service, which had previously been protected by the provisions of Resolution 506 (Rev.Orb-88). Having heard no objection, the **Chairman** proposed that the end of MOD S22.2 should be amended to read: "… not cause

unacceptable interference to geostationary-satellite systems in the fixed-satellite service and the broadcasting-satellite service operating in accordance with …".

1.16 It was so **agreed**.

1.17 In reply to a question from the **delegate of the Islamic Republic of Iran** concerning the wording of the second and third lines of ADD S22.5A1, the **delegate of France** explained that the idea was to protect geostationary receiving space stations from non-geostationary transmitting space stations and confirmed that the wording was correct.

1.18 The **delegate of the United States** pointed out that the phrase "or in the broadcasting-satellite service" in ADD S22.5A1 should be deleted because the proposed amendment referred only to non-geostationary systems in the fixed-satellite service.

1.19 In reply to the **delegate of India**, who asked whether the maximum aggregate power flux-density referred to in ADD S22.5A1 was measured on the orbit itself or with a tolerance of ±2°, as was the case for terrestrial systems, the **delegate of France** said that the difference was negligible and explained that it was proposed to calculate power flux-density limits at the orbit to avoid unduly complicated verification procedures. The **Chairman** invited the two delegates to confer informally.

1.20 The **delegate of the Islamic Republic of Iran**, drawing attention to an apparent difference between the wording of ADD S22.5A1 and ADD S22.5C.1, proposed deleting the word "earth" from the latter. The **delegate of France** explained that the apparent difficulty stemmed from the fact that part of the frequency range referred to in Appendix 30A, namely the band 17.8 - 18.1 GHz, was allocated in both directions, Earth-to-space and space-to-Earth, so that what had to be limited was the aggregate power-flux density emitted by earth stations in one direction and by space stations in the other. The **Chairman** proposed that any editorial alignment of ADD S22.5A1 and ADD S22.5C.1 should be effected informally.

1.21 It was so **agreed**.

1.22 In response to the **delegate of Russia**, who questioned the validity of the frequency band 17.8 - 18.1 GHz referred to in ADD S22.5A1, the **delegate of France** acknowledged that 17.7 - 18.1 GHz would be a more appropriate range for the frequency band, since the aim was to protect geostationary space stations from interference produced by non-geostationary space stations in the space-to-Earth direction. The **Chairman** took due note of the point and proposed that the Committee should come back to it later.

1.23 It was so **agreed**.

1.24 The **delegate of Syria** said that the phrase "confirmed by WRC-99" in the note under ADD S22.5B.1 was inaccurate since it gave the impression that the provisional limits were already correct. The **Legal Adviser** added that the current Conference could not dictate to WRC-99 and that the wording "shall be" was inappropriate. The **Chairman** therefore proposed that the offending phrase should be amended in the note and throughout the document under consideration to read: "and are subject to confirmation by WRC-99".

1.25 It was so **agreed**.

1.26 The **delegate of Syria** noted that in Table S22-1 the reference antenna radiation pattern was governed in the case of Regions 1 and 3 by Recommendation ITU-R BO.1213 and in the case of Region 2 by Annex 5 of Appendix 30. He thought it unfair that the Regions should be treated differently, on the basis of new provisions and old ones respectively. The **Chairman** stressed again

that the compromise reached was very finely balanced and the **delegate of France** pointed out that the use of reference antennas based on the Appendix 30 Plan applied to Stage 1 and was in conformity with the provisions of draft Resolution [COM5-19].

1.27 The **delegate of France** drew attention to an editorial but nonetheless very important amendment to Table S22-1, in which the power flux-density should be equivalent.

1.28 The **delegate of Syria** strongly deplored the manifest differences in levels of protection proposed for the different Regions in Table S22-3.

1.29 The **representative of INTELSAT** made the following statement: "INTELSAT has plans to serve 5 m earth station antennas in the band 19.7 to 20.2 GHz. If one compares the epfd limits proposed for the protection of 5 m antennas in the upper Ka-band, 19.7 to 20.2 GHz, with those approved for the lower Ka-band, 17.8 to 18.6 GHz, one sees that they are less protective. The reason is clear. In the lower Ka-band, the levels approved are those which are really required to protect 5 m antennas, while the limits proposed for the upper Ka-band, both for short term and long term, fall short by about 6 dB, and therefore do not protect the GSO transmissions planned by INTELSAT. This is not due to the fact that the non-GSO systems cannot meet the required limits, or else they would not have been accepted for the lower Ka-band, but simply because the non-GSO operators want relaxations in the upper Ka-band. What we witness here is the creation of a 500 MHz portion of the Ka-band in which the GSO FSS systems will not be fully protected, and INTELSAT has serious concerns with this fact. While INTELSAT has an observer status at this Conference, it has an obligation towards its member countries, most of which were not present during the working group meetings which derived the proposed limits, to point out the implications of these proposals on the system that they own."

1.30 The **Chairman**, noting the sensitive nature of the discussions on the Ka-band, said she did not wish to reopen the debate at the present stage, but had taken due note of the concerns expressed by the representative of INTELSAT.

1.31 In reply to the **delegate of Russia**, who inquired about the meaning of the phrase "exceeded on the territory of any country" in ADD S22.5F and wondered which territorial limits were referred to, the **Chairman** explained that the offending phrase was a standard formula in the Radio Regulations, e.g. in No. S21.17. She acknowledged, however, that some form of clarification was clearly required, the **representative of BR** having conceded that the concerns of the delegate of Russia were well-founded since it was a matter of protection vis-à-vis systems in the geostationary-satellite orbit. The **delegate of France** explained that the problem arose from an error in the table numbers given and that the limits shown in Tables S22-1 and S22-3 were certainly measured on the countries' territories.

1.32 The **delegate of India** established a correlation between the proposals in Section VI and the wording of new *resolves* 5 in draft Resolution [COM5-18] submitted for consideration in Corrigendum 1 to the document under discussion and proposed that Section VI should be duly aligned. The **Chairman**, acknowledging the pertinence of the comment, proposed reverting to the point when draft Resolution [COM5-18] was considered.

1.33 It was so **agreed**.

1.34 The **delegate of France** drew attention to an editorial but nonetheless important amendment, namely the renumbering of ADD S21.19 as ADD S22.5E.

Draft Resolution [COM5-18] (Documents 294(Rev.2) and Corr.1)

1.35 *Considering, further considering,* subject to an editorial amendment, *noting* and *recognizing* were **approved**.

1.36 In response to a request for clarification by the **delegate of Syria**, the **delegate of France** said that the bands to which S22.2 applied were not closed to non-geostationary systems. He proposed rewording *resolves* 1 to read: "…non-GSO/FSS shall apply the procedures in Sections I and III of Article 11/in Section I of Article **S9** and Nos. **S9.17** and **S9.17A**, and the procedures in Article **13/S11**, and non-GSO/FSS for which complete notification information has been received by the Radiocommunication Bureau after 21 November 1997 shall be subject to the provisional power limits appearing in Article **S22** and in Annex 1 to this Resolution".

1.37 *Resolves* 1, as amended, was **approved**.

1.38 Following an exchange of views among the **delegate of Canada,** the **representative of BR** and the **delegate of France**, the latter proposed inserting the following phrase at the end of Section VI so that there would be no inconsistency between MOD S22.26 and *resolves* 5: "The provisions of this section are suspended pending a review of the figures given in MOD S22.26, ADD S22.27 and ADD S22.28 by WRC-99".

1.39 It was so **agreed**.

1.40 *Resolves* 2, 3, 4 and 5 were **approved**.

1.41 The **Chairman** noted that *resolves* 6 had been **deleted**.

1.42 *Resolves* 7, 7*bis*, 7*bis*.1, 7*bis*.2 and 7*bis*.3 were **approved**.

1.43 The **delegate of India** made the following statement:

"The statements in '*considering* g)' and *'recognizing'* of the Resolution are strong statements identifying these resources as unique and emphasizing the need to prevent monopolization or exclusive use of an allocation by a single system. At present no answer to the question of the number of non-GSO systems that can operate simultaneously is available and this matter needs to be studied with highest priority to ensure equitable access to non-GSO technology."

To that end, he proposed inserting an additional paragraph under *resolves*. The **Chairman** invited him to discuss the proposal with the authors of the draft Resolution informally and assured him that it would be adopted if it secured a consensus.

1.44 *Resolves* 8 and 9 were **approved**.

1.45 *Requests ITU-R, instructs the Radiocommunication Bureau* and Annex 1 were **approved**.

1.46 With regard to Annex 2, the **Chairman** noted that it contained a list of ITU-R studies in frequency sharing between non-GSO FSS and GSO FSS, as set out in Document DT/150.

1.47 The **delegate of the United Kingdom**, who had chaired the technical group responsible for preparing the list, said that his attention had been drawn to the omission of one study. He read out the study in question, which would figure as number 12, and said he would pass the text to the Secretariat.

1.48 The **representative of BR**, referring to study 6 in Annex 2, said that the Bureau did not yet have the tools it needed to calculate the epfd and apfd limits. Pending development of the tools with the study groups concerned, it would be grateful if administrations would provide the figures needed to calculate the limits when submitting their frequency assignment notices to the Bureau.

1.49 Annex 2, as amended, was **approved**.

1.50 Draft Resolution [COM5-18] as a whole, as amended, was **approved**.

Draft Resolution [COM5-19] (Document 294(Rev.2))

1.51 *Considering* and *resolves* 1 a), b), c) and d) were **approved**.

1.52 The **delegate of the United States** proposed that the words "or the availability of the signal" should be added after "degradation of picture and sound quality" in the second subparagraph of *resolves* d)1.

1.53 *Resolves* d)1, as amended, e), f) and g), *requests ITU-R* and *instructs the Radiocommunication Bureau* were **approved**.

1.54 The **delegate of France** drew attention to two editorial amendments to Tables 1 and 2 in the Annex. In reply to a question from the **delegate of Cuba**, he confirmed that the reference to the broadcasting-satellite service in paragraph 1.1 would have to be deleted. The **representative of BR** said that he would consult the delegate of the United Kingdom regarding the appropriateness of replacing "dB(W/m^2)" in the subparagraph relating to P_i of paragraph 3.1 by "dBW".

1.55 Draft Resolution [COM5-19] as a whole, as amended, was **approved**.

1.56 Documents 294(Rev.2) and Corr.1 as a whole, as amended and subject to subsequent editorial amendments, were **approved**.

Documents 290 and Corr.1(Rev.1)

1.57 The **Chairman** invited the Committee to comment on MOD Table 18.6 - 20.2 GHz and MOD Table 27 - 29.9 GHz and on footnote MOD S5.523A.

1.58 The **delegate of Luxembourg** said that he had some difficulties with footnote MOD S5.523A; he could accept it if the words "notification information" in the last sentence were replaced by the words "coordination information". The **Chairman**, having noted that the amendment was unacceptable in the light of the previous discussions, the **delegate of Luxembourg** entered a reservation regarding the footnote.

1.59 MOD Table 18.6 - 20.2 GHz, MOD Table 27 - 29.9 GHz and MOD S5.523A were **approved**.

1.60 The **Chairman** invited the Committee to comment on draft Resolution [COM5-27] contained in Document 290, the text of which had been amended by Corrigendum 1(Rev.1).

1.61 The **delegate of Luxembourg** said that his delegation had entered a reservation concerning the two paragraphs under *resolve*s.

1.62 The **representative of BR**, noting that *considering* g) provided for the entry into force of MOD S5.523A on the date given in Article S59 of the Radio Regulations and that at the end of the draft Resolution BR was instructed to apply the provisions of MOD S5.523A (WRC-97) in the bands 18.8 - 19.3 GHz and 28.6 - 29.1 GHz from 22 November 1997, said he thought that footnote S5.523A should actually enter into force on 22 November 1997 and that that should be reflected in Article S59 of the Regulations. The **Legal Adviser** noted that Committee 4 had decided that Article S59 of the Regulations would contain a recapitulation of the dates of entry into force.

1.63 The **delegate of France**, expressing the view that issues relating to the coexistence of non-GSO and GSO FSS systems had not been adequately studied, proposed adding a *requests ITU-R* to the draft Resolution identical to paragraph c) under *requests ITU-R* in draft Resolution [COM5-18], which the Committee had just approved. As that formulation was not acceptable to the **delegate of the United States**, the **delegate of France** said he would refrain from pressing his proposal but would discuss it informally with the delegation of the United States prior to the Plenary. The **representative of BR** said that ITU-R would in any case undertake appropriate studies.

1.64 Draft Resolution [COM5-27] was **approved**.

1.65 Documents 290 and Corr.1(Rev.1) as a whole were **approved**.

Draft Resolution [COM5-23] (continued) (Document 263(Rev.1))

1.66 The **Chairman** noted that in MOD Table S21-4/Annex 1 to draft Resolution [COM5-23], some frequency bands for the non-GSO fixed-satellite service (space-to-Earth) remained within square brackets. In the light of the discussions that had taken place concerning Document 294(Rev.2) and the amendments to Article S5, she proposed removing the brackets and keeping the frequency bands as they appeared in the table.

1.67 It was so **agreed**.

2 Application of footnotes ADD S5.556A and ADD S5.556B (Document 205)

2.1 The **representative of BR** said that at the time of the approval of footnotes ADD S5.556A and ADD S5.556B, BR had been instructed to check whether administrations had supplied it with information regarding systems to which the two footnotes were applicable. Several administrations had in fact done so, some of them at the advance publication stage. The administrations in question requested that their notifications should continue to be treated in accordance with the provisions that had been in force when they had initialized the registration procedure and that they should not be subject to the new footnotes.

2.2 The **delegate of Syria** took the view that it would be wrong to penalize an administration in a situation like Malaysia's by forcing it to comply with new rules.

2.3 The **Legal Adviser** said that the questions of retroactivity and the application of the interim provisions had been discussed in Committee 4. He noted that non-retroactivity of treaties was a general legal principle and applied as a matter of course to the Radio Regulations, which constituted a treaty. The Vienna Convention on the Law of Treaties clearly stipulated that, unless a different intention appeared from the treaty or was otherwise established, its provisions did not bind a party in relation to any act or fact which had taken place or any situation which had ceased to exist before the entry into force of the treaty. Hence, if the Administration of Malaysia had duly submitted a frequency assignment notice under the old provisions of the Regulations and before the entry into force of the new provisions, it must continue to be treated in accordance with the old rules.

2.4 The **Chairman** added that, when the Committee had approved the footnotes, it had not explicitly decided that they would be applicable to systems already involved in the notification procedure. She therefore confirmed that the registration procedure for those systems would continue to be governed by the old provisions of the Regulations.

2.5 The **delegate of India** made the following statement: "While the changes in the Radio Regulations should be effective prospectively, certain situations may require retrospective operation. One such situation is when a proponent of new technologies wishes to induct systems based on the provisional limits. While there can be no objection to induction of such systems with provisional limits, the proponents of such systems should undertake to meet the final limits as and when such limits are finalized."

2.6 The **Chairman** considered that the footnotes under consideration should not be applied retroactively to Malaysia and other administrations in the same situation.

3 Closure of the work of the Committee

3.1 The **Chairman** said she had made sure that no provisions would remain in square brackets for consideration by the Plenary. All matters referred to the Committee had been addressed and, for the most part, settled by compromise, with the exception of the question relating to the band 1 559 - 1 567 MHz for the mobile-satellite system and the questions of sharing with the global positioning system (GPS) and the band 1 675 - 1 710 MHz. She thanked everybody who had contributed to the successful completion of the Committee's work, in particular the Chairmen of ad hoc Groups and subgroups.

3.2 The **delegates of Lebanon, South Africa, the United Kingdom, the United States** and **Mali** paid tribute to the Chairman, commending her competence, tenacity and skilful handling of the proceedings.

The meeting rose at 2230 hours.

The Secretary:
J. LEWIS

The Chairman:
V. RAWAT

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 387-E
9 December 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

SEVENTH PLENARY MEETING

Tuesday, 18 November 1997, at 1610 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Tribute to Mr. Carlo Terzani	-
2	Report of Committee 2	309
3	Fifth series of texts submitted by the Editorial Committee for first reading (B.5)	277
4	Sixth series of texts submitted by the Editorial Committee for first reading (B.6)	288
5	Second series of texts submitted by the Editorial Committee for second reading (R.2)	287
6	Announcement by the Russian delegation	-

1 Tribute to Mr. Carlo Terzani

1.1 The **Chairman** said that he regretted to announce the death of Mr. Carlo Terzani, who had been associated with the Union for 40 years and had been the Chairman of ITU-R Study Group 10 for 20 years, until his retirement in 1995. He would be sadly missed.

1.2 The Conference observed a minute's silence in tribute to the memory of Mr. Terzani.

2 Report of Committee 2 (Document 309)

2.1 The **Chairman of Committee 2**, introducing Document 309, said that to date 129 countries had deposited their credentials with the Secretariat; he appealed to the 11 countries that had not yet deposited their credentials to do so as soon as possible. In that connection, he suggested that the Plenary Meeting should authorize the Chairman or Vice-Chairman of Committee 2 to verify any credentials received after the date of the report and submit their conclusions to the Plenary.

2.2 It was so **agreed**.

2.3 The report of Committee 2 (Document 309) was **noted**.

3 Fifth series of texts submitted by the Editorial Committee for first reading (B.5) (Document 277)

3.1 The **Chairman** invited the meeting to consider the Committee 5 texts taken from Documents 244 and 246.

Article S5 (MOD S5.369, MOD Table 2 450 - 2 520 MHz, MOD Table 2 520 - 2 670 MHz, ADD S5.403A, MOD Table 2 670 - 3 300 MHz, ADD S5.420A)

3.2 Approved.

MOD Annex 1 to Appendix S5 (Rev.WRC-95) (NOC 1 to 1.2.2.2, MOD 1.2.2.2.1, MOD 1.2.2.2.2, MOD 1.2.2.2.3, NOC 1.2.3, MOD 1.2.3.1)

3.3 **Approved** subject to correction of a typographical error in the table of MOD 1.2.3.1.

MOD Resolution 215 (Rev.WRC-97), SUP Resolution 115 (WRC-95), NOC Resolution 716, SUP Resolution 717, SUP Recommendation 717, SUP Recommendation 721

3.4 Approved.

Article S5 (NOC Table 1 700 - 2 010 MHz, MOD Table 2 010 - 2 170 MHz, MOD S5.389C, ADD S5.390, NOC Table 2 170 - 2 450 MHz, MOD 14.8 - 17.3 GHz, MOD S5.511A, SUP S5.511B, MOD S5.511C, ADD S5.511D, MOD Table 18.6 - 20.2 GHz, MOD Table 27 - 29.9 GHz, MOD S5.523C, MOD S5.523D, ADD S5.523E, MOD S5.535A, MOD S5.541A)

3.5 Approved.

Article S21 (MOD Table S21-4)

3.6 Approved.

ADD Resolution COM5-8 (WRC-97)

3.7 In response to a query by the **delegate of Malaysia**, the **Chairman** said that references to WRC-99 were being placed in square brackets pending the outcome of discussions in Working Group PLEN-1.

3.8 Resolution COM5-8 (WRC-97) was **approved**.

SUP Resolution 116 (WRC-95), SUP Resolution 117 (WRC-95)

3.9 **Approved**.

3.10 The **Chairman** invited the Committee to consider the Working Group PLEN-1 text taken from Document 255.

ADD Resolution GTPLEN1-1 (WRC-97)

3.11 In response to a query by the **delegate of Syria** regarding the use of the word "competent" in the operative part of the Resolution, the **Legal Adviser** explained that a world radiocommunication conference was competent in respect of a matter if that matter was included in its agenda.

3.12 Resolution GTPLEN1-1 (WRC-97) was **approved**.

3.13 The fifth series of text submitted by the Editorial Committee (B.5) (Document 277), as a whole, as amended, was **approved** on first reading.

4 Sixth series of texts submitted by the Editorial Committee for first reading (B.6) (Document 288)

4.1 The **Chairman** invited the meeting to consider the Committee 4 texts taken from Document 279.

Article S5 (MOD S5.73, MOD S5.81)

4.2 **Approved**.

ADD Article S12

4.3 The **Chairman of Committee 4** said that the word "[Exclusively]" should be deleted from the title. Footnotes 1 and 3 should also be deleted and the remaining footnotes renumbered accordingly.

4.4 The **delegate of Syria**, referring to No. S12.12, said that the Radiocommunication Bureau should respond positively to requests for assistance from the administrations of developing countries, in particular LDCs; he could not accept that the Bureau did not have the budgetary resources to provide such assistance.

4.5 The **Chairman of Committee 4** said that No. S12.14 should be deleted.

4.6 Article S12, as amended, was **approved**.

Article S19 (ADD S19.96A)

4.7 **Approved**.

Article S33 (NOC S33.39, ADD S33.39A, ADD S33.39.1, ADD S33.39B, ADD Section VIII, ADD S33.54, ADD S33.55)

4.8 **Approved**.

Article S51 (MOD S51.53)

4.9 **Approved**.

Article S52 (MOD S52.3, MOD S52.7, MOD S52.54, ADD S52.54.1, MOD S52.55, MOD S52.189, MOD S52.217, MOD S52.219, MOD S52.220)

4.10 **Approved** subject to deletion of the references to class J1D emissions from MOD S52.3, MOD S52.54.1, MOD S52.217, MOD S52.219 and MOD S52.220.

Appendix S15 (NOC Table S15.1)

4.11 **Approved**.

Appendix S15 (Table S15.2)

4.12 The **Chairman of Committee 4** proposed that, as a consequence of the text approved for ADD S5.353A by Committee 5, the texts in square brackets in the notes for MOD 1 530 - 1 544 MHz and MOD 1 626.5 - 1 645.5 MHz should each be amended to read "GMDSS distress, urgency and safety communications have priority in this band; see No. S5.353A" and the square brackets should be deleted.

4.13 Table S15.2, as amended, was **approved**.

SUP Resolution No. 210 (Mob-87), SUP Resolution No. 330 (Mob-87), MOD Annex to Resolution 312 (Rev.WRC-97)

4.14 **Approved**.

Resolution COM4-9 (WRC-97)

4.15 In response to a query by the **observer for IMO**, the **Chairman** explained that the date of the WRC referred to in *noting further* b) and *resolves* 2 remained in square brackets pending the outcome of discussions in Working Group PLEN-1, as in other similar texts submitted to the Plenary.

4.16 On that understanding, Resolution COM4-9 (WRC-97) was **approved**.

Resolution COM4-10 (WRC-97), Resolution COM4-11 (WRC-97), Resolution COM4-12 (WRC-97), Annex to Resolution COM4-12 (WRC-97)

4.17 **Approved**.

4.18 The **Chairman** invited the meeting to consider the Committee 5 texts taken from Document 282.

Article S5 (MOD S5.208, MOD S5.208A, NOC S5.219, MOD Table 148 - 156.8375 MHz, MOD Table 322 - 400.15 MHz)

4.19 **Approved**.

Article S5 (MOD S5.209)

4.20 The **Chairman of Committee 5** said that as a consequence of a further decision in Committee 5, "455 - 456 MHz" should read "454 - 456 MHz".

4.21 MOD S5.209, as amended, was **approved**.

Article S5 (MOD S5.220, SUP S5.224, ADD S5.224A, ADD S5.224B)

4.22 **Approved**.

Annex 2 to Resolution 46 (Rev.WRC-95), paragraph A2.3.2 (MOD Table 1)

4.23 The **Chairman of Committee 5** noted that in MOD Table 1 the frequency range "455 - 456 MHz" should read "454 - 456 MHz".

4.24 MOD Table 1, as amended, was **approved**.

Annex 2 to Resolution 46 (Rev.WRC-95) (ADD A2.1.1.1, ADD A2.1.1.2, ADD A2.1.1.3)

4.25 In reply to a query by the **delegate of Canada** concerning the reference between brackets to Annex 1 to Appendix S5, the **Chairman of Committee 4** explained that Committee 4 had recommended that Resolution 46 should be abrogated but that the revised text of the Resolution, as approved by Committee 5, should apply until the entry into force of parallel provisions in the Radio Regulations as revised at WRC-97. The **Chairman** suggested that the matter should be clarified editorially.

4.26 On that understanding, Annex 2 to Resolution 46 (Rev.WRC-95) (ADD A2.1.1.1, ADD A2.1.1.2, ADD A2.1.1.3) was **approved**.

Resolution 715 (Rev.WRC-97)

4.27 **Approved**.

Draft Resolution COM5-14 (WRC-97)

4.28 The **delegate of Spain** recalled that his delegation had expressed reservations in Committee 5 regarding the need for the proposed Resolution. The band 470 - 862 MHz was extensively used by broadcasting services, studies relating to the possible sharing of the band with other services would be a waste of ITU's scarce resources, since a successful outcome was unlikely. The **delegates of Bulgaria, Panama** and the **Islamic Republic of Iran** associated themselves with that view.

4.29 The **Chairman of Committee 5** said that a number of delegations had expressed similar reservations, which had been reflected in the relevant summary record of Committee 5, but that strong interest had been shown in the proposed studies, and the draft Resolution had been approved.

4.30 Following an exchange of views during which a large number of delegations indicated by raising their cards that they had reservations concerning the draft Resolution, the **Chairman** proposed that those delegations should submit their names in writing to the Secretary.*

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* A reservation in respect of draft Resolution COM5-14 was subsequently submitted to the secretariat by the delegation of Singapore.

4.31 The **delegate of India** suggested that administrations' concerns might be met by adding "the possibility of" before "additional" and "particularly taking into account *considering* i) above" after "1 GHz" in *resolves* 2.

4.32 The **delegate of Spain**, supported by the **delegate of Algeria**, proposed that, given the apparently large number of reservations, the draft Resolution should be withdrawn.

4.33 Following a further exchange of views, the **Chairman** proposed that the matter should be referred to an informal group, coordinated by the Chairman of Committee 5, for further consideration.

4.34 It was so **agreed**.

Recommendation COM5-A (WRC-97), SUP Resolution 711 (WARC-92), SUP Resolution 714 (WRC-95)

4.35 **Approved**.

4.36 With the exception of Resolution COM5-14 (WRC-97), the sixth series of texts submitted by the Editorial Committee (B.6) (Document 288) as a whole, as amended, was **approved** on first reading.

5 Second series of texts submitted by the Editorial Committee for second reading (R.2) (Document 287)

Article S19

5.1 The **Chairman of Committee 4** said that new proposals for MOD S19.35 and MOD S19.99 had been formulated, as set out in Document 324, and would be considered later by Committee 4. The **Chairman** suggested the deletion of MOD S19.35 and MOD S19.99, shown in square brackets in Document 288, on the understanding that new texts would be submitted in due course.

5.2 It was so **agreed**.

5.3 With the exception of MOD S19.35 and MOD S19.99, Article S19 was **approved**.

Appendix S3, Appendix S18, Resolution 310 (Rev.WRC-97)

5.4 **Approved**.

Resolution 331 (Rev.WRC-97)

5.5 The **Chairman of Working Group PLEN-1** suggested that the *invites the next world radiocommunication conference* section should be placed in square brackets pending the outcome of discussions in Working Group PLEN-1.

5.6 On that understanding, Resolution 331 (Rev.WRC-97) was **approved**.

Resolution COM4-1 (WRC-97), Resolution COM4-2 (WRC-97)

5.7 **Approved**.

Resolution COM4-3 (WRC-97)

5.8 The **Chairman of Working Group PLEN-1** suggested that the *resolves* section should be placed in square brackets pending the outcome of discussions in Working Group PLEN-1.

5.9 On that understanding, Resolution COM4-3 (WRC-97) was **approved**.

Resolution COM4-4 (WRC-97) and Annex, Resolution COM4-5 (WRC-97)

5.10 **Approved**.

Resolution COM4-7 (WRC-97)

5.11 The **delegate of Syria** said that it would be preferable to complete studies and develop improved technology before frequency adaptive systems in the MF/HF bands were brought into operation, in order to ensure that there would be no harmful interference to existing services in those bands.

5.12 Resolution COM4-7 (WRC-97) was **approved**.

Resolution COM4-8 (WRC-97), Resolution COM5-3 (WRC-97), Resolution COM5-4 (WRC-97), Resolution COM5-5 (WRC-97), Resolution COM5-7 (WRC-97)

5.13 **Approved**.

Resolution COM5-9 (WRC-97)

5.14 The **Chairman of Committee 5** read out the following statement which had been included in the summary record of the fifth meeting of Committee 5 at the request of the Administration of the Islamic Republic of Iran*: "Considering that an allocation to the meteorological-satellite service has been made in the frequency band 7 750 - 7 850 MHz, limited to non-GSO systems, and that an allocation has been made to the earth exploration-satellite service in the frequency band 8 025 - 8 400 MHz in Regions 1 and 3, the attention of ITU-R is drawn to RR S21.16.7 and the need to review the adequacy of the power flux-density limit shown in Table 21.4 to protect fixed service systems operating in these bands".

5.15 Resolution COM5-19 (WRC-97) was **approved**.

Resolution COM5-13 (WRC-97), Recommendation 66 (Rev.WRC-97), SUP Resolution 408 (Mob-87), SUP Recommendation 621 (WARC-92), List of Resolutions and Recommendations approved for suppression

5.16 **Approved**.

5.17 The second series of texts submitted by the Editorial Committee to the Plenary Meeting (R.2) (Document 287), as a whole, as amended, was **approved** on second reading, subject to the matters left pending and minor editorial amendments.

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* See rectification in § 2.2 of the minutes of the eighth Plenary Meeting (Document 388).

6 Announcement by the Russian delegation

6.1 The **delegate of Russia** was pleased to announce the successful launch, on 12 November 1997, of a Proton rocket and its payload, the first geostationary satellite in a fixed-satellite service network which would come into operation in the band 11 - 14 GHz, from 26 November 1997.

The meeting rose at 1740 hours.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 388-E
9 December 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

EIGHTH PLENARY MEETING

Wednesday, 12 November 1997, at 0905 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Oral report by the Chairman of Committee 4	-
2	Oral report by the Chairman of Committee 5	-
3	Oral report by the Chairman of Working Group PLEN-1	-
4	Report of Committee 3	314
5	Sixth series of texts submitted by the Editorial Committee for first reading (B.6) (continued)	288
6	Seventh series of texts submitted by the Editorial Committee for first reading (B.7)	341
7	Third series of texts submitted by the Editorial Committee for second reading (R.3)	342
8	Approval of the minutes of the third, fourth and fifth Plenary Meetings	209 + Corr.1, 226, 299
9	Draft Resolution relating to telecommunication resources for disaster mitigation and relief operations	161 (Rev.1) + Corr.1
10	Date of entry into force of the Radio Regulations	44, 153

1 Oral report by the Chairman of Committee 4

1.1 The **Chairman of Committee 4** said that the Committee's main achievement had been the approval of the draft Plan, together with a number of concomitant documents, by an overwhelming majority. It had not, however, been possible to resolve all issues on the Committee's agenda, on account of their number and difficulty. Certain contentious matters had been referred to the Plenary. Despite the preparation of Document DT/5(Rev.1) by ad hoc Group 5 of Working Group 4D and the lengthy discussions in the Committee concerning the technical parameters for the establishment of the Plan, it had not been possible to reach agreement; another ad hoc working group had been set up to discuss Document DT/5(Rev.1) further and to endeavour to resolve the divergences of opinion. Although work had been partially completed on the draft resolution on the replanning issue, certain parts of the text still remained in square brackets. A number of other matters which had not been tackled on account of lack of time would be listed in a document to be issued later. He thanked all members of Committee 4 for the spirit of cooperation which had prevailed over their deliberations on such difficult items.

1.2 The **delegates of the Islamic Republic of Iran** and **Syria** requested that sufficient time be set aside for discussion in the Plenary of certain key issues which were a source of concern to many delegations, such as those dealt with in Documents 44 and 153.

1.3 The **Chairman** thanked the Chairman and all members of Committee 4 for their excellent work on very sensitive matters.

2 Oral report by the Chairman of Committee 5

2.1 The **Chairman of Committee 5** said that the Committee had completed its work on matters relating to MSS below 1 GHz, and had almost completed its tasks on MSS in the 1 - 3 GHz range, except for new MSS allocations in the 1 559 MHz range and MSS uplinks in the 1 675 MHz range, for which the outcome of informal consultations was awaited. On the challenging issue of band sharing between non-GSO FSS, FSS and BSS systems, the Committee had considered input from Committee 4 on the relevant technical aspects. In a spirit of considerable compromise and cooperation, Document 294(Rev.1) on regulatory provisions relating to the operation of non-GSO FSS and GSO systems in the 10.7 - 30 GHz bands had been approved. The delegate of Luxembourg, however, had expressed concern over the retroactivity of some provisions, and had reserved his position on ADD S5.441A, and the delegate of the Islamic Republic of Iran had expressed reservations concerning MOD S5.516 and ADD S5.487A. The delegate of Syria had raised the issue of the differences in the protection afforded to the BSS Plan in Regions 1 and 3 in comparison with Region 2. Those concerns would be reflected in the relevant Committee 5 summary records.

2.2 Rectifying the statement she had read out at the seventh Plenary Meeting concerning allocations to the earth exploration-satellite service in the 8 GHz band and the meteorological-satellite service in the 7 GHz band, she said that the statement had been received not from the Administration of the Islamic Republic of Iran but from Working Group 5A as a whole.

2.3 The **delegate of Syria** observed that his Administration had accepted the compromise solution reached in Committee 5, on condition that adequate protection would be provided through the inclusion of a footnote by a competent future radiocommunication conference.

2.4 The **Chairman** thanked the Chairman and all members of Committee 5 for the excellent work they had accomplished.

3 Oral report by the Chairman of Working Group PLEN-1

3.1 The **Chairman of Working Group PLEN-1** said that all three ad hoc groups set up by the Working Group had completed their work and that the resulting texts would be transmitted to Committee 6 and thence to the Plenary. Working Group PLEN-1 would be holding a final meeting to endeavour to complete its work on five resolutions for submission to the Plenary Meeting concerning, respectively, the agenda items for WRC-99, urgent studies, a possible conference for broadcasting-satellite services (Appendix 30A), agenda items for WRC-01, and possible agenda items for future conferences.

3.2 The **Chairman** stressed the importance of drawing up agendas which would not overload future conferences.

4 Report of Committee 3 (Document 314)

4.1 The **Chairman of Committee 3**, introducing Document 314, said that the Budget Control Committee had held two meetings during the Conference to consider points arising from its terms of reference, the first of which concerned the organization and facilities made available to delegates, which had been fully satisfactory, despite the much larger participation than at WRC-95. On the basis of the provisions of Article 34 of the Convention (Geneva, 1992), the Committee had considered the WRC-97 budget of 3 721 000 Swiss francs approved by the Council at its 1995 session. The actual total expenditure, which had been estimated at 5 017 000 Swiss francs, exceeded that budget by 1 296 000 Swiss francs. With a view to cutting costs, the Committee requested the Secretary-General to study ways of limiting the volume of documentation and to report his findings to the Council. The Committee had also expressed concern over the number of entities and international organizations which were exempted from any form of payment towards defraying the expenses of the Conference. The matter of the cost of participating in WRCs had been raised in relation to the contributory unit of 10 300 Swiss francs and the Secretary-General was requested to draw the attention of the 1998 Council, and subsequently, the Plenipotentiary Conference to the full cost incurred by the Union as a result of the participation of entities and organizations at WRCs.

4.2 Regarding the potential financial implications of the implementation of WRC-97 decisions, the Committee had expressed concern at the high level of expenditure necessary to undertake that work (cf. Annex 3 to Document 314). Pending further review by BR, it had approved the provision of 500 000 Swiss francs for post-Conference work. It had noted that the 1995-1999 financial plan did not contain any provision for implementation of decisions taken by WRCs - a situation which should be examined by the 1998 Plenipotentiary Conference, when preparing the financial plan for 2000-2003, and by the Council. Annexes 1 and 2 to the Committee's report showed, respectively, the situation of the WRC-97 accounts as at 14 November 1997 and a list of entities and international organizations participating in the work of the Conference.

4.3 The **Chairman**, observing that the excess expenditure had perhaps been inevitable on account of the heavy agenda and the number of participants, said that the cost of world radiocommunication conferences should be given further consideration in future.

4.4 Following a query by the **representative of the International Chamber of Shipping (ICS)** as to the impact of the second sentence of § 6.5 on organizations such as his own, the **Chairman of Committee 3** said that although concern had been expressed at the high cost of the Conference and the number of exemptions under Council Resolution 925, no specific representations had been made to any organization or entity, and no concrete proposals had been put forward. There was a need, however, for the Council to take up the matter at a future session.

4.5 The **Chairman** said that the matter would be referred to the Council for consideration.

4.6 The **delegate of Saudi Arabia**, supported by the **delegate of Lebanon**, welcomed the broad participation at WRC-97 but considered that some thought should be given to the possibility of requesting profit-making organizations to participate financially in order to alleviate the burden on administrations.

4.7 The **delegate of Mali**, referring specifically to § 7 of the report and expressing concern at the discrepancies between the estimates and the actual expenditure, said that the process of drawing up estimates should be reviewed. He also sought clarification concerning the provision of 500 000 Swiss francs referred to in § 7.4. The **Chairman** replied that the amount in question was intended to cover all post-conference work, and not only planning-related tasks. He observed that more attention had been paid by WRC-97 than by previous radiocommunication conferences to the estimated cost of future agenda items.

4.8 The report of Committee 3 (Document 314) was **approved**.

5 Sixth series of texts submitted by the Editorial Committee for first reading (B.6) (continued) (Document 288)

Resolution COM5-14 (WRC-97) (continued)

5.1 The **Chairman of Committee 5** recalled that consideration of the draft Resolution had been deferred at the previous Plenary Meeting to enable informal discussions to take place. Following consultations with the delegations concerned, she proposed the following amendments: deletion of the words "with service links operating below 1 GHz" from the title; in *resolves* 1, deletion of the words "as a matter of urgency" and amendment of the phrase "technical means to facilitate" to read "technical means that may facilitate"; in *resolves* 2, insertion of the words "the possibility of" before "additional allocation", and replacement of the phrase "with service links operating below 1 GHz" by the phrase "particularly taking into account *considering* h) and i) above".

5.2 Resolution COM5-14 (WRC-97), as amended, was **approved**.

6 Seventh series of texts submitted by the Editorial Committee for first reading (B.7) (Document 341)

6.1 The **Chairman of Committee 6** said that Document 341 contained texts from Working Group PLEN-1, Committee 5 and Committee 4. Some of the Committee 4 texts would have to be read in parallel with that Committee's report to the Plenary Meeting in Document 324.
Document 341 also contained two lists of WARC/WRC resolutions that were proposed for deletion by Working Group PLEN-1 and Committee 4 respectively. Any overlapping between the two lists would be eliminated in the document submitted for second reading.

6.2 The **Chairman** invited the meeting to consider the Working Group PLEN-1 texts taken from Document 308.

Proposed action with regard to WARC/WRC resolutions

6.3 **Approved** subject to the removal of Resolution 507 (WARC-79) from the list.

Proposed action with regard to WARC/WRC recommendations

6.4 **Approved**.

6.5 The **Chairman** invited the meeting to consider the Committee 5 texts taken from Document 316.

6.6 The **Chairman of Committee 5** said that there had been extensive discussion in his Committee of the modifications proposed to the Radio Regulations relating to the MSS generic allocation in the 1.5 - 1.6 GHz range. On that occasion, a statement concerning protection of the aeronautical mobile-satellite service had been made by the observer for ICAO, and the observer for IMO, as well as and the delegates of Greece and Russia, who had expressed concerns regarding GMDSS.

Article S5 (MOD Table 1 452 - 1 530 MHz, SUP S5.352, ADD S5.352A)

6.7 **Approved**, subject to the inclusion of Algeria in the list of countries in ADD S5.352A.

Article S5 (MOD Table 1 530 - 1 535 MHz, MOD Table 1 535 - 1 610.6 MHz, SUP S5.353, ADD S5.353A, NOC S5.356, SUP S5.358, SUP S5.360, SUP S5.361, SUP S5.362, ADD S5.362A, ADD S5.362B, MOD Table 1 610.6 - 1 631.5 MHz, MOD Table 1 631.5 - 1 670 MHz, SUP S5.373A, MOD S5.374, NOC S5.375, ADD S5.376A)

6.8 **Approved**.

Resolution COM5-24 (WRC-97)

6.9 The **Chairman of Committee 5** said that the square brackets around the words "except No. S9.13" in *considering* g) should be deleted, the delegations concerned having reached agreement on that provision.

6.10 In response to a query by the **delegate of Turkey** concerning *requests ITU-R* 3, the **Chairman** explained that the reference to WRC-99 or a future competent conference should remain in square brackets, pending a decision on the agenda for WRC-99.

6.11 On that understanding Resolution COM5-24 (WRC-97), as amended, was **approved**.

Resolution COM5-10 (WRC-97)

6.12 **Approved**.

6.13 The **Chairman** invited the meeting to consider the Working Group PLEN-1 resolution taken from Document 322.

Resolution GTPLEN1-2 (WRC-97)

6.14 The **delegate of Syria**, referring to *resolves to invite* 3, wished it to be made quite clear that the reference to the scheduling of future conferences did not apply exclusively to WRCs, any change to the scheduling of which might affect the arrangements for other conferences too.

6.15 Resolution GTPLEN1-2 was **approved**.

6.16 The **Chairman** invited the meeting to consider the Committee 4 texts taken from Document 324.

Article S8 (NOC S8.1, MOD S8.1.1, (S8.2), MOD S8.3, MOD S8.4, NOC S8.4.1 to S8.5)

6.17 The **delegate of Algeria** said that in Document 76 the group of Arab countries had submitted a certain number of proposals aimed at re-establishing international protection for assignments. It was regrettable that the working conditions in Committee 4 and its working groups had not allowed for consideration of those proposals. The **delegate of Saudi Arabia** endorsed those remarks, as did the **delegate of Syria** who recalled that the Arab countries, having regard to the absence of adequate protection for the assignments concerned, had proposed a new text for No. S8.2 but had not been given the opportunity to explain it.

6.18 In the ensuing discussion, the **delegates of the Islamic Republic of Iran, Lebanon, Mali, Tunisia** and **Viet Nam** supported the comments by the delegate of Algeria and expressed reservations regarding Article S8. Following further comments by the **delegates of Saudi Arabia** and **Algeria**, the **Chairman** said he took it that all the delegations listed in Document 76 and its Corrigendum as sponsors of the proposals in question wished to reserve their position regarding Article S8. In order to expedite the proceedings, he suggested that any other delegations wishing to enter similar reservations should submit their names in writing to the secretariat*.

6.19 On that understanding and subject to those reservations, Article S8 was **approved**.

Article S9 (MOD title)

6.20 The **Chairman of Committee 4** drew attention to the note by Committee 4 in Document 324, to the effect that it might be necessary to include an additional footnote making reference to a resolution on the implementation of certain provisions of Article 9; that note should have been reproduced in Document 341 now under consideration. However, since the note might also be relevant to discussions under way in Working Group PLEN-2 on administrative due diligence, which would certainly have a bearing on the application of Article S9, he suggested that it should not be inserted in Document 341 for the time being, pending the outcome of work in Working Group PLEN-2.

6.21 It was so **agreed**.

Article S9 (MOD A.S9.1)

6.22 Approved.

Article S9 (MOD A.S9.3)

6.23 The **delegate of France** said that MOD A.S9.3 as it stood did not afford adequate protection to the Appendices 30 and 30A Plans, since it made no mention of the interregional aspect of service sharing. He therefore proposed the insertion of the words "in the same region or in another region" after the word "allocated" in paragraphs b) and d).

6.24 MOD AS.9.3, as amended, was **approved**.

Article S9 (ADD A.S9.4)

6.25 Approved.

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* Reservations were subsequently submitted to the secretariat by the delegations of Benin, Niger and Togo.

Article S9 (MOD title Section I, MOD S9.1, NOC S9.1.1, MOD S9.2, NOC S9.2A, NOC S9.2B, ADD title Sub-Section IA, MOD S9.3, SUP S9.3.1, MOD S9.4, NOC S9.5, MOD S9.5A, ADD title Sub-Section IB, ADD S9.5B, ADD S9.5B.1, ADD S9.5C, ADD S9.5D, MOD title Section II, MOD S9.6, MOD S9.6.1, ADD S9.6.2, MOD S9.7, NOC S9.8, NOC S9.9, MOD[4], MOD S9.11, NOC S9.11A, MOD S9.12, MOD S9.13, NOC S9.15, NOC S9.17, MOD S9.17A, MOD S9.18, MOD S9.19)

6.26 Approved

6.27 In reply to a question by the **delegate of the United States** concerning the provision entitled SUP, the **Chairman**, referring to Document 324, explained that the proposal was for the deletion of Note 6 under Sub-Section IIA and said that it could perhaps have been more clearly shown in Document 341. He requested the Editorial Committee to follow up the matter.

Article S9 (NOC S9.32, NOC S9.41, MOD S9.43, MOD S9.50, MOD S9.51, MOD S9.51A, MOD S9.52, NOC S9.52C, MOD S9.60)

6.28 Approved.

Article S13 (ADD S13.12A)

6.29 The **Chairman of Committee 4** drew attention to the fact that the delegate of the United Arab Emirates had reserved the position of the group of Arab countries with regard to ADD S13.12A.

6.30 The **delegate of Syria** said that in Document 76 the group of Arab countries had proposed the deletion of the provision, since those countries objected in principle to BR being empowered to take action on an assignment on behalf of administrations, should the latter fail to reply within three months. The **delegate of Luxembourg** asked whether that concern might be met if the period within which administrations could reply was extended to six months.

6.31 The **delegate of Algeria** said that while he understood the desire to speed up the coordination process, he sympathized with those countries which, for a variety of reasons, might not be able to reply to the Bureau within the stipulated deadline. Moreover, problems might be encountered in implementing the Plan if failure to reply was taken to mean agreement.

6.32 The **delegate of Saudi Arabia** observed that not only the Arab countries, but also many other developing countries, were affected. In the interest of those countries the Conference was duty bound to seek a compromise solution, possibly on the basis of the proposal by the delegate of Luxembourg.

6.33 At the proposal of the **delegate of Syria**, it was **agreed** that all interested delegations should hold consultations with a view to reaching a compromise, taking into account the proposal by the delegate of Luxembourg.

6.34 Following the informal consultations, the **delegate of Syria** said that two alternative proposals had been put forward. In his view, agreement was possible on one of them, but more time would be required to finalize the text. The basic thrust of that proposal was that two consecutive reminders would be dispatched to administrations, each with a three-month deadline for reply; furthermore, it would not be possible to cancel entries relating to assignments without the consent of the Radio Regulations Board. If delegates agreed, he would pursue the consultations on the basis of that proposal and report the outcome to the next Plenary Meeting.

6.35 It was so **agreed**.

6.36 On that understanding, further consideration of ADD S13.12A was **deferred**.

Article S13 (SUP S13.13, (MOD) S13.14, (MOD) S13.15, (MOD) S13.16, MOD S13.17A, SUP S13.20, ADD title Section IV, ADD S13.23A, ADD S13.23B, ADD S13.23C)

6.37 Approved.

Article S14 (MOD S14.2, MOD S14.4, SUP S14.8 and S14.9)

6.38 Approved.

Article S19 (MOD S19.35, MOD S19.99)

6.39 The **Chairman of Committee 4** recalled that consideration of the two provisions had been deferred at the previous Plenary Meeting during the second reading of Article S19 texts in Document 287. Replying to a question by the **Director of BR** concerning MOD S19.35, he confirmed that it had been agreed in Committee 4 that the Secretary-General rather than the Director of BR should be responsible for allocating additional maritime identification digits to countries.

6.40 MOD S19.35 and MOD S19.99 were **approved**.

Appendix S4 (Annex 1A, Annex 1B), Resolution 13 (Rev.WRC-97)

6.41 Approved.

List of WARC/WRC resolutions proposed for deletion

6.42 Approved, subject to the deletion of the reference to Resolution 105 (Orb-88) from the French-language version of Document 341.

List of WARC/WRC recommendations proposed for deletion

6.43 Approved.

6.44 With the exception of ADD S13.12A, the seventh series of texts submitted by the Editorial Committee (B.7) (Document 341), as a whole, as amended, was **approved** on first reading.

7 Third series of texts submitted by the Editorial Committee for second reading (R.3) (Document 342)

Article S12

7.1 Approved, subject to the deletion of SUP S12.14 and the consequential renumbering of provisions S12.15 and S12.15A.

(Article S19 ADD S19.96A)

7.2 Approved.

Resolution 215 (Rev.WRC-97) and Annex, Resolution 715 (Rev.WRC-97), Resolution GTPLEN1-1 (WRC-97), Resolution COM4-9 (WRC-97), Resolution COM4-10 (WRC-97), Resolution COM4-11 (WRC-97), Resolution COM4-12 (WRC-97) and Annex, Resolution COM5-8 (WRC-97), Recommendation COM5-A (WRC-97)

7.3 **Approved**.

SUP Resolution 115 (WRC-95), SUP Resolution 116 (WRC-95), SUP Resolution 117 (WRC-95), SUP Resolution 210 (Mob-87), SUP Resolution 330 (Mob-87), SUP Resolution 711 (WARC-92), SUP Resolution 714 (WRC-95), NOC Resolution 716 (WRC-95), SUP Resolution 717 (WRC-95), SUP Recommendation 717 (Rev.WRC-97), SUP Recommendation 721 (WRC-95)

7.4 **Approved**.

8 Approval of the minutes of the third, fourth and fifth Plenary Meetings (Documents 209 and Corr.1, 226, 299)

Document 209 and Corr.1

8.1 The minutes of the third Plenary Meeting (Document 209 and Corr.1) were **approved**.

Document 226

8.2 The **Legal Adviser** read out a correction to § 3.2.

8.3 Subject to that correction, the minutes of the fourth Plenary Meeting (Document 226) were **approved**.

Document 299

8.4 The **Chairman of Committee 4** read out a correction to § 1.5.

8.5 Subject to that correction, the minutes of the fifth Plenary Meeting (Document 299) were **approved**.

9 Draft Resolution relating to telecommunication resources for disaster mitigation and relief operations (Document 161(Rev.1) and (Corr.1))

9.1 The **delegate of Canada**, introducing the draft Resolution in Document 161(Rev.1) co-sponsored by a number of delegations, said that the text was based on Document 65 relating to the implementation of Resolution 36 (Kyoto, 1994) as well as on the draft Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations, which the Intergovernmental Conference on Emergency Telecommunications ICET-98 to be held in Finland in June 1998 was expected to adopt. The square brackets in the first line of the *resolves* section could be removed as work was already under way in ITU-R Study Group 8 on various aspects of the subject.

9.2 The **delegates of Indonesia** and **Tonga** asked for their names to be added to the list of those co-sponsoring the draft Resolution.

9.3 The **delegate of Pakistan**, after fully supporting the draft Resolution, requested clarification on the role ITU would play at ICET-98.

9.4 The **Legal Adviser** said that although the subject did not fall within the domain traditionally covered by ITU, it was closely related to it. The Council at its previous session had authorized the Secretary-General and the Director of BR to lend their full cooperation to the Conference. In order to emphasize the Union's involvement, he suggested the addition of the words "and to report to the 1998 Plenipotentiary Conference on the outcome of the Tampere Conference for any necessary action which that Conference or the ITU Council may see fit to take" at the end of the text under *instructs the Secretary-General*.

9.5 The **delegate of India** fully supported both the draft Resolution and the suggestion by the Legal Adviser.

9.6 The **representative of the International Chamber of Shipping (ICS)** said that Resolution 209 (Mob-87) on the development of a global land and maritime distress and safety system shared common features with the proposed draft Resolution, in particular with regard to communications in remote areas, and might therefore usefully be referred to in the text. The **delegate of Canada** having agreed that a reference to Resolution 209 might be included in the *considering* section, the **Legal Adviser** suggested the insertion of the words "in the same spirit as reflected in Articles 40 and 46 of its Constitution and in Resolution 209 (Mob-87)" in *considering* a) after the words "that ITU".

9.7 It was so **agreed**.

9.8 The **observer for the United Nations**, speaking on behalf of the Working Group on Emergency Telecommunications and the United Nations Emergency Relief Coordinator, expressed her sincere gratitude for the interest shown in the subject at WRC-97 and thanked the co-sponsors of the draft Resolution, which represented a commitment to continue to work towards the unhindered application of telecommunications in the most noble of causes, namely, the prevention and alleviation of human suffering caused by disasters.

9.9 The draft Resolution in Document 161(Rev.1), as amended, was **approved**.

10 Date of entry into force of the Radio Regulations (Documents 44, 153)

Document 153

10.1 The **Chairman** said that Document 153, which had been issued in response to a request by the delegate of Syria, provided information in respect of Resolution 24 (WRC-95) in which Members of the Union were invited to advise the Secretary-General of the status of their provisional application of the Radio Regulations adopted by WRC-95.

10.2 The **delegate of Syria** observed that only four administrations had officially notified the Secretary-General that they had approved the Final Acts of WRC-95 or had given their consent to be bound by the WRC-95 revision of the Radio Regulations. Many of the decisions taken at WRC-95 had been the result of a series of compromises and, indeed, it appeared that the outcome of the present Conference would be somewhat similar. However, until administrations notified their approval of the Final Acts, the validity of those compromises remained in doubt. Accordingly, he

proposed that the Final Acts of each conference should be ratified either by the ensuing Plenipotentiary Conference, with any urgent matters being dealt with by means of resolutions, or at each conference itself.

10.3 The **Legal Adviser** said that the delegate of Syria might wish to submit his proposal to the forthcoming Plenipotentiary Conference. The spirit of Resolution 24 (WRC-95), as reflected in paragraph 2 under *resolves to invite Members of the Union*, was directly related to Article 54 of the Constitution where the concept of the provisional application of administrative regulations was introduced. However, the use of the phrase "to the extent permitted by their national law" in the context of that Article had led to the misconception that the administrative regulations would become subject to national law, which was not the case. Since 1968 the principle of provisional application had been enshrined in the Vienna Convention on the Law of Treaties and, in his view, it might be useful for the issue to be clarified at the Plenipotentiary Conference in 1998.

10.4 The **delegate of Syria** said that Resolution 24 (WRC-95) related not only to provisional application, but also to ratification of the Final Acts of world radiocommunication conferences. He disagreed, therefore, with the interpretation given by the Legal Adviser for the aim of the Resolution, as he understood it, was to inform the Members of ITU which of the administrations signing the Final Acts of WRC-95 and WRC-97 were ready to be bound by those Acts.

10.5 The comments of the Legal Adviser and the views expressed by the delegate of Syria were **noted**.

Document 44

10.6 The **Chairman** said that draft Resolution [IRN-1] (proposal IRN/44/43) relating to the coming into force of the Final Acts of WRC-95 had been discussed by Committee 4 which had referred it to the Plenary for further consideration.

10.7 The **delegate of the Islamic Republic of Iran** said that the agreement to postpone discussion on the adoption of Approaches 1 and 2 relating to Articles 4, 5, 6 and 7 of Appendices 30 and 30A until WRC-99 demonstrated the need for further study of the regulatory procedures. The possibility of a replanning conference being convened in 1999 or 2001 further justified the need for additional time to reflect on the application of the simplified Radio Regulations. Draft Resolution [IRN-1] therefore proposed that the date of entry into force of the simplified Radio Regulations be deferred from 1 June 1998 until after WRC-99.

10.8 The **delegate of Luxembourg** said that the Voluntary Group of Experts established in 1989 to prepare a simplified version of the Radio Regulations had submitted the outcome of its work to WRC-95. In view of the concerns expressed by some delegations with regard to the application of the simplified Radio Regulations, it had been agreed to set the date of their entry into force at 1 June 1998. The decision by WRC-97 to adopt Approach 1 in respect of the broadcasting-satellite service would entail relatively minimal changes in the Regulations. Working Group PLEN-1 was proposing a WRC-99 agenda item to deal with any problems encountered in applying the simplified Regulations. In his view, it was essential to acquire some practical experience in applying the new Regulations before WRC-99. Although he would prefer the Regulations to enter into force on 1 June 1998, he could agree to postpone the date of 1 January 1999 as that would still allow some time for provisional application before WRC-99.

10.9 The **delegate of Algeria** said that his Administration had brought problems encountered by both developing and developed countries in applying the simplified Radio Regulations to the attention of the ITU Council earlier in the year. While experts might find little difficulty in debating the related issues, it could be quite a different matter for administrations endeavouring actually to implement decisions at country level. Would it really be appropriate for the simplified Radio Regulations to enter into force before they had been ratified by a majority of ITU Members? As administrations needed time to evaluate the new Regulations, he supported the view that the latter should not enter into force until after WRC-99.

The meeting rose at 1200 hours.

The Secretary-General:
Pekka TARJANNE

The Chairman:
R. SMITH

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 389-E
8 December 1997
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

NINTH PLENARY MEETING

Wednesday, 19 November 1997, at 1300 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Date of entry into force of the Radio Regulations (continued)	44
2	Report of Working Group PLEN-2 (continued)	249 + Add.1, 258, 344
3	Seventh series of texts submitted by the Editorial Committee for first reading (B.7) (continued)	341

1 Date of entry into force of the Radio Regulations (continued) (Document 44)

1.1 The **Chairman** said that the question to be considered was possible deferral of the date of entry into force of the Radio Regulations, as proposed by the delegation of the Islamic Republic of Iran in a draft Resolution contained in Document 44.

1.2 The **delegate of Saudi Arabia** expressed support for the arguments previously presented by the delegations of the Islamic Republic of Iran and Algeria in favour of a deferral of the date.

1.3 The **delegate of Sweden** noted that as early as 1989 the Nice Plenipotentiary Conference had stressed the need for simplification of the Radio Regulations, which had become extremely complex and difficult to apply, especially for small administrations and those of developing countries. The simplification exercise had entailed considerable work, initially by VGE and subsequently by WRC-95, CPM and WRC-97; instead of deferring the date of entry into force and thereby letting all that work go to waste, it would be preferable to bring to light any shortcomings in the simplified Radio Regulations by applying them and improving them later if necessary.

1.4 The **delegate of the United Kingdom** said he shared that view and was opposed to deferral of the date of entry into force of the Radio Regulations.

1.5 The **delegate of the Islamic Republic of Iran** said that VGE had consolidated the coordination procedures for the fixed-satellite service described in Article 11 and Appendices 30 and 30A without changing the substance of the provisions. Articles S9 and S11 contained in the VGE Report had subsequently been amended by CPM; as a result, Articles S9 and S11 submitted to the current Conference were very different from those originally proposed by VGE in its Report. Furthermore, VGE had consolidated most of the provisions relating to the identification of administrations which were adversely affected in Appendix S5, and that Appendix had again been amended by WRC-95, CPM-97 and the current Conference. Noting that radical changes to Appendix S5 had been proposed in just under five months, he expressed the view that a fundamental issue had been addressed either too hastily or inexhaustively. The delegation of the Islamic Republic of Iran therefore proposed that the date of entry into force of the Radio Regulations should be deferred so that the provisions in question could be studied in greater depth.

1.6 The **delegate of the Netherlands**, acknowledging that VGE had endeavoured to make the Radio Regulations less complicated, suggested that the only way of testing the simplified Regulations was to put them into practice, taking action, if necessary, to remedy shortcomings. He advocated the date of 1 June 1998. That view was supported by the **delegates of Canada** and **Japan**.

1.7 The **delegate of France** considered that it was high time to implement the simplified procedures and was in favour of maintaining the proposed date. To allay the fears of the delegation of Algeria concerning the training of administration staff in the developing countries, he suggested that the Conference should request BR to organize regional seminars to train staff in the implementation of the simplified procedures before they came into force.

1.8 The **delegate of Russia** supported the implementation of the simplified Radio Regulations as soon as possible so that practical conclusions could be drawn. Noting that three dates were proposed for different provisions, he said that his delegation was in favour of adopting a single date of entry into force for all provisions of the simplified Radio Regulations and was prepared to accept the date of 1 June 1998.

1.9 The **delegates of Pakistan, Tonga** and **Malaysia** said they were in favour of deferring the date of entry into force of the Radio Regulations.

1.10 The **delegate of Germany** supported the statements by the delegates of Sweden, the Netherlands and France to the effect that any further deferral of the date of entry into force of the simplified Radio Regulations was undesirable and advocated, for practical reasons, the choice of a single date of entry into force. Referring to the Legal Adviser's comments regarding Resolution 24 (WRC-95) at the previous meeting, he said that his Administration had provisionally implemented the simplified Radio Regulations, but - probably like other countries - without informing the Union. To avoid such a situation, he suggested that in future the Secretary-General should send a reminder to all administrations.

1.11 The **delegate of Saudi Arabia**, speaking as former Chairman of WRC-95, said that he would personally find any delay in implementation of the simplified Radio Regulations very regrettable. However, the position of his Administration was different since it had spoken on behalf of the Arab group, which supported the proposal of the Islamic Republic of Iran. By way of a compromise and in the light of the comments by the delegate of Germany, he suggested that a different and later date should be chosen for the entry into force of all the provisions.

1.12 The **delegate of Germany**, having stated that he was willing to accept the date of 1 June 1998, said it might be more appropriate, for practical reasons, to agree on a single date for entry into force of the Final Acts of WRC-97 and the simplified Radio Regulations as adopted by WRC-95. Taking into account the customary time-frame, he suggested that the date of 1 January 1999 might be appropriate. In response to a comment by the **Chairman** concerning the date of entry into force of the Final Acts, he said that Committee 4 had already considered the matter and agreed to fix a single date, but had not specified any date in particular.

1.13 The **Chairman** noted that Committee 4 would submit a document to the Plenary regarding the date of entry into force of the Final Acts.

1.14 The **delegate of Saudi Arabia**, speaking on behalf of the Arab group, said he was willing to accept the compromise proposed by the delegate of Germany and opt for the single date of 1 January 1999.

1.15 It was **agreed** to set 1 January 1999 as the date of entry into force of the simplified Radio Regulations.

1.16 The **delegate of Algeria** having drawn attention to the proposal by the French delegation to request BR to organize seminars to explain the new Regulations to administrations, the **Director of BR** said that a radiocommunication seminar would be held in Geneva in autumn 1998 and that it would focus on the simplified Radio Regulations. In collaboration with BDT, fellowships would be made available to nationals of developing countries to facilitate their participation. In addition, regional seminars scheduled to take place prior to the entry into force of the Regulations would be used to train administration staff responsible for the implementation of the new procedures.

1.17 The **delegates of Cameroon, Benin** and **the Islamic Republic of Iran** supported the proposal for training to be organized by BR in collaboration with BDT for the Geneva seminar.

1.18 The **delegate of Syria** also supported the proposal, but observed that the usual five-day period for seminars seemed unduly short for that kind of training. He thus felt it would be desirable also to arrange for a regional seminar in the Development Sector's Arab States region.

1.19 The **delegate of Senegal** considered it preferable to concentrate exclusively on the organization of carefully targeted regional seminars in order to encourage the broadest possible participation.

2 Report of Working Group PLEN-2 (continued) (Documents 249 and Addendum 1, 258, 344)

2.1 The **Chairman** said that ad hoc Group 1 of the Plenary had been instructed to consider Annex 2 to Document 258 (administrative due diligence), which would therefore be examined in connection with that Group's report (Document 344). The other outstanding point in Document 258 concerned recommendations E to Q contained originally in Document 8 and reproduced in Annex 3 to Document 258. He invited the participants to comment on the recommendations.

2.2 The **delegate of the Islamic Republic of Iran** said that recommendation H caused problems for some administrations because it dealt with a notion, that of "direct-to-home", which was not properly defined in the Radio Regulations. The administrations in question believed that the former IFRB should never have authorized the use of small-diameter antennas (60-80 cm) in the FSS bands for direct transmission of BSS signals. In reality, that type of BSS application came within the scope of broadcasting in the general sense of the term. The fact that technological progress made such an application possible failed to resolve the regulatory difficulties associated with the notion of direct-to-home. At WRC-95, a number of administrations had reported on the undesirable day-to-day impact of that type of application on the cultural and social life of many countries. The Administration of the Islamic Republic of Iran therefore requested that No. 2674 of the Radio Regulations should be rigorously applied to all BSS applications, whether in BSS or FSS allocations. The **delegate of Egypt** fully supported that statement and the **delegate of Syria** said that the Arab group had submitted a document to Working Group PLEN-1 proposing the inclusion of that very important topic on the agenda of WRC-99 or WRC-01. He reserved the right to revert to the subject when the proposals of Working Group PLEN-1 were discussed.

2.3 The **Chairman** pointed out that, according to Section III of Document 258, the Conference was only required to take note of the recommendations without indicating any action thereon. He therefore proposed that the Conference should take note of recommendations E, G, H, I, J, K, L, M, N, P and Q set forth in Annex 3 to Document 258, that it should not support recommendation O and that it should approve on first reading the draft Recommendation contained in Annex 4 to the document.

2.4 It was so **agreed**.

2.5 The **delegate of Syria**, who approved the draft Recommendation contained in Annex 4, urged countries with the resources required to carry out the monitoring activities mentioned in the text to assist in implementing the Recommendation so that it did not remain a dead letter like so many others.

2.6 The **Chairman** invited participants to consider Document 344.

2.7 The **Chairman of ad hoc Group 1 of the Plenary**, introducing the results of his Group's deliberations on draft Resolution [GTPLEN2-1] concerning administrative due diligence annexed to Document 344, said that some parts of the text were still within square brackets, either because of continuing uncertainty with regard to the regulatory provisions to be adopted or amended or because of the parallel discussions in Committee 4 concerning Appendices 30 and 30A. The ad hoc Group had basically taken as its starting point the agreement reached in Working Group PLEN-2. It had taken note of the statement by the delegation of Tonga to the effect that the original draft Resolution (Annex 2 to Document 258) had itself resulted from a compromise reached after lengthy discussions within Working Group PLEN-2. The ad hoc Group had also had before it a text submitted by the

United States for insertion in the draft Resolution but had agreed to submit it separately to the Plenary (Section 3 of Document 344). The ad hoc Group had also noted that certain points could have a retroactive influence and that a possible adverse impact on future discussions in the context of ITU must be avoided in such cases.

2.8 With regard to the application of the due diligence procedure to the Plans of Appendices 30 and 30A (Section 1 of Document 344), some administrations had been concerned about the possible impact on national assignments if the requested modifications were not brought into service, but BR had explained that in such cases the initial assignments would be restored. With regard to the Appendix 30B Plans, the ad hoc Group had agreed that the due diligence procedures should only apply to the additional uses as defined in that Appendix. The ad hoc Group had furthermore taken the view that a provision urging administrations to develop relevant national due diligence procedures need not be included in the draft Resolution. It had also agreed that the Director of the Bureau should report on the implementation of the Resolution as from WRC-99. The body of the draft Resolution stipulated that the detailed procedure set out in Annex 1 would apply to all new systems coming within the scope of the Resolution, whose date of entry into force would be the first day following the end of the Conference. The *resolves* of the draft Resolution described the procedure applicable to systems already being processed within BR, and provided for two somewhat different procedures depending on whether the systems were or were not recorded in the Master International Frequency Register. Annex 2 to the draft Resolution listed the components of the three major categories of information to be supplied at the different stages of the administrative due diligence procedure. The list was unchanged from that considered by Working Group PLEN-2.

2.9 The **delegate of Mexico**, referring to the concerns expressed by a number of administrations during the ad hoc Group's discussions, requested confirmation of the BR interpretation to the effect that, if a modification to the Appendices 30, 30A or 30B Plans was not implemented, the original allocations under the Appendices 30A and 30B Plans in the case of BSS and Appendix 30B Plans in the case of FSS would be restored.

2.10 The **delegate of Tonga**, supported by the **delegate of Singapore**, said that he understood *resolves* 2 in the draft Resolution to mean that for those networks for which advance publication information had been submitted prior to 22 November 1997, due diligence information would not be required until the expiry of a period of nine years following the date of publication of the advance publication information, in accordance with the provisions of RR 1550, if that date was earlier than 21 November 2003.

2.11 The **delegate of Spain** saw no objective reason why the period indicated in square brackets in § 5 of Annex 1 to the draft Resolution, namely eight years, should be different from that indicated in § 4, namely five years. In his view, the time-frame should be five years in both cases.

2.12 The **delegate of Sweden** said that the figure "8" had been placed in square brackets in § 5 of Annex 1 because of a connection with the discussion in Committee 4 on Appendices 30 and 30A; it might therefore be sufficient to make reference to the time-frames contained in those Appendices.

2.13 The **Chairman of Committee 4** said that Committee 4 had not discussed the matter but that Appendices 30 and 30A currently provided for a period of five years which could be increased to eight years when both the downlinks and feeder links were considered.

2.14 In reply to the **delegate of France**, who inquired about the reasons for choosing the date of 1 July 1998 in *resolves* 2**,** the **Chairman of ad hoc Group 1 of the Plenary** said that a seven-month period had been considered necessary so that BR could send out requests for

information and administrations could gather the information to be submitted to ITU, including in the case of systems for which the date of bringing into use might fall immediately after the end of the Conference.

2.15 The **representative of Eutelsat** said that the time limits for the submission of information in respect of due diligence were not the same for systems not yet recorded in the Register (*resolves* 2) and for those already recorded (*resolves* 3). However, the BR backlog meant that the recording of systems in the Register followed a somewhat random order. It would perhaps be appropriate to adopt a single time limit for the two cases in point, somewhere in between the two time limits proposed in the draft.

2.16 The **Chairman of ad hoc Group 1 of the Plenary** said that the ad hoc Group had considered the possibility of developing two separate procedures for provisional entries and final entries in the Register but had decided, in order to avoid an undue complexity, to retain the distinction between systems already recorded and those not yet recorded. As the systems had in all cases been brought into use, administrations should have no great difficulty in providing the information required.

2.17 The **representative of Eutelsat** pointed out that the definitive international recognition of a system occurred at the time of its inclusion in the regional plans in the case of a modification to a Plan of Appendices 30 or 30A or relevant provisions of Appendix 30B, and at the time of its recording in the Master International Frequency Register in the case of bands that did not fall under the Plan. It would perhaps be appropriate, therefore, to add, under *resolves* 2 and 3 in the draft Resolution, after the reference to recording or non-recording in the Register, a reference to inclusion or non-inclusion in the regional plans.

2.18 The **delegate of Luxembourg** felt that such an addition would upset the delicate balance achieved by the ad hoc Group. The text proposed by the Group should therefore remain as it stood, if only because the period of three years corresponding to a provisional recording in the Register was not applicable to the regional plans.

2.19 The **Chairman of ad hoc Group 1 of the Plenary** proposed, with regard to § 5 of Annex 1 to the draft Resolution contained in Document 344, that "[8]-year" should be deleted and that "[cross-reference to regulatory provision]" should be replaced by "in accordance with § 4.3.5 of Appendix 30 and §§ 4.2.5 and 4.2.6 of Appendix 30A". He further proposed that the word "original" in the seventh line of *resolves* 2 in draft Resolution [GTPLEN2-1] should be deleted to avoid placing at a disadvantage administrations which had already now notified a period of less than six years. He noted that even if the time limit of six plus three years expired in 2204, 2005 or 2006, the administration concerned must submit full information in respect of due diligence by 21 November 2003 at the latest.

2.20 It was so **agreed**.

2.21 Draft Resolution [GTPLEN2-1] and its annexes, as amended, were **approved**.

2.22 The **delegate of Spain** said that his delegation reserved the right to revert to the matter when the Plenary considered Appendices 30 and 30A.

2.23 The **Chairman** invited participants to comment on Document 249 and its Addendum 1.

2.24 The **delegate of Luxembourg**, introducing Document 249 and its Addendum 1 on behalf of the delegations of Australia, Luxembourg, Norway, the Netherlands and Sweden, proposed to the Conference that it adopt a draft Resolution inviting the 1998 Plenipotentiary Conference to study

problems associated with the use of financial measures and to consider the principle of the possible use of financial due diligence, including financial deposits and/or annual fees, with respect to the ITU coordination and notification process for satellite networks, and to adopt any provisions that it considered necessary to permit such deposits and/or annual fees to be considered by a future WRC.

2.25 The **delegate of Mexico** said that before the adoption of a financial approach to the due diligence principle was contemplated, the results of the application of the administrative due diligence principle, which the current Conference had just adopted (Document 344), should be evaluated. Moreover, it should be noted that, in its Resolution 1113, the Council had decided to adopt the principle of full recovery of processing costs for the production of the special sections of the weekly circular for space radiocommunication services concerning advance publication, requests for coordination or agreement and requests for modification of space service Plans contained in Appendices 30, 30A and 30B and, in addition, to instruct the Secretary-General to develop fee schedules for the above-mentioned activities for consideration at the 1998 Council and, as appropriate, subsequent action by the 1998 Plenipotentiary Conference. The delegation of Mexico considered that, in any event, the Union was not a commercial entity and that administrations should not, therefore, pay it any fee for authorization to use certain parts of the spectrum or certain positions on the geostationary orbit. For all those reasons, the delegation of Mexico considered that it was inappropriate to adopt the draft Resolution.

2.26 The **delegates of Colombia, Tonga, the United States, the Islamic Republic of Iran, Ecuador, Venezuela, Pakistan, Russia, Papua New Guinea, Bulgaria** and **Saudi Arabia** (on behalf of the Arab countries) associated themselves with the views expressed by the **delegate of Mexico**.

2.27 The **delegates of the Czech Republic, Australia, Sweden, Norway** and **the Lao People's Democratic Republic** supported the draft Resolution.

2.28 The **delegate of Japan** said there was a risk that the increasing number of notifications of satellite networks would lead to chaos. He feared, however, that financial measures were a remedy worse than the evil they were intended to cure since they might impede the development of genuine satellite networks. The delegation of Japan would nevertheless be prepared to support Document 249(Add.1) if certain amendments were made.

2.29 The **delegate of the Netherlands** said that the proposed financial measures should be designed in such a way as to deter the notification of fictitious networks without impeding the development of genuine networks. He also noted that the effectiveness of the administrative measures could not be evaluated before WRC-03. Lastly, he observed that the principle of full cost recovery had been accepted in practice by the Council in its Resolution 1113 and that, according to the Radiocommunication Bureau, if the implementation of the administrative due diligence principle had failed to improve the situation by 1999, WRC-99 could decide whether additional action, including financial measures, was necessary.

2.30 The **delegate of Spain** said that making administrations pay for a service was inconsistent with the principles that had governed the establishment of the Union. In his view, the Radiocommunication Bureau was best equipped to address the problem raised by the number of notifications and to propose a solution.

2.31 The **delegates of China, Singapore, Indonesia** and **Viet Nam** considered that the time was not ripe for adoption of the draft Resolution and that the matter should continue to be studied in depth.

2.32 The **Chairman** noted that a majority of the Conference participants were opposed to the approval of the draft Resolution introduced by the delegate of Luxembourg although many administrations considered that the idea of a financial approach to the due diligence principle deserved to be explored in greater depth.

3 Seventh series of texts submitted by the Editorial Committee for first reading (B.7) (continued) (Document 341)

Article S13 (ADD S13.12A)

3.1 In response to a proposal by the **delegate of Syria**, it was **agreed** to reword the end of ADD S13.12A b) to read: "… in the event of non-response after two consecutive dispatches of reminders, each of three months' period, shall either cancel, or suitably modify, or retain the basic characteristics of the entry. The decision of the Bureau to cancel this entry, in the case of non-response, shall be confirmed by the RRB".

3.2 The **delegate of Mexico**, supported by the **delegate of Syria**, said that the Bureau and the RRB should adopt rules and procedures that would enable them to ascertain that administrations had acknowledged receipt of the notifications and reminders sent to them.

3.3 The **delegate of Syria** said that the RRB should at some point clarify what was meant by "reliable information".

The meeting rose at 1630 hours.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

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COMMITTEE 4

SUMMARY RECORD

OF THE

THIRTEENTH AND LAST MEETING OF COMMITTEE 4

(REGULATORY AND ASSOCIATED ISSUES)

Tuesday, 18 November 1997, at 1935 hours

Chairman: Mr. E. GEORGE (Germany)

	Subjects discussed	**Documents**
1	Seventh report of Working Group 4A (continued)	319
2	Proposed revision of Annex 5 to Appendix 30 (S30) and Annex 3 to Appendix 30A (S30A)	DT/5(Rev.1)+Add.1; DL/56, DL/57
3	Results of the BSS-BSS compatibility studies for the draft revised Appendices 30/30A Plan for Regions 1 and 3	273+Corr.1+Corr.2
4	Results of compatibility studies for the draft revised Appendices 30/30A Plan for Regions 1 and 3 with regard to other services and the Region 2 Plan	318, 326
5	Format and text of Article 11 of Appendix 30 and Article 9A of Appendix 30A	325, 336
6	Proposed revision of Annex 5 to Appendix 30 (S30) and Annex 3 to Appendix 30A (S30A) (resumed)	DT/5(Rev.1)
7	Draft Resolution [COM4-XB] concerning the review and possible revision of the BSS Plan for Regions 1 and 3	330
8	Observations relating to Working Group PLEN-1	-
9	Closure of the Committee's work	-

1 Seventh report of Working Group 4A (continued) (Document 319)

1.1 The **Chairman** recalled that the only outstanding matter with regard to Document 319 related to Attachment 2 and was the deletion of the square brackets in the remarks column in Table S5-1.

1.2 The **delegate of the United States**, speaking as Chairman of the informal group, said that it had been agreed that the square brackets could be deleted in all cases, subject to the inclusion of a text to indicate that the BR, in the course of drawing up Rules of Procedure, should take care to use wording clear enough to avoid misinterpretation with regard to the coordination procedures in Article S9 and explicit enough to assist administrations in interpreting the simplified Radio Regulations - a matter which could also be considered by the Special Committee.

1.3 It was so **agreed**.

2 Proposed revision of Annex 5 to Appendix 30 (S30) and Annex 3 to Appendix 30A (S30A) (Documents DT/5(Rev.1)+Add.1; DL/56, DL/57)

2.1 The **Chairman of ad hoc Group 5 of Working Group 4D** introduced Document DT/5(Rev.1) and Addendum 1, pointing out a number of editorial amendments. He also drew attention to Documents DL/56 and DL/57, pointing out with regard to the latter that Recommendation ITU-R P.837-1, Characteristics of precipitation for propagation modelling, should be added to the list for incorporation by reference in respect of both Annex 5 of Appendix 30 (S30) and Annex 3 of Appendix 30A (S30A).

2.2 With regard to the processing of Article 4 systems using parameters different from those on which the Plan was based, the proposed text for each section appeared in Document DT/5(Rev.1) within square brackets. A possible alternative to putting such text in each section would be to add one introductory sentence to the effect that all submissions in accordance with Article 4 should be protected to a level equivalent to that using the reference parameters on which the revised Plan was based, and that such stations should not cause more interference than they would cause if they used those parameters. The point at issue was protection, not implementation. The Committee would also have to consider the wording, currently within square brackets, of the annex titles.

2.3 The **Chairman** invited the Committee to consider Document DT/5(Rev.1), beginning with the identical titles of the annexes and the footnotes to them.

2.4 The **delegate of the United States** suggested that the titles should include the phrase "shall be used for their application in Regions 1 and 3 and should be used for their application in Region 2".

2.5 The **delegate of Luxembourg**, supported by the **delegates of Malaysia** and **Spain**, opposed that suggestion and suggested the retention of the original titles, without any modification. The **delegates of Egypt** and **Bulgaria** wished to retain the word "should".

2.6 It was **agreed** to retain the original wording of the titles unchanged.

2.7 The **delegate of the United States** proposed that the square brackets around the two footnotes to each of the titles should be removed and that, in the second footnote, the words "Regions 1 and 3" should be replaced by "all Regions".

2.8 The **delegate of Canada** said that the current Conference should avoid taking any step that might affect the Region 2 Plan.

2.9 The **delegates of Luxembourg, Egypt** and **Spain** spoke in favour of deleting footnote 2. The **delegate of the United States** had no objection to the deletion.

2.10 Footnote 2 was **deleted**.

2.11 The **Chairman** invited the Committee to consider the definitions in § 1 of Annex 5 to Appendix 30 (S30), as contained in Document DT/5(Rev.1).

2.12 (MOD) 1.1 and (MOD) 1.2 were **approved.**

2.13 Following observations by the **delegates of Bulgaria, Egypt** and **Luxembourg** and the **Chairman of ad hoc Group 5 of Working Group 4D**, it was **agreed** to delete the text of NOTE 2 in (MOD) 1.3.

2.14 (MOD) 1.3, as amended, was **approved**.

2.15 The **delegate of Luxembourg**, referring to (NOC) 1.7, said that the note under that item should be amended or deleted, since the service-area definition it contained was misleading.

2.16 The **Chairman of ad hoc Group 5 of Working Group 4D** said that the ad hoc Group's unanimous opinion had been that the note was correct and useful. The **delegates of Syria** and **Spain** said that the note should be retained.

2.17 In reply to a question by the **delegate of Luxembourg**, the **representative of BR** said that in the case of national service areas, contour may be defined by national boundary.

2.18 The **delegate of Russia** said that (NOC) 1.7 could perhaps be deleted altogether, and possibly (MOD) 1.5 and (MOD) 1.6 also, since they related not to downlinks but to feeder links, which were dealt with under the definitions in Annex 3 to Appendix 30A (S30A).

2.19 The **delegate of Luxembourg** suggested the addition of a footnote relating to the title of § 1, definitions, to the effect that, throughout the text, the word contours did not necessarily refer to antenna-gain contours. His concern in that regard was that the feeder-link service area might be construed as restricted to a national territory, which he doubted was the intention with regard to a similar note relating to the downlink area.

2.20 The **representative of BR** suggested that in view of the short time available, Document DT/5(Rev.1) should be held in abeyance in order to allow the Committee to proceed with consideration of other agenda items which have higher priority. The technical parameters used for the revision of the Plan for Regions 1 and 3 could simply be included in Annexes 5 and 3 of Appendices 30 (S30) and 30A (S30A), but other definitions be maintained if time does not permit to amend them. The text relating to technical definition could be sent to the appropriate ITU-R study groups for consideration and the results could be issued later in the form of a circular letter to administrations.

2.21 The **delegate of Spain** said that he had no objection to suspending consideration of Document DT/5(Rev.1), but had some hesitation about the idea of ITU-R study groups dealing with the text in question.

2.22 Following some discussion, it was **agreed** to suspend consideration of Document DT/5(Rev.1).

3 Results of the BSS-BSS compatibility studies for the draft revised Appendices 30/30A Plan for Regions 1 and 3 (Documents 273+Corr.1+Corr.2)

3.1 The **Chairman of Working Group 4D** said that the draft revised Appendices 30/30A Plan for Regions 1 and 3 contained in Document 273 together with Corrigenda 1 and 2, constituted a modernized Plan suited to the coming era, based on updated criteria and accommodating new countries.

3.2 The **Chairman** invited the Committee to consider the draft Plan contained in Annex 1 to Document 273.

3.3 The **delegate of Algeria** said that he could not approve a Plan that involved a five-channel orbital position. Document 273 was intended to provide guidance for the Radiocommunication Bureau concerning all the activities to be implemented in the replanning exercise for WRC-99 and should reflect Committee 4's decision to increase the capacity of a single orbital position for each country to ten analogue channels.

3.4 The **Chairman** explained that Document 273 was the outcome of the Committee 4's decision, which had been endorsed by the Plenary. He referred the delegate of Algeria to paragraph 1.2.9 of Addendum 1 to Document 187, "Summary of additional decisions by Committee 4 in relation to the planning parameters and related issues", recalling that following a lengthy and controversial discussion, a compromise decision had been taken that the Radiocommunication Bureau would proceed with Steps 1 and 2 (for new countries) in Regions 1 and 3 on the basis of five and four channels respectively, with the possibility of an increase to approximately ten channels only at the replanning stage. Indeed, an ad hoc group had been given the task of drafting a resolution on possible replanning based on the guidelines contained in Document DT/80.

3.5 The **delegate of Syria** considered that some of the large negative equivalent protection margins indicated in the feeder-link and downlink columns were unacceptable. The **Chairman** requested delegates to refrain from discussing matters relating exclusively to other countries.

3.6 The **representative of BR** said that the Bureau had examined the columns in the draft Plan individually and identified those with overall negative equivalent protection margins. As explained in Document 242, some of the negative protection margins resulted from agreement reached with the respective administrations in response to coordination requests and in a handful of cases they were inherited from the WARC-77 or WARC ORB-88 Plans. Most of the negative equivalent protection margins concerned Europsat-1 and a few other satellite networks that had reached agreement with other countries in accordance with Article 4 of Appendices 30/30A by accepting negative margins as a result coordination. Virtually all the other countries to which the new parameters were applied have positive equivalent protection margins, except for a few cases in which either the test point lay outside the 23 dB contour or the satellite e.i.r.p. was low, a situation that stemmed from a given administration's decision to use the satellite e.i.r.p. as it deemed appropriate. The administrations concerned had made no comment on the value of reference situation obtained from inclusion of those assignments in the Plan.

3.7 The **delegate of Syria** said that he could agree to the Plan on the condition that all the applications recorded therein were in conformity with Article 4 and that similar negative protection margins would also be accepted at the replanning stage. The **Chairman** responded that the replanning stage would constitute a fresh attempt at optimal accommodation of the systems, which ran counter to the idea that the protection margins of particular systems would be retained.

3.8 In response to a question by the **delegate of New Zealand,** the **Chairman** explained that the gaps in the C/I feeder-link and downlink columns resulted from the absence of a lower channel.

3.9 Replying to a query by the **delegate of Morocco** as to how his Administration could improve its negative protection margin, the **representative of BR** observed that a negative overall equivalent protection margin of -0.48 dB was negligible. He explained that, in implementing alternative Step 1, as the orbital position at 31° W was no longer to be considered as an orbital position in the Plan, it had been decided to replace assignments at 31° W by assignments at orbital position 30° W and new orbital position 33.5° W.

3.10 Following the **Chairman's** indication that Committee 4 had decided to concentrate on the equivalent protection margin (EPM), where Morocco was indeed at a greater disadvantage in the feeder-link column, rather than on the overall equivalent protection margin (OEPM), the **representative of BR**, supported by the **delegate of Russia,** explained that the Plan had been prepared on the basis of OEPM, as instructed by WRC-95, and that the EPM downlink and feeder-link values had been provided for information purposes only. Committee 4's decision to take the EPM rather than OEPM as a basis was intended to apply to future modification of the Plan. That explanation was confirmed by the **Chairman of Working Group 4D**.

3.11 The **delegate of Algeria** contended that if the Plan was not acceptable to some countries it should be noted rather than adopted, to enable the Bureau to consider ways of improving the situations of certain countries in preparation for WRC-99. The Bureau needed to know which beams to include in the replanning exercise; he proposed all the beams in the Step 2 exercise. The essential task of the present Conference was to provide guidance to the Bureau with regard to the replanning exercise, in line with § 1.2.9 of Addendum 1 to Document 187.

3.12 The **Chairman** observed that ad hoc Group 1 of Committee 4 had submitted a document proposing basic principles for replanning.

3.13 The **delegate of Australia**, supported by the **delegates of the United Kingdom, Russia, Belarus, Germany, Luxembourg, the Netherlands, Micronesia, France, India, Malaysia, Spain, Portugal, Italy, Belgium** and **China** and **the representative of INTELSAT** favoured adoption of the Plan since it had accomplished the specific tasks of updating the parameters and making provision for new countries, which were entitled to access to spectrum resources.

3.14 The **delegate of Bulgaria** observed that, if the Plan was approved and issued as an official Conference document, any further changes would depend on the reactions of administrations to modifications submitted to the Bureau. He queried the wisdom of adopting a Plan which would require amendment.

3.15 The **Chairman** explained that the replanning exercise would take account of existing systems, but not necessarily the entire reference situation.

3.16 The **delegate of the Lao People's Democratic Republic**, supporting approval of the Plan, made the following statement:

"As we have indicated at previous meetings of COM 4, we reserve our position on the Hong Kong beam at 122° E as shown on page 131 of the Plan. We believe that a mutually agreeable solution to the problem is both practicable and feasible. This beam is therefore subject to further mutual considerations. We request, therefore, that the Bureau place a suitable remark to this effect against the relevant assignments in the Plan on page 131. We would also like our views to be recorded in the minutes of the meeting."

3.17 The **delegate of Viet Nam** considered that the Plan should be approved but called on the Bureau and the Conference to improve the situation further so that all assignments for BSS broadcasting could be used in each country.

3.18 The **delegate of Algeria**, supported by the **delegate of Saudi Arabia,** expressed appreciation of the work by the Bureau in producing Document 273 but reiterated his concern as to the follow-up to the Conference. Unless he was guaranteed that Step 3 would only be implemented after 1999, and that the Bureau would concentrate on providing an increased minimum capacity for all countries (as envisaged in draft Resolution [COM4-XB] in Annex A to Document 330), he reserved the right to revisit the entire issue in Plenary.

3.19 The **delegate of the United Kingdom** confirmed that approval of the Plan was contingent on reaching agreement on draft Resolution [COM4-XB].

3.20 The **delegate of Kazakstan,** while supporting the Plan, drew attention to Document 123 and asked for consideration to be given to the possibility of granting his country five additional channels in the same orbital position, which would neither aggravate the reference situation nor adversely affect other countries. The **Chairman** suggested that, in view of the time constraints of the Conference, the delegate of Kazakstan should contact the BR in that regard.

3.21 The **delegate of Syria,** observing that his Administration had not obtained the additional channels requested and that the interference level had increased, asked that his reservations concerning the results of the Plan and exceptions made for some countries with more than five channels in the same beam be recorded.

3.22 The Plan contained in Annex 1 to Document 273 was **approved**.

3.23 The **Chairman** drew the Committee's attention to Document 329, which was an information document concerning access to the input data files used for the calculations of BSS-BSS compatibility.

3.24 Document 329 was **noted**.

4 Results of compatibility studies for the draft revised Appendices 30/30A Plan for Regions 1 and 3 with regard to other services and the Region 2 Plan (Documents 318, 326)

4.1 The **representative of BR** introduced Document 318 which set out the results of compatibility studies that had been carried out on the basis of a number of agreed principles, as outlined in the document itself and in Document 326, the latter comprising proposed provisions based on the principles approved by Committee 4. Annex 1 to Document 318 listed the administrations that would be affected by the proposed new or changed feeder-link or downlink channels. The intention was to ensure all administrations were treated on an equal footing in respect of the coordination of new BSS assignments.

4.2 The **delegate of Austria** asked why, in Annex 1 to Document 318, Tables 2.2.2 and 3.1.3 were entitled "Administrations which may have …", whereas in most instances the tables were entitled "Administrations which have …".

4.3 The **representative of BR** said the administrations in question were those described in § 4.3.1.4 of Article 4 of Appendix 30, which was cited in the title of Table 2.2.2. The criteria reflected in the document were based on the very conservative ones embodied in Article 4. The new BSS assignments concerned the 33 "new" countries which would have no assignment in the Plan

other than those incorporated at the present Conference. In the interests of equitability of access to BSS, certain principles had been accepted, and it was those principles that were addressed by the word "may".

4.4 In reply to the **delegate of Pakistan** who queried whether the term "space stations" in the title of Table 2.2.3 was correct, the **representative of BR** explained that the term was in line with § 4.3.1.5 of Article 4 of Appendix 30.

4.5 The **delegate of Mali**, observing that his Administration was shown in Table 2.1.2 as being affected by at least three beams, asked what steps the Bureau intended to take.

4.6 The **representative of BR** drew attention to § 1.2 of Document 326, which included a proposed provision, entitled "Compatibility with terrestrial service (from BSS feeder link into terrestrial services)", to include a text along the lines of that which currently exists in § 5.1.4 of Article 5 of Appendix 30A. That section embodied the very pragmatic principle of not overburdening administrations prematurely with coordination work, but rather of leaving it to be done at the time of actual implementation of the BSS feeder-link assignments.

4.7 The **delegate of Japan** observed that the change requested by the Democratic People's Republic of Korea would affect his Administration, as indicated in Table 2.1.1 of Annex 1 to Document 318. As that country was not a "new" one, his delegation had difficulty in accepting that change.

4.8 The **representative of BR** recalled that, at its sixth meeting, the Committee had authorized the Bureau to go ahead with the planning exercise on the basis of certain criteria, which had included the incorporation of the new test point requested by the Democratic People's Republic of Korea. The proposed provisions ADD 5.1.4*bis* and ADD NOTE [10], set out in Document 326, obliged administrations to coordinate with affected administrations at the time of implementation of a frequency assignment and would thus provide the necessary protection for Japan.

4.9 In response to questions by the **delegates of the Islamic Republic of Iran** and **Germany** concerning the lists of countries in Annex 1 to Document 318, he drew attention to the paragraph following Table 2.1.2, which indicated that the affected administrations had been identified provisionally, pending a revision of the list following the Conference.

4.10 In response to a question by the **delegate of Tonga**, he explained that, in Document 326, the proposed provision ADD NOTE [7] for inclusion in § 11.2 of Article 11 of Appendix 30 was based on the underlying principle that the new BSS assignments should be placed on an equal footing with other services, and that the need for coordination at the stage when assignments were being brought into use should be reduced to the minimum.

4.11 In response to a question by the **delegate of the Republic of Korea** concerning beams KOR11201 and KO11201D in Table 2.1.2 of Annex 1 to Document 318, he said that the Bureau had not carried out a comparison of the interference situation before and after the requested change of the test point because the parameters applying to the two situations were not the same. The test point by the Republic of Korea had been changed subject to analysis of compatibility with other systems.

4.12 The **delegate of Russia** proposed the deletion of the phrase "or those that are in process of coordination under the provisions of No. 1060 of the Radio Regulations or paragraph 7.2.1 of Appendix 30 prior to 27 October 1997", both in the paragraph following Table 2.2.3 in Annex 1 to Document 318 and in ADD NOTE [7] c), in § 1.4 of Document 326. That phrase contradicted the principle of planning priority and would undermine the value of planned assignments.

4.13 The **representative of BR** observed that § 2.4 of Annex 1 to Resolution 531 (WRC-95) provided no guidance on precisely how compatibility between BSS and other services was to be ensured. In the absence of clear instructions, it had been decided to use the regulatory text of Article 4 of Appendix 30 as a basis for ensuring compatibility. He drew particular attention to the latter portion of § 4.3.1.5 of Article 4, on which the phrase cited by the Russian delegation was modelled ("or is being coordinated under the provisions of No. 1060 of the Radio Regulations, or those of paragraph 7.2.1 of this Appendix").

4.14 The **delegates of India**, **Pakistan, the Islamic Republic of Iran, Tonga, the United States, Lebanon, Malaysia** and **Syria** opposed the Russian proposal.

4.15 The **delegate of Kazakstan** supported the Russian proposal. The Plan just approved would be rendered valueless to "new" countries by the requirement that they coordinate their new assignments with the numerous FSS networks in Region 3. The **delegates of Viet Nam, Kyrgyzstan** and **Uzbekistan** also supported the Russian proposal.

4.16 In response to the **Chairman's** remark that a majority of delegations opposed the Russian proposal, the **delegate of Russia** observed that such opposition was only natural in view of the vital interests involved. Document DL/60 showed that a great many FSS assignments had already been registered in the frequency band in question. The coordination of new BSS assignments with all those FSS assignments would be extremely difficult. In the interests of compromise, however, he would revise his proposal. He suggested that the phrase, instead of being deleted, should be supplemented by wording to make it clear that it referred to those notified FSS assignments that would have been coordinated by the time of bringing into use of the relevant BSS network.

4.17 The **Chairman** suggested that the proposal should be deferred for consideration in the context of Document 326, and that the Committee should take note of Document 318.

4.18 It was so **agreed**.

4.19 The **Chairman** invited the Committee to consider Document 326 in detail.

Sections 1.1 to 1.3

4.20 **Approved**.

Section 1.4

4.21 The **Chairman** drew attention to the Russian proposal to add, at the end of ADD NOTE [7] c): "and which have been coordinated by the time of entry into force of the BSS network".

4.22 The **delegate of India** said that the Radio Regulations had been based on the concept that any assignment must be coordinated with those assignments already notified, coordinated or under coordination. Any assignment for which the Bureau had received a coordination request before the Conference's starting date on 27 October 1997 must be considered to be under coordination and must be given priority. He therefore opposed the Russian proposal.

4.23 The **delegate of Pakistan** observed that the coordination of satellite networks could be subject to delays entirely independent of the will and actions of the requesting administrations. He consequently opposed the Russian proposal.

4.24 The **delegates of the United States, Tonga** and **the Islamic Republic of Iran** opposed the Russian proposal.

4.25 The **delegate of Kazakstan** supported the Russian proposal.

4.26 The **Chairman** suggested that, since there was very little support for the proposal, the reservations of the Russian and Kazakstan delegations to the text of ADD NOTE [7] should be noted and the text retained unchanged.

4.27 It was so **agreed**.

4.28 Section 1.4 was **approved**.

Sections 2.1 and 2.2

4.29 **Approved**, with the removal of the square brackets and deletion of the asterisked footnote in ADD NOTE [9].

5 Format and text of Article 11 of Appendix 30 and Article 9A of Appendix 30A (Documents 325, 336)

5.1 The **Chairman** invited the Committee to take up Document 325, containing draft Resolution [COM4-20] entitled "Updating the 'Remarks' columns of Article 9A of Appendix 30A and Article 11 of Appendix 30 and tables associated with these new 'Remarks' column entries".

5.2 The **representative of BR** said that the draft Resolution would serve as the vehicle for incorporating in the Final Acts the changes to the "Remarks" columns adopted during the consideration of Documents 318 and 326.

5.3 The **delegate of Spain,** supported by the **delegate of Portugal,** suggested that a new *resolves* paragraph be added to indicate that upon receipt of the circular letter referred to in *resolves* 2, administrations would be able, within a set time period, to request the deletion of their name from the "Remarks" column.

5.4 The **delegates of the Islamic Republic of Iran, Pakistan** and **the United States** opposed that proposal.

5.5 The **representative of BR** said that a decision to delete a name from the "Remarks" column could not be taken unilaterally, but had to be agreed on by the administrations concerned. With regard to the Spanish proposal, he thought that the best course of action would be for the Bureau to make definitive calculations concerning the compatibility of assignments and to submit them to WRC-99 for approval by all administrations concerned.

5.6 Draft Resolution [COM4-20] was **approved**.

5.7 Following a remark by the **delegate of Luxembourg,** it was **agreed** that the note cited in Corrigendum 1 to Document 273 should likewise be included in the "Remarks" columns.

5.8 The **Chairman** invited the Committee to take up Document 336.

5.9 The **representative of BR** explained that Article 11 of Appendix 30 and Article 9A of Appendix 30A consisted of additions to the existing texts in the form of assignment status codes, column headings of the Plan, text symbols in the "Remarks" column of the Plan and some examples of tables. Referring to Article 11, section 11.2 § 7, he recalled that as footnote S5.487 had been approved, that item had to be considered without square brackets.

5.10 The **delegate of Luxembourg** suggested that, in order to avoid making Volume 2 of the Radio Regulations excessively unwieldy, the Plan should be published in its current form in the Radio Regulations not covering detailed additional characteristics such as the designation of emission and earth-station antennae, all of which were available in other ITU publications. The **delegate of Russia**, however, expressed the view that the detailed tables facilitated the understanding of the Radio Regulations. As a compromise, the **delegate of the United States** proposed that all the characteristics should be retained but should be published separately on paper or CD-ROM.

5.11 It was so **agreed**.

5.12 The **delegate of Luxembourg** cautioned that inclusion of the designation of an emission in the Plan would constitute a modification to the Plan if it was altered afterward.

5.13 Document 336 was **approved**, on the understanding that the Secretary-General of the ITU would decide on the form in which the additions were to be published.

6 Proposed revision of Annex 5 to Appendix 30 (S30) and Annex 3 to Appendix 30A (S30A) (resumed) (Document DT/5(Rev.1))

6.1 The **Chairman** said that, due to lack of time, neither Committee 4 nor the Plenary would be able to consider Document DT/5(Rev.1) further. It seemed that the only way to proceed was to establish an ad hoc group to try to review Annex 5 to Appendix 30 and Annex 3 to Appendix 30A, aiming at the minimum possible number of changes, based on the parameters used for the establishment of the Plan, such as Recommendation 521 (WRC-95); the ad hoc group would have to submit its conclusions to the Plenary Meeting.

6.2 The **representative of BR** said that the ad hoc group would have to consider certain other issues, such as Committee 4's decision to include new antenna patterns for feeder-link earth station and space station receiving antenna patterns.

6.3 The **Chairman of Working Group 4D** suggested that, as an alternative to establishing a further group, the Committee might try to approve draft Resolution [COM4-21] in Document DT/157, *resolves* 1 of which would give the Bureau authority to use the technical parameters adopted at the current Conference for planning.

6.4 The **delegate of Spain** said that it was a majority view that Document DT/5(Rev.1) was essential to the application of the Plan, since its provisions would give the Bureau a more effective tool than the mere application of the Rules of Procedure.

6.5 The **Chairman** said that the draft Resolution contained in Document DT/157 would not suffice; although the Bureau could work in accordance with its provisions, it would not allow for amendments to update Annex 5 to Appendix 30 and Annex 3 to Appendix 30A. He saw no other course of action than the establishment of a small ad hoc group.

6.6 The **delegates of Syria, the United Kingdom** and **the Islamic Republic of Iran** supported the suggestion to establish such a group.

6.7 The **delegate of the United States** supported the suggestion but stressed that the group should focus only on items essential to alignment with Recommendation 521.

6.8 The **Chairman**, referring to an observation by the **Chairman of Working Group 4D**, said that the group could attempt to review Document DT/5(Rev.1), aiming to extract as many non-controversial items as possible, with a view to producing a consolidated text.

6.9 Following a brief discussion, it was **agreed** to establish ad hoc Group 3, to be chaired by the delegate of the United States and composed of the delegates of Australia, Austria, France, Japan, Luxembourg, Norway, Spain, Sweden and Syria, with the Bureau's participation. Since time was short, it would have to work in parallel with the Plenary Meeting.

6.10 The **Chairman** said that, if the Group failed to agree on a text, it would be left to the Chairman of the Conference to decide how to proceed; Document DT/157 should be kept in mind for such a contingency.

7 Draft Resolution [COM4-XB] concerning the review and possible revision of the BSS Plan for Regions 1 and 3 (Document 330)

7.1 The **Chairman of ad hoc Group 1 of Committee 4**, introducing draft Resolution [COM4-XB] contained in Annex A to Document 330, said that the many instances of text within square brackets reflected the complexity of the subject-matter and the difficulties faced; some of the square brackets, towards the end of the document, related to text which the Group had been unable to consider. There were also two alternative appendices, within square brackets. He also drew attention to Annex B to Document 330, containing draft agenda items for future conferences, which had not yet been discussed.

7.2 The **Chairman** invited the Committee to consider Document 330, beginning with Annex A, draft Resolution [COM4-XB].

Title, *considering* a)

7.3 **Approved**, the square brackets being deleted.

***considering* b)**

7.4 It was **agreed**, on a proposal by the **delegate of South Africa**, to reword *considering* b) to read "that certain countries requested that replanning be undertaken to establish a Plan with increased capacity to provide a channel capacity large enough to permit the economical development of a broadcasting-satellite system;".

7.5 As so amended, *considering* b) was **approved**.

***considering* c), *considering* d), *resolves* 1**

7.6 **Approved**.

***resolves* 2**

7.7 The **delegate of Hungary** proposed that the words "to around ten analogue-equivalent channels (see Annex 2)" should be deleted.

7.8 The **Chairman of ad hoc Group 1 of Committee 4** said that the wording had been based on Document DT/80, in which the 10 analogue-equivalent channels were a key element.

7.9 The **delegate of Egypt** said that the word "analogue" might give rise to confusion in regard to channel bandwidth. He proposed that the wording in question should be replaced by "to 10 channels, each 27 MHz".

7.10 The **delegate of the United Kingdom** proposed that "(see Annex 2)" should be deleted but the rest of the text maintained.

7.11 It was so **agreed**, the delegate of Egypt having withdrawn his proposal.

7.12 *resolves* 2, as amended, was **approved**.

***resolves* 3**

7.13 *resolves* 3 was **noted** and referred to the Plenary Meeting, including the square brackets at the end of the text.

invites ITU-R

7.14 **Approved**.

invites the Council to recommend to the 1998 Plenipotentiary Conference

7.15 The **delegate of the United Kingdom** said that the entire text was currently within square brackets because some delegations, including his own, felt that the issue could be considered at WRC-01 and in any case did not warrant the convening of a special conference. Responding to an observation by the **Chairman**, he said that his delegation could accept the text on the understanding that the convening of such a special conference was not implied. The **delegate of Japan** endorsed that view.

7.16 It was **agreed** to retain all the square brackets and refer the text to the Plenary Meeting.

instructs the Secretary-General

7.17 **Approved.**

Annex 1

7.18 The **delegate of Sweden** said that, in considering the principles to be established for the work of an inter-conference representative group (IRG) to carry out studies, the Conference was not bound to the terms of Resolution 531 (WRC-95), since the latter related to the entry of new countries into the existing Plan whereas the current issue was one of replanning. Referring to item 2) of the principles, he proposed that the word "mainly" should be maintained and the square brackets removed. The **delegates of Hungary** and **Syria** agreed.

7.19 The **delegate of Tanzania** said that the word "mainly" should be deleted.

7.20 Following an observation by the **Chairman**, it was **agreed** to retain the word "mainly" and delete the square brackets.

7.21 The **Chairman of ad hoc Group 1 of Committee 4**, referring to item 3), said that the phrase "in conformity in" should be amended editorially to read "in conformity with". He proposed that the entire text should be retained and the square brackets removed.

7.22 The **delegate of Syria** proposed that the words "which are in conformity with those Plans" should be deleted.

7.23 The **representative of BR** said that the only area in the Radio Regulations where existing systems were referred to was in Appendix 30B. In order to avoid any confusion, perhaps it could be stated that existing systems were those notified under Article 5 of Appendices 30/30A, in operation, whose date of bringing into use had been confirmed to the Bureau from an agreed date, and were in conformity with the Appendices 30 and 30A Plans. The **delegate of the United States** supported that suggestion but felt that, in any case, the words "which are in conformity with those Plans" were unnecessary.

7.24 The **Chairman** suggested that item 3) should be approved, subject to a review, in Plenary, of a more specific wording.

7.25 It was so **agreed**.

7.26 Item 4) was **approved**.

7.27 The **delegate of the Islamic Republic of Iran**, referring to item 5), proposed that the words "such as subregional systems", currently within square brackets, should be deleted. The **delegates of Algeria, China** and **India** supported the proposal.

7.28 The **delegate of Spain** said that the deletion was acceptable, on the understanding that subregional systems were not excluded. The **delegate of Australia** agreed, but drew attention to a specific requirement, in Document DT/80, to address the matter.

7.29 It was **agreed** to delete the words "such as subregional systems" and the square brackets. As so amended, item 5) was **approved**.

7.30 Items 6), 7) and 8) were **approved**.

7.31 The **delegate of Hungary** said that, according to Document DT/80, the matters to be covered in the draft resolution were to include provision for the avoidance of monopoly utilization of the resources. He proposed that an item 9) should be added to Annex 1 accordingly.

7.32 The **Chairman** said that Committee 4 had agreed that the provision, despite the reference to it in Document DT/80, really referred to the application of Article 4 of Appendices 30 and 30A, since the task in question was a matter for attention after a Plan had been established.

7.33 The **delegate of the Lao People's Democratic Republic** suggested some additional wording, under new item 9), to the effect that, if software was provided to the Radiocommunication Bureau for planning purposes, the same software should also be available, free of charge, to any administration which requested it. The **delegates of Japan, Pakistan** and **the Islamic Republic of Iran** supported the proposal.

7.34 The **Chairman** said that he did not view that matter as a planning principle.

7.35 The **Chairman of ad hoc Group 1 of Committee 4** said that the matter raised by the delegate of Hungary was taken up in Document 330, as the second item under "Requests for additional studies by the IRG". He agreed with the Chairman that the matter of access to software was not a planning principle and suggested that it should be left for consideration by the Bureau.

7.36 The **Chairman** added that aspects such as free-of-charge access to intellectual property might inhibit administrations' willingness to contribute software. The **Chairman of ad hoc Group 1 of Committee 4** said that the issue should perhaps be reflected somewhere; if the relevant decision were made at WRC-99, the matter might need to be addressed in the context of replanning. The current Conference, however, was focusing on planning and replanning possibilities, rather than on execution.

7.37 The **delegate of the Lao People's Democratic Republic**, suggested that the matter of software should be dealt with under a separate heading.

7.38 The **delegate of Luxembourg** said that, of the BR software made available to administrations, some was in the source code, free of charge and subsequently incorporated into commercial software to be sold in the open market with certain copyright conditions. His question was whether, if software had to be made available free of charge (presumably in the source-code versions), administrations agreed that any software used by the Bureau must be given to administrations in the source code. The Bureau could surely be trusted to evaluate any source code, and should not be subject to any conditions on the software given to or developed by them. The Bureau was surely entitled to earn some revenue in that regard, thus helping to reduce costs, for the benefit of administrations.

7.39 On a suggestion by the **Chairman**, it was **agreed** to defer consideration of the matter to the Plenary and include a reference to it in the Committee's report.

Annex 2

7.40 The **Chairman** invited the Committee to consider Annex 2 to draft Resolution [COM4-XB]. Referring to an observation by the **delegate of the Islamic Republic of Iran**, he said that, in his view, the fact that an intersessional group of experts would include appropriate geographical representation for each Region did not imply any limitation on the membership; anyone was free to participate, with no selection of membership. He took it that, on that understanding, the square brackets could be deleted from the first indent of the second paragraph.

7.41 The **delegate of Spain** said that he had some difficulty with the words "but membership encouraged to ensure adequate representation from all ITU regions", and with the word "representative" in the proposed title of Annex 2, since the word "representative" was nowhere defined.

7.42 Following a brief discussion in which the **Chairman** and the **delegates of Spain** and **the United Kingdom** took part, it was **agreed** to retain the title as it stood and to remove the square brackets from the first indent of the second paragraph, on the understanding that the matters mentioned could be raised in Plenary session.

7.43 The **representative of BR** said that it would be more appropriate if the words "working to directions established by the IRG" were replaced by "advised by the IRG".

7.44 The **Chairman of ad hoc Group 1 of Committee 4** said that the Group had been clearly of the view that the inter-conference representative group (IRG), as the policy body, would direct the work of the Bureau; he himself had no strong views on the matter.

7.45 The **delegate of Algeria** suggested that the second indent could be deleted and replaced by wording, to continue the first indent, to the effect that the inter-conference representative group would direct the activities of the Bureau.

7.46 The **representative of BR** said that a difficulty would be created by wording which implied that the Bureau would work under the directions of a body not established under the Constitution; and that the word "directions" should not be used.

7.47 The **Chairman of ad hoc Group 1 of Committee 4** proposed that the Bureau should be invited to submit a suitable text to replace the current wording of the second indent. The **delegate of the United Kingdom** suggested that the Bureau, in doing so, could perhaps consider wording to the effect that the Bureau would work under the guidance of the group of technical experts.

7.48 The **delegate of Spain** felt that the second sentence of the second indent should be redrafted, because the selection criteria for membership of the group of technical experts were unclear. In his view, the members should be volunteers from among Sector Members, selected on the basis of technical expertise.

7.49 The **Chairman** said that he took it that the delegate of Spain was not making a specific proposal, and suggested that the text should be left as it stood, on the understanding that the matter could be raised in Plenary if the delegate of Spain so wished.

7.50 On that understanding, the title and first three paragraphs of Annex 2 were **approved**, the square brackets being retained around the first indent of the second paragraph, and the first part of the third paragraph being amended editorially to read "JWP 10-11S is encouraged …".

7.51 The **Chairman**, summing up, said that the Committee had approved Document 330, as orally amended, up to and including the title and first three paragraphs of Annex 2. In view of the lack of time, the remainder of the text would be reviewed by the Plenary meeting.

8 Observations relating to Working Group PLEN-1

8.1 The **Chairman of Working Group 4D** noted that Working Group PLEN-1 had proposed some revisions to Resolution 522 (WARC-92), although Working Group 4D had decided to delete that Resolution; on the other hand, Working Group 4D had proposed the retention of Resolution 507 (WARC-79), but Working Group PLEN-1 had decided that it could be deleted. The **Chairman** said that, in both cases, Committee 4 was competent to decide, and that the decisions of Working Group PLEN-1 in that respect should be disregarded.

9 Closure of the Committee's work

9.1 The **Chairman** said that, unfortunately, the extent and complexity of the Committee's tasks had made it impossible to complete the work in the time allotted and that, as a result, many outstanding items had been left for consideration in the Plenary meeting. Nevertheless, the Committee had worked extremely hard, and he thanked all concerned for their collaboration and assistance. He declared closed the last meeting of Committee 4.

The meeting rose at 0145 hours on Wednesday, 19 November 1997.

The Secretary:
T. GAVRILOV

The Chairman:
E. GEORGE

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 391-E
16 December 1997
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GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

TENTH PLENARY MEETING

Wednesday, 19 November 1997, at 1810 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Report of Working Group PLEN-2 (continued)	203+Corr.1+2
2	Final report of Committee 4	296(Add.1), 328, 353; DT/144, DT/153, DT/156, DT/157+Corr.1
3	Eighth series of texts submitted by the Editorial Committee for first reading (B.8)	354
4	Sixth series of texts submitted by Committee 4 to the Editorial Committee	335
5	Ninth series of texts submitted by the Editorial Committee for first reading (B.9)	360
6	Tenth series of texts submitted by the Editorial Committee for first reading (B.10)	362

1 Report of Working Group PLEN-2 (continued) (Document 203+Corr.1+2)

1.1 The **delegate of Colombia**, introducing Document 203, said that the proposed new draft Resolution [CLM-1] contained therein sought to instruct the Radio Regulations Board to develop Rules of Procedure to be followed for the examination of notices with a view to ensuring due compliance with the principles governing the use of the geostationary-satellite orbit. Notifications which did not always comply with those principles were being made and, as a result, some countries were being denied their legitimate right of access to the spectrum/orbit resource. The draft Resolution was not an attempt to change the current Regulations and was no way inconsistent with the results of the work carried out in Working Group PLEN-2, but was intended to strengthen administrative due diligence measures.

1.2 The **delegate of Ecuador** fully supported the new draft Resolution. It was completely unjust that Andean countries were prevented from having access to the orbit while other relatively small countries had been accorded more than 20 orbital positions.

1.3 The **delegate of Luxembourg** wondered whether it was feasible for the Board to develop Rules of Procedure to examine notices in such a way as to ensure that the spectrum was used rationally, efficiently and economically, in accordance with the provisions of No. S0.3.

1.4 The **delegates of Argentina**, **Costa Rica**, **the United States**, **Indonesia**, **Mexico**, **Spain**, **Syria** and **Cuba** supported new draft Resolution [CLM-1].

1.5 The **Chairman of RRB** said that he would welcome more guidance from the Conference on the preparation of the Rules of Procedure.

1.6 New draft Resolution [CLM-1] was **approved**.

1.7 The **Chairman** suggested that, in the interests of saving time, new draft Resolution [CLM-1] should be approved on first reading.

1.8 New draft Resolution [CLM-1] was **approved** on first reading.

1.9 The **Vice-Chairman of RRB** wondered whether *resolves* 2 a) of the new draft Resolution implied that the Radiocommunication Bureau would immediately have to refrain from recording notices in the Master International Frequency Register until Rules of Procedure were developed. The preparation of such Rules of Procedure would be a lengthy process.

1.10 The **delegate of Australia** said that careful thought should be given to the new draft Resolution before it was taken any further.

1.11 The **delegate of the Netherlands** said that, while there was general agreement on the principles set out in No. S0.3, the meeting should reconsider its decision and think deeply before supporting the draft Resolution.

1.12 The **Legal Adviser** pointed out that No. S0.3 of the simplified Radio Regulations was identical to No. 196 of the Constitution. He recalled that world radiocommunication conferences were not empowered to alter any provisions of the Constitution even if those provisions appeared in the Radio Regulations. Referring to Article 14 of the Constitution, he said that while the Radio Regulations Board was mandated to develop criteria in accordance with the Radio Regulations and with any decision taken by a competent radiocommunication conference, it was not empowered to establish an implementation procedure for a constitutional provision. From a legal point of view, the establishment of any such procedure by the Board would constitute an indirect attack on the sovereign rights of Member States.

1.13 The **delegate of Sweden**, supported by the **delegate of Italy**, said that it would be premature for the Radiocommunication Bureau to refrain from recording notices in the Master International Frequency Register. Further studies were necessary before such a decision could be taken.

1.14 The **delegate of Syria** said that countries were not supposed to be allotted more than one position in the geostationary-satellite orbit, except if absolutely necessary, and the spectrum should be used in a more equitable manner. There might, however, be some difficulties associated with the implementation of the new draft Resolution as it stood and he suggested that *resolves* 2 a) might be amended to read "as of 1 January 1998, to refrain …".

1.15 The **delegate of the United States**, responding to the Chairman of the Board's request for guidance in developing the Rules of Procedure, suggested that notices received pursuant to Article S11 should be examined for their conformity with the provisions of the Constitution, the Convention and the Radio Regulations. The Radio Regulations Board could then invite the Bureau to report anomalies to the next world radiocommunication conference.

1.16 The **Vice-Chairman of RRB** said that the procedure suggested by the previous speaker was already followed: any notices found not to be in conformity with the provisions of the Constitution, the Convention and the Radio Regulations were returned to the submitting administration. He welcomed Syria's proposal to alter the date in *resolves* 2 a) and wondered whether the date might be delayed until 1 January 1999 to enable the Board to seek the views of administrations before finalizing the Rules of Procedure.

1.17 The **representative of Russia** questioned the need for the new draft Resolution since the concerns that it sought to address were already covered, particularly by the principle of administrative due diligence.

1.18 The **delegate of Spain** said that the Legal Adviser's interpretation of Article 14 of the Constitution was rather limited. The Board would not be going beyond its mandate if the draft Resolution were adopted since No. S0.3 referred to therein was part of the Radio Regulations and had been approved at WRC-95. He supported the proposal to specify a new date in *resolves* 2 a). The **delegate of Ecuador** endorsed those comments.

1.19 In response to a comment by the **delegate of the United States** regarding *resolves* 2 a), the **Chairman** said that it was rather strange to specify a date on which the Radiocommunication Bureau was to refrain from recording notices in the Master International Frequency Register, rather than a date by which the Rules of Procedure were to be established.

1.20 The **delegate of the United Kingdom**, while fully supporting the intent of the new draft Resolution, expressed concern about the repeated references to No. S0.3 as a regulatory provision, since that provision was only to be found in the preamble to the simplified Radio Regulations. In addition, even if the Rules of Procedure were not established by the date specified, any notices received subsequently would not be recorded in the Master International Frequency Register, which would be unacceptable. The Radio Regulations Board should endeavour to develop suitable Rules of Procedure which, in view of their importance, should be considered by a future world radiocommunication conference.

1.21 The **Chairman** suggested that the delegates of Colombia, the United States, Syria and the United Kingdom, a representative of the Radiocommunication Board and any other interested parties should hold informal consultations with a view to agreeing on an appropriate date in *resolves* 2 a).

1.22 It was so **agreed**.

2 Final report of Committee 4 (Documents 296(Add.1), 328, 353; DT/144, DT/153, DT/156, DT/157+Corr.1)

2.1 The **Chairman of Committee 4**, introducing the final report of Committee 4 contained in Document 353, said that at its final meeting Committee 4 had approved the revised Plan for BSS (downlink and associated feeder links) in Regions 1 and 3 (Appendices S30 and S30A), together with the other related decisions. The latter included draft Resolution [COM4-20] which set out the course of action required as a consequence of the results of studies of compatibility between the BSS assignments in the revised Plan and other services. The Committee had also partially approved draft Resolution [COM4-22], contained in Attachment 1 to Document 353, which stipulated the course of action in regard to future replanning of the bands governed by Appendices 30 and 30A. Owing to lack of time and a heavy workload, Committee 4 had been unable to complete the examination of a number of issues, which were listed in § 3 of Document 353. At the appropriate time, he could give an indication as to their priority in order to facilitate the discussions.

2.2 The **Chairman** suggested that draft Resolution [COM4-22] should be discussed first, followed by the items listed in § 3 of Document 353, in order of priority, warning that given the time constraints it might not be possible to resolve all of the latter in Plenary.

2.3 The **delegate of Spain** observed that his delegation had understood that there would be an opportunity to discuss the reservations it had expressed regarding Resolution [COM4-20] and its subsequent proposal contained in Document 350. The **Chairman** suggested that, in the interests of time, those concerns should be raised during consideration on first reading.

2.4 It was so **agreed**.

Draft Resolution [COM4-22] concerning review and possible revision of the 1997 BSS Plan for Regions 1 and 3 (Document 353)

2.5 The **Chairman** invited the Committee to consider draft Resolution [COM4-22].

2.6 The **Chairman of Committee 4** explained that, after considering a proposal to increase the number of channels assigned per country in Regions 1 and 3 from 5 and 4 respectively, the Committee had concluded that it would not be possible to draft a revised BSS Plan at WRC-97 to take into account such an increase, but that studies should be undertaken to examine the feasibility of a subsequent increase to 10 analogue-equivalent channels per country, with a view to replanning in the future. An ad hoc Group had been established to draft an appropriate resolution; it had also been asked to draft a resolution on the operation of broadcasting satellites serving other countries. After extensive discussions, Committee 4 had approved draft Resolution [COM4-22], although a number of details remained to be resolved. In its Annex 2, the draft Resolution provided for the establishment of an inter-conference representative group which was expected, with the assistance of a group of technical experts, to provide guidance to the Radiocommunication Bureau in carrying out studies on the basis of the planning principles set out in Annex 1. WRC-99 would consider the results of those studies and, if it concluded that replanning was feasible, would initiate an appropriate revision. A number of countries, in particular the developing countries, had argued that the revision should be completed by 2000 on the grounds that any available spectrum for replanning might already have been used up as a result of applications under Article 4 of Appendices 30 (S30) and 30A (S30A) for modifications involving additions to the Plans. Others had argued in favour of completion by 2001, given the amount of work involved and the limited capacity of conference

agendas. Concerns had been raised at the budgetary implications of a proposal to hold a special conference to consider the matter. The date for completion of the revision given in *resolves* 3, the paragraph *invites the Council to recommend to the 1998 Plenipotentiary Conference* and the date given in that paragraph therefore remained in square brackets.

2.7 Annexes 1 and 2 to draft Resolution [COM4-22] outlined the principles for review and revision of the Plan and the nature of the inter-conference representative group, respectively, and had been approved with a reservation from one administration regarding Annex 2. There followed two texts for appendices, both in square brackets, which represented options for setting out additional replanning principles. Owing to lack of time, they had not been discussed by Committee 4 or in any detail by ad hoc Group 1 of Working Group 4. Administrations had considered that the software used by the Radiocommunication Bureau in preparing the draft revised Plan should be made available to them free of charge and that such availability should also be reflected in an appendix. Finally, Annex B to the draft Resolution contained two possible draft agenda items for future conferences and was also placed in square brackets since it would have to be considered by Working Group PLEN-1.

2.8 The **Chairman** observed that it would be for the 1998 Plenipotentiary Conference to take a final decision with regard to the date of a future conference, so that it might be sufficient to indicate that a conference was desirable, perhaps replacing "no later than 2000/2001" by "no later than 2000" in *resolves* 3 and deleting reference to a date in *invites the Council to recommend to the 1998 Plenipotentiary Conference*.

2.9 The **delegate of Syria**, noting that the date given in *resolves* 3 was for the replanning conference not for completion of the studies, proposed that the text currently in square brackets should read "not later than 2001". In *invites the Council*, "a radiocommunication conference [before [2000/2001]]" should be replaced by "a world radiocommunication conference before 2001". As the Chairman had indicated, it was not for WRC-97 to take the final decision. The **delegate of South Africa** supported those views.

2.10 The **delegate of the United Kingdom** said that there had already been extensive discussion in Committee 4 on the question of an appropriate date. His Administration, concerned at the resource implications of an additional conference, considered that the review should be dealt with at a world radiocommunication conference and that that conference should be held in 2001. He therefore proposed that, in the second amendment suggested by the previous speaker, "before 2001" should be replaced by "in 2001". However, since the Resolution instructed the Secretary-General to bring the Resolution to the attention of the Council with a view to competent conferences undertaking the review and if necessary revision of the Plan, it might be appropriate to delete *invites the Council* or, alternatively, to delete reference to any date in that paragraph.

2.11 The **delegate of Saudi Arabia** said that there was global agreement at WRC-97 that a replanning exercise should take place and it was therefore important for WRC-97 to determine the schedule for completion of that work. There should be no attempt to delay the convening of a conference in order to avoid discussion of replanning.

2.12 The **Chairman of Committee 4** observed that the wording chosen for the two paragraphs concerned must be consistent.

2.13 After a further exchange of views, the **Chairman** suggested that in *resolves* 3 "[at a future conference no later than [2000/2001]] [at WRC-01]" should be replaced by "no later than 2001" and that in *invites the Council*, "a radiocommunication conference [before [2000/2001]]" should be replaced by "a world radiocommunication conference no later than 2001", the square brackets around the whole paragraph being deleted.

2.14 The **delegate of the United Kingdom** said that he could accept those suggestions provided that his Administration's position was quite clear; its concern about the timing of the relevant world radiocommunication conference related to resource implications.

2.15 The **Chairman** said that he was sure that the Council and the Plenipotentiary Conference would take such implications into account when considering the matter.

2.16 The main body of the draft Resolution, as amended, and Annex 1 were **approved**.

2.17 The **Chairman** invited the meeting to consider Annex 2 to draft Resolution [COM4-22].

2.18 The **delegate of Spain** said that the title of Annex 2, Inter-conference representative group (IRG), was too vague, especially as the Spanish rendering spoke of "representatives", a term not defined in the Convention of the ITU. He would prefer "experts", a term which was defined in No. 1001 of the Convention and matched perfectly the profile intended for participants in the said group.

2.19 The **Chairman of Committee 4** said that Committee 4 had purposely avoided the term "expert" precisely because in groups such as the Voluntary Group of Experts participating experts had not represented their administrations.

2.20 The **Chairman** said that the structure and membership of the group were clearly set forth in the first indent of the second paragraph of Annex 2. As the Annex contained no square brackets, it appeared to have met with the approval of Committee 4 as a whole and he wondered if the delegate of Spain could accept the text as it stood.

2.21 The **delegate of Spain** said that he could not accept the text if it defined members of the group as being representative of ITU regions. Its members must represent administrations.

2.22 The **Chairman of Committee 4** suggested that the title of Annex 2 should be amended to read "Inter-conference group" and the first indent of the second paragraph should be amended to make it clear that the group included representatives of administrations. The **Chairman** noted that the delegate of Spain agreed with those suggestions.

2.23 The **delegate of the Islamic Republic of Iran** recalled that, in elaborating the draft Resolution, considerable importance had been attached to ensuring that membership of the inter-conference group ensured the geographical representation of all regions of the ITU. Delaying tactics had been used with regard to the planning exercises whenever a compromise agreement had been imminent, and he could not accept recourse to such an attitude now, especially as such an attitude clearly went against the Chairman's efforts to make headway. The title of Annex 2 should not be changed, it being clear from the text itself that members of the group should represent administrations. Notwithstanding comments by the **Chairman**, who urged him to accept the title suggested by the Chairman of Committee 4, he said that he was unwilling to accept such a change to a text which, in Committee 4, had met with the unanimous approval of all delegations save one. That delegation had the right to express its reservation, and should be invited to do so.

2.24 The **delegate of Spain**, supported by the **delegate of Lebanon**, proposed that, in the light of the concerns expressed by the previous speaker, the title of Annex 2 should be left unchanged but the first indent of the second paragraph should be amended to end: "… from the administrations of all ITU regions", along the lines suggested by the Chairman of Committee 4.

2.25 It was so **agreed**.

2.26 The **delegate of Egypt** said that the Annexes to draft Resolution [COM4-22] comprised elements that would obstruct realization of the Resolution's basic objectives. They failed to present a clear methodology and schedule for studies, and appeared in places to apply two different sets of standards. Furthermore, the contradictions within the text would lead to problems.

2.27 The **delegate of Mali** stressed that replanning constituted one element of a compromise package, and that attempts to delay proceedings or upset the balance that had been achieved should be resisted. To the extent possible, voting should be avoided as a means of resolving contentious issues.

2.28 The **delegate of Algeria** attached particular importance to the subject under consideration, as it related to an asset which the developing countries should safeguard and exploit to the best possible advantage themselves, according to the technical possibilities available, rather than letting the same well-established operators always enjoy the privilege. His delegation regarded the body of draft Resolution [COM4-22] as an acceptable compromise. With regard to Annex 1, he recalled that there had been numerous objections to the use of the adverb "mainly" in § 2). As to Annex 2, he had no objection to the approach adopted, but wished specifically to place on record that the results of the work of the inter-conference representative group should in no way prejudge the decisions of WRC-99 on the subject, as WRC-99 maintained the sovereign right to follow-up the results of the group's work as it saw fit.

2.29 The **delegate of South Africa** stressed that, notwithstanding the emphasis placed on ensuring representation from the administrations of all ITU regions, experience showed that the constraints faced by the developing countries often thwarted such good intentions in groups set up by ITU. She appealed to the relevant organs and officials of the Union to do their utmost to ensure participation by the developing countries, and LDCs in particular, in the inter-conference group. A clear schedule of the group's meetings should be established so that countries could plan and allocate resources accordingly.

2.30 The **delegate of Saudi Arabia** endorsed those comments and stressed the importance of ensuring that experts from the developing countries could participate in the group of technical experts referred to in the second indent of the second paragraph of Annex 2. The **delegate of Lebanon**, who also endorsed South Africa's comments, added that participants in the work of Working Party 10-11S could provide valuable input to the studies. The **Chairman** invited the Director of the Radiocommunication Bureau to note those observations.

2.31 Responding to further comments by the **delegate of Spain**, the **Chairman of Committee 4** said that, in the second indent of the second paragraph of Annex 2, the French and Spanish versions of the second sentence should be aligned with the English text. He also drew attention to two editorial amendments required in the first indent.

2.32 Annex 2, as amended, was **approved**.

2.33 The **Chairman** invited participants to comment on the alternative appendices entitled "Initial suggestions to the IRG" and "Replanning principles".

2.34 The **Chairman of Committee 4** suggested that the Plenary should opt for the first of the two alternative appendices proposed since it had obtained wider support from delegations. He further suggested approving and including in Annex 2 the sections entitled "Requests for additional studies by the IRG" and "Requests for studies by ITU-R".

2.35 The **delegate of Syria** proposed deleting both of the alternative appendices since he considered it preferable that IRG should establish its own programme of work. The **delegates of Egypt, the United Kingdom** and **Lebanon** supported that proposal. The **delegate of Syria** specified that he was in favour of keeping the sections entitled "Requests for additional studies by the IRG" and "Requests for studies by ITU-R" and advocated that the requested studies be undertaken as speedily as possible by a special team which would meet more frequently than a working group.

2.36 The **delegate of Japan** proposed that an additional request be introduced under "Requests for additional studies by the IRG" concerning the grouping of beams with multiple orbital positions having wider orbital spacings than 0.4° arc.

2.37 The **delegate of Syria** noted that a consensus had not been reached in Committee 4 on that suggestion and the **Chairman of ad hoc Group 1** of Committee 4 said that his Group had wished to keep its instructions to the IRG to the minimum. Moreover, the question of beam grouping should not be addressed either necessarily or solely by the IRG. The **Chairman**, noting that the proposal by the delegate of Japan had not obtained support, invited the latter to submit his suggestion direct to the IRG when it met.

2.38 The **delegate of the Lao People's Democratic Republic** requested that a sentence be inserted in the text under consideration guaranteeing that all computer aids used in planning exercises at ITU during inter-conference periods and for future activities would be made available to Member States at the same cost and with the same obligations as for other computer programs used by ITU. He stressed that it was essential for developing countries to have access to software used by ITU and asked for assurances that BR would make available to all administrations any software it developed itself or received from other administrations.

2.39 The **Chairman** assured the delegate of the Lao People's Democratic Republic that his request would be taken into account, but pointed out that it was difficult to insert a sentence to that effect in the text under consideration. Having received assurances from BR, the **delegate of the Lao People's Democratic Republic** agreed to withdraw his proposal.

2.40 The **delegate of South Africa** proposed inserting the following sentence after the "Requests for studies by ITU-R" section: "ITU is requested to provide the necessary assistance to facilitate the active participation of developing countries, especially least developed countries, in both the supervisory policy group and the technical group of experts of the IRG". That proposal was supported by the **delegates of Syria, the Islamic Republic of Iran** and **Pakistan**.

2.41 The **delegate of the United States** observed that, if the Plenary wished to delete the appendix, the third paragraph of Annex 2 should be amended to read: "JWP 10-11S is encouraged to contribute to the studies requested of ITU-R, as appropriate".

2.42 The **Chairman** proposed that the Plenary approve the attachment to Annex 2 of the sections "Requests for additional studies by the IRG" and "Requests for studies by ITU-R", as amended by South Africa's proposal, and the second sentence of Annex 2, as amended in the light of the proposal by the delegate of the United States.

2.43 It was so **agreed**.

2.44 The **Chairman** invited the participants to comment on Annex B: "Draft agenda items for future conferences".

2.45 The **delegate of Syria** proposed replacing the words "the report of the Director of the Radiocommunication Bureau" under paragraph 1 "Agenda item for WRC-99" by "the IRG report submitted by the Director of the Radiocommunication Bureau".

2.46 The **Chairman** noted that that proposal was accepted. He proposed that, if there was no objection, the Annex, thus amended, should be communicated to Working Group 1 of the Plenary.

2.47 It was so **agreed**.

2.48 The **delegate of Algeria** asked BR on what basis the IRG would deal with modifications to the Plan under Article 4. The **Director of BR** replied that the matter was still pending. The **Chairman of Committee 4** confirmed that the possible amendment of Article 4 of Appendices 30 and 30A had not been discussed by Committee 4 for lack of time and added that the terms of reference of the IRG in that regard did not come within the framework of the Resolution under consideration.

2.49 The **delegate of Algeria** pointed out that the IRG would meet prior to WRC-99 to discuss assignments recorded or not recorded in the Plan, some of which would relate to a single network and others to dozens of networks. He asked whether those assignments would be treated on equal terms and according to what terms of reference they would be considered by the IRG. The **Chairman of ad hoc Group 1 of Committee 4** said that he had consulted the Legal Adviser on that point and that a first analysis indicated that the IRG could set a time limit for submission of type A systems, which would thus be taken into consideration one year before the end of the examination period. That principle could therefore serve as a guideline for the work of the IRG, which would be left to establish a more specific timetable. Then, as WRC-99 approached, decisions would need to be taken for replanning purposes. The **Chairman** made it clear that the IRG's mandate only covered the examination of assignments.

2.50 The **delegate of Algeria** recommended that the terms of reference of the IRG should make a clear-cut distinction between two cases: that of existing systems, complying with the provisions of Article 4, which would be integrated into the planning exercise, and that of systems for which information would be provided before the end of the current Conference and which would be taken into consideration only according to their number, by country, and their degree of development, as evaluated by the IRG.

2.51 The **Chairman of Committee 4** proposed that the second bullet in paragraph 2 of Annex 2 should be amended to read: "the Bureau, assisted by a group of technical experts (GTE) and working under the guidance of the supervisory group".

2.52 It was so **agreed**.

2.53 On the Chairman's proposal, Document 353 as a whole was **approved** on first reading.

Draft Resolution [COM4-21] concerning implementation of the decisions of WRC-97 relating to Appendices S30 and S30A (Document DT/157 and Corr.1)

2.54 The **Chairman of Committee 4** said that the draft Resolution was uncontroversial because the decisions it contained had already been approved at Committee level.

2.55 *Considering* and *recognizing* of Resolution COM4-21 (WRC-97) (Document DT/157), *resolves* 1, 2 and 3 (Corrigendum 1 to Document DT/157) and *resolves* 4 and 5 (Document DT/157) were **approved**, the square brackets in the second and third subparagraphs of paragraph 5 having been removed.

2.56 The **delegate of the United States** said that the first bullet in *resolves* 6, as it appeared in Corrigendum 1, did not reflect the wording that had previously been approved, and read out the correct version: "in those cases where the degradation of the margins caused by the proposed modification is no worse under the new situation arising from the revision of the Plan than under the original situation, any agreements previously obtained under the Article 4 procedures of Appendices 30 or 30A should be confirmed by the respective administrations".

2.57 The correction was **noted**.

2.58 The **representative of BR** proposed that the first bullet in *resolves* 6 contained in Corrigendum 1, which had been read out by the delegate of the United States, should be amended to read: "in those cases where the degradation of the equivalent protection margins caused by the proposed modification …". He added that if there were any difficulties in implementing the text, BR would consult the RRB in order to apply the procedure for which it would have the necessary information.

2.59 The **delegate of the Lao People's Democratic Republic** pointed out that the phrase "in the same date order of receipt by the Bureau of the complete information" in the first bullet in *resolves* 6 in Document DT/157 did not necessarily correspond to the exact date of submission and drew the participants' attention to the text of Corrigendum 1 to Document DT/114 which provided that the Bureau should request the provision of "the missing information/clarification within 45 days".

2.60 In the absence of further comment, *resolves* 6 of Resolution COM4-21 (WRC-97), as contained in Document DT/157 and as amended in Corrigendum 1 thereto, was **approved**.

2.61 Resolution COM4-21 (WRC-97) having been **approved** as a whole, it was **agreed** to remove the brackets around the date of 22 November 1997 in *resolves* 1 and to approve Document DT/157 and Corrigendum 1 thereto on first reading.

Updating of Nos. S5.492 and S5.493 (Document 328)

2.62 The **Chairman of Committee 4**, introducing Document 328, drew the attention of participants to the content of the note under MOD S5.492.

2.63 The **delegate of Algeria** said that a number of Arab countries, including his own, wished to propose the insertion in the document under consideration, and in others dealing with Article 5, of a footnote, which he read out, concerning the use in Regions 1 and 3 of several parts of bands regarding which they had been unable to submit their proposals to Working Group 4D.

2.64 The **delegate of Syria** noted that the proposed footnote should be inserted in Document 328 only for Region 1 to which the Arab countries in question belonged. He added that the text of the footnote had been submitted orally to Committee 5 during the discussion of Document 294(Rev.2) and that it was the result of the work of Committee 5.

2.65 The **Chairman**, noting the lack of a written proposal, said it would be difficult for the Plenary to take a decision at that stage. The **Chairman of Committee 4** pointed out that the proposed footnote, if it really concerned the bands mentioned in Document 328, was related to the

question of non-GSO FSS systems and should not therefore be considered in the context of Document 328. The **Chairman** proposed that the footnote in question be resubmitted by its sponsors when the documents submitted by Committee 5 were considered.

2.66 There being no objection, it was so **agreed**.

2.67 The **delegate of the United States** noted that MOD S5.493 had not been included in MOD Table 10.7 - 12.7 GHz and suggested creating a new block under Region 3 for the frequency band 12.5 - 12.75 and mentioning S5.493.

2.68 It was so **agreed**. There being no further amendments or objections, Document 328, as amended, was **approved**.

2.69 The **Chairman of Committee 5** said that MOD Table 10.7 - 12.7 GHz had been approved by Committee 5 as a blue document and requested the Editorial Committee, in combining the two documents, to take due note of the amendments introduced respectively by Committee 4 and Committee 5.

2.70 The **Chairman** proposed to the Plenary that it approve Document 328 on first reading. In response to a question from the **delegate of Syria** concerning the retention or deletion of the note under MOD S5.492 in the blue document, the **Chairman** said that the note had only been included for information and would not appear in the blue document.

2.71 The **delegate of the Islamic Republic of Iran** said that when considering MOD S5.492 Committee 4 had actually examined the impact of two different technical criteria, applicable to BSS on the one hand and FSS on the other, and that BR had confirmed in that connection his delegation's concern regarding the implications of the applicability of the footnote. He requested additional information so that his delegation could take a decision.

2.72 The **representative of BR** explained that MOD S5.492 referred to the use of BSS assignments for FSS applications. Since 1983, the application had been included in a similar footnote for Region 2. To date, BR had received no requests concerning that application. At the current Conference, an extension of the provision to Regions 2 and 3 had been requested. In reply to the question as to whether the application might entail difficulties, the Bureau said that for the time being there was no ITU-R Recommendation laying down relevant criteria and calculation methods and that any problems likely to arise could be resolved by such a text.

2.73 The **delegate of the Islamic Republic of Iran**, in the light of what had been said and in the absence of a relevant Recommendation and calculation methods applicable to the use by the FSS of bands allocated to the BSS, reserved the right of his delegation not to approve MOD S5.492. The **delegate of China** associated himself with that statement.

2.74 There being no objection, Document 328, as amended, was **approved** on first reading.

Definition of subregional systems (Document DT/153)

2.75 The **Chairman of Committee 4** said that the document under consideration contained two different definitions of the term "subregional system", Working Group 4D having been unable to decide between the two. The first definition was somewhat more restrictive in the sense that it referred to "neighbouring administrations" while the second referred to "two or more administrations"; in addition, the first provided that administrations should indicate their agreement.

2.76 The **delegate of Syria**, speaking also on behalf of the Arab countries, expressed a clear preference for the first definition, which was not restrictive but merely logical. Pursuant to ITU principles and Resolution 531 (WRC-95), planning was to be conducted on the basis of national coverage. The question of the definition was important since it influenced the implementation of subregional systems.

2.77 The **delegate of Cuba** drew attention to No. S5.22 of the Radio Regulations, which defined a subregion as being "an area consisting of two or more countries in the same Region". It seemed logical therefore that the administrations of a subregional system should be neighbouring. For that reason, he preferred the first definition.

2.78 The **delegates of Zimbabwe, the Islamic Republic of Iran, India** and **Mali** supported the first definition.

2.79 The **delegates of Tonga, Mexico** and **the United States**, on the other hand, supported the second definition.

2.80 The **delegate of Syria** felt that, given the political implications of the matter, it would be preferable to defer a decision until the next meeting and to take a vote by secret ballot for the purpose.

2.81 The **delegate of the United Kingdom** noted that the main difference between the two proposed definitions was that the first required the agreement of the administrations. In that connection, he drew attention to draft Resolution [COM4-XA] in Document 306, which stipulated under *resolves* that administrations providing services should obtain the agreement of other administrations. It was perhaps unnecessary therefore to provide for agreement by administrations in the definition. He viewed the second definition as more appropriate.

2.82 By way of a compromise, the **delegate of India** proposed amending the first definition to read "… a broadcasting service to the territories of two or more administrations of the same Region, with the agreement of those administrations".

2.83 The **delegate of Mali**, noting that it was never a good idea to take an important decision at a late hour, proposed deferring consideration of the matter until a subsequent meeting.

2.84 The **delegates of Malaysia, the United States, Luxembourg** and **New Zealand** considered that no definition was required.

2.85 The **delegate of Mali** said he was strongly opposed to the deletion of the definition and insisted that the discussion should be postponed.

2.86 Having asked delegates to express their preference by a show of hands, the **Chairman** noted that a large majority of the Plenary were in favour of dispensing with a definition of subregional systems. He therefore proposed that it be considered that the Plenary did not approve either of the definitions contained in Document DT/153.

2.87 It was so **agreed**.

Updating of Appendices S30 and S30A (Document DT/156)

2.88 The **Chairman of Committee 4** said that the document under consideration contained the updates to Appendices S30 and S30A resulting from Addendum 1 to Document 30. As the modifications were purely formal, he suggested that the Plenary should approve the document as a whole. He was supported by the **delegate of the United States**.

2.89 The **delegate of Algeria** said he was surprised that on several occasions temporary documents had been referred to the Plenary without having been accepted by working groups or committees. He regretted that delegates were being asked to accept such documents as a whole at a late hour and expressed disapproval of the procedure followed. He was supported by the **delegates of Mali** and **the Islamic Republic of Iran**.

2.90 The **Chairman** explained that Committee 4 had been unable to consider Document DT/156 for lack of time. As the document before the Plenary was merely an update, he requested the delegates to approve it rapidly so that the Plenary could proceed with its work.

2.91 The **delegate of Turkey**, while approving the principle underlying the statement by the delegate of Algeria, said he was willing to approve Document DT/156 as a whole because the modifications it contained were purely formal.

2.92 Document DT/156 was **approved**.

2.93 The **Chairman** proposed to the Plenary that it approve the document on first reading.

2.94 It was so **agreed**.

Annex 2 to Appendices 30 (S30) and 30A (S30A) (Addendum 1 to Document 296)

2.95 The **Chairman** said that Addendum 1 to Document 296 contained proposed additional amendments to Annex 2 to Appendices 30 (S30) and 30A (S30A).

2.96 Addendum 1 to Document 296 was **approved**.

2.97 The **Chairman** proposed that the Plenary approve the document on first reading.

2.98 It was so **agreed**.

Draft Recommendation concerning non-standard parameters (Document DT/144)

2.99 The **Chairman of Committee 4** submitted to the Plenary in Document DT/144 a draft Recommendation concerning the development of a method to adjust protection for modifications/additions to the Regions 1 and 3 Plans in Appendices 30 and 30A which used technical parameters different from those used for development of the Plans. As the content of the draft Recommendation was important for BR, he hoped that the Plenary would approve it.

2.100 The **delegate of Luxembourg** opposed the approval of the draft Recommendation on the grounds that the difficulties encountered by BR could be examined by the study groups. He was supported by the **delegates of Japan** and **Malaysia**.

2.101 The **delegate of Syria**, noting that the draft simply recommended that ITU-R should conduct studies, was unable to see why it was difficult to accept. The **delegate of Luxembourg** pointed out that, in addition to recommending that ITU-R should conduct studies, the draft Recommendation instructed the Director of BR to apply the methods developed by ITU-R. The **delegate of Syria** noted that the Director of BR was instructed to apply the methods developed only when they became available.

2.102 The **delegate of the Lao People's Democratic Republic** inquired about the source of the draft Recommendation submitted.

2.103 The **representative of BR** explained that difficulties arose in calculations for non-standard parameters. The matter had already been raised at WRC-95, in which connection he drew attention to Resolution 531 (WRC-95) concerning the consideration of Appendices 30 (S30) and 30A (S30A) to the Radio Regulations. The purpose of the draft Recommendation was to request ITU-R to conduct studies as a matter of urgency in order to determine a method for protection of Article 4 submissions which used technical parameters that differed from the reference parameters in the Regions 1 and 3 Plans in Appendices 30 and 30A.

2.104 While the **delegate of Syria** maintained that requesting ITU-R to conduct a study entailed no commitment, the **delegate of Luxembourg** pointed out that approval of the draft Recommendation would imply acceptance of the notion of non-standard parameters.

2.105 In an attempt to reach a compromise, the **Director of BR** proposed deleting *instructs the Director of the Radiocommunication Bureau* so that BR would not apply any methods developed by ITU-R without instructions from a future conference or from RRB. That proposal was approved by the **delegates of Luxembourg** and **Syria**.

2.106 The **delegate of the Islamic Republic of Iran** reserved his position and drew attention to proposal IRN/44/31 in Document 44 concerning non-standard parameters. He read out the content of the proposal: "WRC-97 should decide on the parameters to be used for the revision of the Regions 1 and 3 Plans as well as those to be used for subsequent modification of the Plan. No other parameters shall be used unless they are contained in a Recommendation approved by ITU-R and adopted by a subsequent WRC. Any such Recommendation shall be accompanied with the calculation method(s) and necessary algorithm for the required compatibility analysis".

2.107 The **delegate of the United States** drew attention to *considering* d) which stated that "in some cases, use of such "non-standard" parameters in conjunction with the protection ratios defined in Appendices 30 and 30A may lead to inefficient use of orbit/spectrum resource". He stressed that in a changing environment not everything could be standardized and he was unwilling to accept the idea of studies prejudging the development of technology.

2.108 The **delegate of Japan** was prepared to accept the draft Recommendation but proposed that the annex, containing an example of a method, be deleted. The **delegate of Russia** drew attention to the unclear wording of the title of the draft Recommendation.

2.109 The **Chairman**, noting that the draft Recommendation was opposed on a number of counts, proposed that the Plenary should not approve Document DT/144.

2.110 It was so **agreed**.

3 Eighth series of texts submitted by the Editorial Committee for first reading (B.8) (Document 354)

3.1 The **Chairman** invited the participants to consider the Committee 4 texts from Documents 335 and 339.

Article S11 (MOD A.S11.1)

3.2 Approved.

Article S11 (ADD A.S11.2)

3.3 The **Chairman of Committee 4** requested that the note under ADD A.S11.2 in Document 335 be inserted under ADD A.S11.2 in the document under consideration. The note read as follows: "It may be necessary to include an additional footnote referencing a Resolution on the implementation of certain provisions of this Article".

3.4 No. ADD A.S11.2, as amended, was **approved**.

Article S11 (MOD S11.14)

3.5 The **Chairman of Committee 4** said that the delegation of Burkina Faso had reserved its position regarding the proposed modification of No. S11.14.

3.6 The reservation was **noted**.

3.7 No. MOD S11.14 was **approved**.

Article S11 (MOD S11.18, MOD S11.21, ADD S11.21A, MOD S11.22, ADD S11.22.1, (MOD) S11.23, (MOD) S11.20.1 to S11.23.1, MOD S11.24, MOD S11.25, ADD S11.26, MOD S11.27, MOD S11.31.3, NOC S11.32A.1, NOC S11.33, MOD S11.36, (MOD) S11.37, ADD S11.37.1, ADD S11.37.2, NOC S11.38, MOD S11.39, NOC S11.39A, (MOD) S11.39B, NOC S11.39C, (MOD) S11.39D, ADD S11.39E, S11.40, NOC S11.41, NOC S11.42, MOD S11.43)

3.8 Approved.

Article S11 (MOD S11.43A)

3.9 The **Chairman of Committee 4** said that the delegation of the Islamic Republic of Iran had reserved its position regarding MOD S11.43A.

3.10 The reservation was **noted**.

3.11 No. MOD S11.43A was **approved**.

Article S11 (MOD S11.44, ADD S11.44A, ADD S11.44B, ADD S11.44C, ADD S11.44D, ADD S11.44E, ADD S11.44F)

3.12 Approved.

Article S11 (ADD S11.44G)

3.13 The **Chairman of Committee 4** said that the delegation of Tonga had reserved its position regarding ADD S11.44G.

3.14 The reservation was **noted**.

3.15 No. ADD S11.44G was **approved.**

Article S11 (ADD S11.44H, ADD S11.44I, NOC S11.45, NOC S11.46, MOD S11.47, MOD S11.48)

3.16 Approved.

Article S11 (SUP S11.49)

3.17 The **delegates of Malaysia, Tonga, Ecuador, the Islamic Republic of Iran, Singapore, Mali, Lao People's Democratic Republic, Japan, Brunei Darussalam** and **Indonesia** and the **representatives of Intelsat** and **Eutelsat** opposed the deletion of S11.49.

3.18 The **delegates of the United States, Luxembourg** and **the United Kingdom**, on the other hand, supported its deletion.

3.19 The **Chairman of Committee 4** said that in deleting No. S11.49 Committee 4 had merely endorsed a decision taken by Working Group 4A and the **Chairman of Working Group 4A** confirmed that there had been a consensus within his Group in favour of deleting the provision.

3.20 The **Chairman** proposed that No. S11.49 be maintained.

3.21 It was so **agreed**.

Article S13

3.22 The **Chairman of Committee 4** said that several delegations had reserved their position regarding Article S13 following its adoption by Committee 4.

3.23 The comment was **noted**.

Article S13 (MOD S13.1, SUP S13.2, SUP S13.3, SUP 13.4)

3.24 Approved.

Article S59 (MOD S59.1)

3.25 Approved.

Article S59 (MOD S59.2)

3.26 The **Chairman of Committee 4** said that the phrase "…, shall apply provisionally as of 1 June 1998, except those revised provisions …" and the word "which" in the last line should be deleted.

3.27 No. MOD S59.2, as amended, was **approved**.

Article S59 (ADD S59.3)

3.28 The **Chairman of Committee 4** said that the provision was to be amended as follows: "The other provisions of these Regulations, as revised by the World Radiocommunication Conferences (Geneva, 1995 and 1997), shall apply provisionally as of 1 January 1999, with the following exceptions:".

3.29 No. ADD S59.3, as amended, was **approved**.

Article S59 (ADD S59.4, ADD S59.5)

3.30 The **Chairman of Committee 4** said that ADD S59.4 should be deleted and that ADD S59.5 should be renumbered ADD S59.4.

3.31 The **delegate of Tonga** said he reserved his position concerning those amendments to Article S59 pending the decision to be taken relating to Resolution COM4-18 (WRC-97).

3.32 The reservation was **noted**.

3.33 No. ADD S59.4, as amended, was **approved**.

Appendix S4 (Annex 2A), Appendix S5

3.34 Approved.

Resolution 27 (Rev.WRC-97)

3.35 The **delegate of Syria** said that his delegation had reserved its position concerning reference to "ITU-T Recommendations" in Resolution 27 under consideration.

3.36 That reservation was **noted**.

3.37 Resolution 27 (WRC-97) was **approved**.

Resolution 33 (Rev.WRC-97)

3.38 The **Chairman of Committee 4** said that the phrase currently within square brackets in *resolves* 1 and 2 should be replaced by "1 January 1999".

3.39 The **delegate of Trinidad and Tobago** drew participants' attention to Document 332(Rev.2) which contained a proposal to revise Resolution 33 (WARC-79), pursuant to the request formulated in Document 332, namely "that transitional measures be adopted for those systems currently in coordination under the procedures of Resolution 33 (WARC-79) prior to incorporation of those procedures within Articles S9 and S11" of the simplified Radio Regulations as revised by WRC-97.

3.40 The **delegates of Tonga**, **Pakistan**, **Panama**, **Ghana**, **Kenya**, **Syria** and **Indonesia** supported the proposal contained in Document 332(Rev.2).

3.41 The proposal contained in Document 332(Rev.2) was **approved**.

3.42 The **Chairman** said that the text would replace the former text of Resolution 33 as contained in Document 354.

3.43 Resolution 33 (Rev.WRC-97), as amended, was **approved**.

Resolution 48 (WRC-95)

3.44 Resolution 48 (WRC-95) was **maintained**.

Resolution COM4-17 (WRC-97)

3.45 Approved.

Resolution COM4-18 (WRC-97)

3.46 The **Chairman of Committee 4** said that the square brackets around *considering* d) should be deleted, as well as those in *resolves* 1 and 2 and around the date of 22 November 1997 in *resolves* 3 and 6.

3.47 The **representative of BR** said that *resolves* 6 could be deleted, and confirmed, following an observation made by the **delegate of Luxembourg**, that, as a result, *considering* d) could likewise be deleted.

3.48 The **delegate of Tonga**, supported by the **delegate of Singapore**, proposed that the last part of *resolves* 3, currently within square brackets, be deleted; the **Chairman** proposed, however, to defer any decision on that matter in order that any possible amendment of that section could first be checked.

3.49 It was so **agreed**.

3.50 Resolution COM4-18 (WRC-97), as amended, was **approved**.

Resolution COM4-19 (WRC-97)

3.51 Approved.

3.52 The eighth series of texts submitted by the Editorial Committee was **approved** as a whole, as amended, on first reading.

4 Sixth series of texts submitted by Committee 4 to the Editorial Committee (Document 335)

4.1 The **Chairman of Committee 4** said that, after considering Appendix S5, Committee 4 had decided to replace the date shown in the "date of entry into force" column in Table S5-2 (S5.1A of Document 2) for the band 2 170 - 2 200 MHz by "01.01.2000"; to request the Bureau to check all the provisions referred to in the "RR footnotes" column in Table S5-2 and correct any errors and, finally, since Table S5-2 might need further updating in order to reflect additional "other space services", to follow the standard practice and include them in the Rules of Procedure. Furthermore, with regard to the study of regulatory/procedural matters in preparation for WRC-99, Committee 4 was of the view that the anticipated volume of work justified activating the Special Committee on regulatory and procedural matters.

4.2 Following a request by the **delegate of Syria**, the **Chairman** proposed that the Plenary should decide to reconvene the Special Committee.

4.3 It was so **agreed**.

4.4 Document 335 was **approved**.

5 Ninth series of texts submitted by the Editorial Committee for first reading (B.9) (Document 360)

5.1 The **Chairman** invited the participants to consider the texts from Committee 5 from Documents 337 and Corr.1.

Article S5 (Table MOD 410 - 420 MHz, MOD S5.268, MOD Table 29.9 - 31.8 GHz, MOD S5.546, ADD S5.547, ADD S5.549A, MOD Table 31.8 - 37 GHz, ADD S5.547B, ADD S5.547C, ADD S5.547D, ADD S5.547E, MOD Table 31.8 - 37 GHz, SUP S5.551, ADD S5.551A, MOD Table 40.5 - 42.5 GHz, ADD S5.551B, ADD S5.551C, ADD S5.551D, ADD S5.551E, ADD S5.551F, MOD Table 42.5 - 54.25 GHz)

5.2 Approved.

Article S5 (MOD Table 54.25 - 71 GHz)

5.3 The **Chairman of Committee 5** drew participants' attention to Document 363. Committee 5 had approved the modifications relating to Article S5 that would allow the frequency bands around 60 GHz to be alleviated from intense use by the inter-satellite service with a view to protecting space science systems in that important spectrum range for meteorological observations. At the final meeting of Committee 5, it had been confirmed by BR that advance publication information had been received prior to WRC-97 for a limited number of systems that used bands around 60 GHz for non-GSO inter-satellite links and that those systems would no longer be in conformity with the frequency allocations modified as a result of the Committee 5 decisions. In order not to penalize administrations which had already submitted information for advance publication of non-GSO systems using inter-satellite links in the 60 GHz band, it was suggested that the Conference instruct the Bureau in the following course of action: when examining amendments to the systems mentioned in the second paragraph of Document 363, which sought to shift the frequencies originally submitted to another band allocated to the inter-satellite service, administrations responsible for those systems would not be required to apply the provisions of RR [1043]/S9.2 (recommencement of advance publication).

5.4 The **Chairman** proposed that the Plenary should instruct the Bureau to follow the procedure described.

5.5 It was so **agreed**.

5.6 On the basis of that decision, MOD Table 54.25 - 71 GHz was **approved**.

Article S5 (MOD S5.340, ADD S5.555A, ADD S5.556A, ADD S5.556B, ADD S5.557A, MOD S5.557, MOD S5.558)

5.7 Approved.

Resolution COM5-11 (WRC-97)

5.8 The **delegate of Sweden** requested that the words "to the fixed and" be added after the words "that the band 31.8 - 33.4 GHz is allocated on a primary basis" in *considering* b).

5.9 Resolution COM5-11 (WRC-97), as amended, was **approved**.

Resolution COM5-12 (WRC-97)

5.10 The **delegate of the United States** proposed that, in *considering* f), the word "interplanetary" should be replaced by "planetary" and that, in the English version of *considering* g), the term "space-based" should be added in front of "very long baseline interferometry".

5.11 Resolution COM5-12 (WRC-97), as amended, was **approved**.

Resolution COM5-16 (WRC-97), Resolution COM5-17 (WRC-97), Resolution COM5-28 (WRC-97)

5.12 Approved.

Resolution COM5-29 (WRC-97)

5.13 The **delegate of the United Kingdom** proposed that *considering* a) should be redrafted to read: "that this Conference has added a primary allocation to the fixed-satellite (space-to-Earth) service in Regions 2 and 3 and in certain countries in Region 1 and to the fixed service in the band 40.5 - 42.5 GHz;".

5.14 Resolution COM5-29 (WRC-97), as amended, was **approved**.

SUP Resolution 211, SUP Resolution 643, SUP Resolution 710, SUP Resolution 711

5.15 Approved.

SUP Resolution 712

5.16 The **delegate of the United States** expressed a reservation concerning the deletion of Resolution 712.

5.17 The reservation was **noted**.

5.18 SUP Resolution 712 was **approved**.

NOC Recommendation 706

5.19 Approved.

5.20 The ninth series of texts submitted by the Editorial Committee was **approved**, as a whole, as amended.

6 Tenth series of texts submitted by the Editorial Committee for first reading (B.10) (Document 362)

6.1 The **Chairman** invited the participants to consider the texts from Committees 4 and 5, taken from Documents 345 and 343, respectively.

Resolution COM4-20 (WRC-97)

6.2 The **delegate of Spain**, referring to Document 350, proposed that a new *resolves* 3 should be inserted, to read: "3 that once the circular-letter referred to in *resolves* 2 has been received, administrations will have a period of [60] days to decide whether they do or do not wish to go on appearing as "affected administrations" in the relevant table. If no reply is received from administrations within that period, it will be taken that there is no need to make any change.". The **delegate of Russia** supported the proposal.

6.3 The **representative of BR** proposed that the beginning of the new text should be amended to read: "that once the circular-letter referred to in *resolves* 2 has been sent …".

6.4 The new *resolves* 3, as amended, was **approved**.

6.5 The **delegate of Syria** expressed a reservation concerning the new text, which he had not had time to consider thoroughly enough.

6.6 The reservation was **noted**.

6.7 Resolution COM4-20 (WRC-97), as amended, was **approved**.

Resolution COM5-25 (WRC-97)

6.8 Following a brief exchange of views between the **delegates of Finland** and **Canada** and the **Chairman of Committee 5**, it was **agreed** to amend the beginning of *noting* a) to read: "that the possible use of the band 405 - 406 MHz by the mobile-satellite service should be limited to systems …".

6.9 The **delegate of China** having requested deletion of the square brackets under *resolves*, the **Chairman of Committee 5** pointed out that the matter would be considered later, since the Resolution was to be forwarded to Working Group PLEN-1 for possible inclusion in the draft agenda for WRC-99.

6.10 Resolution COM5-25 (WRC-97), as amended, was **approved**.

Resolution 214 (Rev.WRC-97)

6.11 Approved.

Resolution COM5-15 (WRC-97)

6.12 The **Chairman of Committee 5**, referring to *resolves* 2, proposed the deletion of the words "…, parts of which may be allocated to non-GSO MSS systems, …".

6.13 Resolution COM5-15 (WRC-97), as amended, was **approved**.

6.14 The tenth series of texts submitted by the Editorial Committee was **approved**, as a whole, as amended.

The meeting rose at 0230 hours on Thursday, 20 November 1997.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 392-E
16 December 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

ELEVENTH PLENARY MEETING

Thursday, 20 November 1997, at 0910 hours

Chairman: Mr. R. SMITH (Australia)

Subject discussed		**Documents**
1	Final report of Committee 4 (continued)	306, 353; DT/5(Rev.1)+Add.1+Corr.1, DT/116(Rev.1)

1 Final report of Committee 4 (continued) (Documents 306, 353; DT/5(Rev.1)+Add.1+Corr.1, DT/116(Rev.1))

Revision of Annex 5 to Appendix 30 and Annex 3 to Appendix 30A (Documents DT/5+Add.1+Corr.1)

1.1 The **Chairman of ad hoc Group 3 of Committee 4**, introducing Corrigendum 1 to Document DT/5(Rev.1), said that the Group had reached consensus on all but one of the outstanding issues relating to the revision of Annex 5 to Appendix 30 and Annex 3 to Appendix 30A. The changes agreed upon were set out in Annex 1. He drew attention to the statement in the last paragraph of the Corrigendum to the effect that those changes invalidated many of the assessments shown in Addendum 1 to Document DT/5(Rev.1).

1.2 The **Chairman of Committee 4** explained that Addendum 1 to Document DT/5(Rev.1) was not ripe for consideration. The optional or mandatory nature of the parameters given in Annex 5 to Appendix 30 had given rise to a great deal of discussion. The text that had now been approved indicated clearly whether a given parameter was mandatory or optional, and in cases of doubt the Bureau could undoubtedly provide guidance in the form of a rule of procedure. He therefore suggested that the Plenary should not engage in consideration of Addendum 1.

1.3 It was so **agreed**.

1.4 The **Chairman** invited the meeting to consider, in the numerical order of items shown, the changes proposed in Annex 1 to the Corrigendum, referring in each case to the corresponding text in Document DT/5(Rev.1).

Item 1

1.5 The **Chairman of ad hoc Group 3 of Committee 4**, in response to an observation by the **delegate of Canada**, said that the proposed title of Annex 5 made no specific reference to Regions 1 and 3 because the application of the technical data in question was not confined to those two Regions.

1.6 Item 1 was **approved**.

Items 2 to 12

1.7 Approved.

Item 13

1.8 **Approved**, subject to a reservation by the **delegate of the Islamic Republic of Iran**, endorsed by the **delegate of Malaysia**, concerning the applicability of Recommendation 521 (WRC-95).

Items 14 to 27

1.9 Approved.

Item 28

1.10 The **delegate of Indonesia** having raised a query with regard to the calculation of atmospheric absorption loss, the **Chairman of ad hoc Group 3 of Committee 4** said that the matter had not been raised during the Group's discussions. The difficulty possibly arose from the fact that the downlink Plan had been developed in 1977 and the feeder-link Plan in 1988. The data source was to be found in the relevant ITU-R Recommendation. The **representative of BR** said that the

calculation bases in respect of the Regions 1 and 3 Plan differed from those for the Region 2 Plan, and that the Bureau would in any case be making the necessary calculations. The **delegate of Australia** suggested that the text should be left as it stood, the matter being too complex to discuss at the current stage of the Conference, and that the calculations in question should be left to the BR.

1.11 On that understanding, item 28 was **approved**.

Item 29

1.12 The **delegate of Malaysia**, said that the rainfall intensity value of 115 mm/h for rain climatic zone Q (Document DT/5(Rev.1), Section 2.2 Table 5 was inadequate.

1.13 The **delegate of Indonesia** pointed out that in accordance with Recommendation ITU-R P.618-5 the rainfall intensity value for rain climatic zone P should be 100, not 145.

1.14 Subject to those remarks, item 29 was **approved**.

Items 30 and 31

1.15 Approved.

Item 32

1.16 The **delegate of the Islamic Republic of Iran** said that his Administration would have difficulty with the proposed deletion relating to Section 3.5.1, which implied that antenna diameters of less than 5 metres would be permitted. The **delegate of Russia** endorsed that observation, and the **delegate of Bulgaria** expressed the view that smaller-diameter antennas would have an adverse effect on the Plan's applicability.

1.17 The **Chairman of Group ad hoc 3 of Committee 4** said that the Group had decided, after much discussion, that the deletion was acceptable, since current technology made possible the use of smaller antenna diameters without adverse effect on feeder-link e.i.r.p., which would still be subject to adequate constraints. The **delegate of Luxembourg** said that improvements in areas such as noise temperature levels and in off-axis e.i.r.p. constraints for earth stations meant that a minimum antenna diameter of 5 metres was no longer a necessary constraint. The **delegate of Spain** agreed that the restriction was unnecessary and could be dispensed with.

1.18 Following further discussion in which the **Chairman of ad hoc Group 5 of Working Group 4D**, the **representative of BR** and the **delegates of Luxembourg** and **the Islamic Republic of Iran** took part, it was **agreed** to note the latter delegation's reservation.

1.19 The **Chairman of Committee 4**, referring to the second paragraph of Section 3.5.1, suggested that the phrase "for antennas smaller than 5 metres" should be replaced by "for all antenna diameters used, including diameters smaller than 5 metres".

1.20 Item 32, as amended, was **approved**.

Items 33 to 39

1.21 Approved.

Item 40

1.22 The **Chairman**, after drawing attention to the changes proposed to the first paragraph of Section 3.14, noted that the text of the second and third paragraphs relating to the use of "clusters" in the Regions 1 and 3 Plan remained in square brackets as agreement had not been reached on them.

1.23 The **delegate of Russia**, after endorsing the changes proposed to the first paragraph, further suggested, with regard to that paragraph, that the words "The orbital positions are those given in the Plan" should be deleted from the second sentence, which could then be combined with the first sentence.

1.24 It was so **agreed**.

1.25 The amendments to the first paragraph were **approved**.

1.26 The **representative of BR,** responding to a request from the **delegate of Luxembourg,** said the work done at the 1977 and Orb-88 Conferences had established nominal orbital positions for the Plan. Annex 7, approved in 1997, had placed certain restrictions on the use of orbital positions other than those of the Plan. If new orbital positions were added by WRC-97, a decision would be required to consider them as nominal orbital positions of the Plan. The revision of Annex 7 was to be discussed at WRC-99. The Conference must therefore decide whether the new orbital positions that had been used for the establishment of the revised Plan were to be considered as nominal orbital positions of the Plan, or to maintain what was already in the initial Plan before WRC-97 for the time being, subject to review at WRC-99 when Annex 7 would be taken up. The **delegate of Luxembourg** said his Administration's preference would be for an indication that the relevant orbital positions were those shown in Document 273. The text now before the Plenary did not reflect some orbital positions which the Conference had incorporated in the Plan and which should be mentioned. He would not, however, press for an amendment to the text currently under consideration.

1.27 The **Chairman** having asked whether delegates agreed to delete the second and third paragraphs of Section 3.14, the **delegate of Luxembourg** recalled that those paragraphs had been incorporated in Appendix 30A by Orb-88. The intention had been to endow the feeder-link Plan with sufficient flexibility to allow the administrations in Regions 1 and 3 to operate on the basis of the clustering principle. If the text was deleted, the potential for flexible use of the Plan would be substantially reduced. His Administration was therefore opposed to the deletion of the two paragraphs.

1.28 The **delegate of Australia,** supported by the **delegate of Russia**, said the text adopted at Orb-88 had been intended, not to implement the "cluster" concept, but simply to allow for a slight shift of orbit to compensate for certain situations where the feeder-link margins had been unacceptable. Since further studies were to be made on orbit spacing for consideration at WRC-99, the retention of the second and third paragraphs of Section 3.14 was acceptable, on the understanding that the situation would be reviewed at WRC-99.

1.29 It was so **agreed**.

1.30 Item 40, as amended, was **approved**.

Items 41 and 42

1.31 Approved.

1.32 Annex 1 to Corrigendum 1 to Document DT/5(Rev.1) as a whole, as amended, was **approved**.

Issues related to RR 2674 (Documents 306; DT/116(Rev.1))

1.33 The **Chairman of Committee 4** said that Document DT/116(Rev.1) drew attention to a discrepancy between the English and French texts of RR 2674. The Conference had to decide which

was the authoritative version. In accordance with the Constitution, the French text prevailed over the English, but the Conference might wish to decide otherwise in the present case.

1.34 The **delegate of Syria,** supported by the **delegates of Cuba** and **Malaysia**, observed that the French text was normally taken to be the authentic one, so that any discrepancy should be resolved by alignment on the French version.

1.35 The **delegate of Spain** said that there was a need for alignment solely of the English and French texts: the Spanish text was fully consistent with the French.

1.36 The **delegate of the United States** said that since the original proposal for RR 2674 had been drafted in English, the other language versions should probably be aligned on that text.

1.37 Following further discussion involving the **delegates of France, Syria** and **the United States,** the **Chairman** suggested that the English text be aligned with the French.

1.38 It was so **agreed**.

1.39 The **delegate of the Islamic Republic of Iran**, referring to the RRB's Rules of Procedure for the application of RR 2674, drew attention to the concerns expressed by his Administration in that connection, as set out in Addendum 1 to Document 44. In particular, he reiterated his delegation's proposal to replace "not yet processed" by "not yet brought into use" in paragraph 2.6 of Annex 1 to the Rules of Procedure concerning Appendix 30.

1.40 The **delegate of Syria** expressed concern at the RRB's interpretation of RR 2674 and fully endorsed the position of the **delegate of the Islamic Republic of Iran**, as did the **delegates of Algeria, Malaysia, Jordan** and **Egypt**.

1.41 The **delegate of the United States** suggested that, given the issue's complex ramifications for the procedures of RRB and BR, a meeting of the two groups of countries holding divergent views might be convened later in an effort to resolve the matter.

1.42 It was so **agreed**.

1.43 The **Chairman of Committee 4** drew attention to the first report of ad hoc Group 1 of Committee 4 (Document 306) containing draft Resolution [COM4-XA] on the operation of broadcasting satellites serving other countries, some parts of which were still between square brackets.

1.44 The **delegate of Syria** proposed the following modifications: in *considering* d), deletion of the words "and subregional"; in *recognizing* a), deletion of the text in square brackets and addition of "that exceed the national territory" after "service areas"; in *recognizing* c), replacement of the words in square brackets by the word "such"; and under *resolves*, replacement of "[should]" by "shall".

1.45 The proposals relating to the preambular parts of the draft Resolution were **approved**.

1.46 In response to a comment by the **Chairman**, the **delegate of Australia** said that it had been decided to retain the square brackets around "should" precisely in order to highlight some administrations' express preference for "shall".

1.47 The **delegate of the United States** made the statement reproduced in Annex 1.

1.48 Following comments by the **Legal Adviser** who, for purposes of information, drew attention to the operative part of Recommendation 2 (Kyoto, 1994) on the unrestricted transmission of news and the right to communicate, the **Chairman** proposed that the square brackets should be removed from around the word "should" in the *resolves* part of the draft Resolution.

1.49 It was so **agreed**

1.50 Draft Resolution [COM4-XA], as amended, was **approved**.

1.51 The **delegate of Islamic Republic of Iran**, speaking on a point of order, made the following statement:

"Mr. Chairman,

Matters related to Article 19 of the Declaration of Human Rights and free flow of information, were, and still are, discussed at UNESCO and the United Nations.

Here, we have a technical conference and our main concerns have to be technical matters, in order to protect the sovereign rights of each administration.

Mr. Chairman,

'Invasion' does not come necessarily by force and by crossing recognized borders on the Earth.

Not accepting this Resolution will cause cultural, and even political, invasion (that is against the Convention of ITU, and the principle of peaceful utilization of space).

It is the right of each administration, and any administration on behalf of its nation, to safeguard its cultural and political interests. So we not only strongly support this Resolution, but we even propose:

1) to bring '*considering*' e) under the heading '*recognizing*';

2) to change the word 'should' in square brackets to 'shall' without square brackets."

1.52 The **delegate of the United States**, requested the Chairman at least to permit consideration of a change to the Resolution's title, namely, the addition of "in the Appendices 30 and 30A Plans" after the words "broadcasting satellites", otherwise the Resolution would fall outside the purview of the Conference.

1.53 The **delegation of Syria**, speaking on a point of order, urged the Chairman to disallow further discussion of a resolution that had been approved and suggested that any lingering objections should simply be recorded in the minutes.

1.54 The **Chairman** announced that draft Resolution [COM4-XA], as approved, would be submitted to the Plenary in due course for first reading.

The meeting rose at 1205 hours.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

Annex: 1

Original: English

ANNEX 1

Statement by the delegate of the United States

"Thank you, Mr. Chairman,

This draft Resolution is designed to address two issues:

– one, administrations' affirmation of their intent to observe S23.13 (RR 2674);

– two, the desire of some administrations to require prior agreement before broadcast-satellite signals can be transmitted into their territory.

It is the latter issue that raises concern for the United States delegation because of its implications on the free flow of information.

At issue are two important rights or principles:

The first concerns the free flow of information. Article 19 of the United Nations Universal Declaration of Human Rights, adopted by the United Nations General Assembly in 1948, provides that:

'Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference, and impart information and ideas through any media regardless of frontiers.'

A prior agreement requirement that facilitates content-based restrictions on the free flow of information undermines that right. We cannot endorse that position. ITU has for many years avoided adopting any provision that implies or requires prior agreement bringing ITU into conflict with the United Nations Universal Declaration of Human Rights.

The second concerns the sovereign right of States to regulate telecommunications within their territories.

In that regard, we make the following observations:

We would encourage providers of subregional BSS services to comply with any regulatory requirements an administration might have concerning the provision of BSS services within its country. For example, administrations can, through the licensing (or not licensing) of the use of appropriate receivers within their countries or through limitations on the sale of particular services to providers regulate the broadcast of satellite services within their countries. It is our understanding that the BSS service providers are in fact talking with administrations about licensing and business arrangements. It is not in their interests to cause problems by trying to bypass administrations. In North and South America, BSS service providers operate only in countries where they are licensed and no service is being offered in countries where they do not have an agreement.

In summary, Mr. Chairman, the United States delegation objects to the adoption of this Resolution for three reasons:

1) First, we believe that ITU should not be discussing any action that, in addition to agreements under RR 2674, requires the prior agreement of administrations before any broadcast service into their territory. Requiring prior agreement between administrations would bring ITU into conflict with the United Nations Declaration of Human Rights. It is well known that this Resolution is only the first step in an objective by a few administrations to require prior agreement language like this to be eventually applied to other BSS services including audio only BSS and even to DTH/FSS in 1999.

2) Second, this Resolution is totally unnecessary. It is a solution looking for a problem. Administrations already have ample means to regulate, as part of the licensing process, the provision of BSS services to, from and within their territory. ITU need not and should not be involved in this process.

3) Third, BR presently is charged with carrying out two BSS regulatory procedures. Article 4, Appendices 30 and 30A procedures for modifications of the Plans and Resolution 531 procedures for ensuring RR 2674 coordination address will continue to address spill over of radiation over the territory of other countries.

Now we have a proposal to establish a third coordination process for all satellite-broadcasting services, not just for subregional systems, which would require administrations to obtain the agreement of the affected administration to the content of the programming being provided.

Mr. Chairman, the ultimate goal of these efforts is to require ITU via BR to police a process that will require prior agreement of BSS video services, BSS audio services and FSS direct-to-home services. I strongly urge delegations to oppose this Resolution and when the report of GTPLEN-1 comes to Plenary, remove it from the agenda of any future conference agenda item that would extend these procedures to the fixed-satellite services.

I apologize for this long intervention, but the United States wants to make sure that the implications of this Resolution are clearly understood before they are discussed."

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 393-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.8 **PLENARY MEETING**

EIGHTH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**
COM 6	265 (B.3) 266 (B.4)	**ARTICLE S1**
	265 (B.3)	**ARTICLE S4**
	DT/89	**ARTICLE S5**
	229 (B.2) 364 (B.11) 277 (B.5) 364 (B.11)	**ARTICLE S21**
	266 (B.4)	**ARTICLE S30** **ARTICLE S31** **ARTICLE S32**
	288 (B.6)	**ARTICLE S33**
	266 (B.4)	**ARTICLE S47** **ARTICLE S48**
	288 (B.6)	**ARTICLE S51** **ARTICLE S52** **APPENDIX S15**
	DT/89	**RESOLUTION 212 (Rev.WRC-97)**
	306	**RESOLUTION COM4-23 (WRC-97)**

A.-M. NEBES
Chairman of Committee 6

Annex: 18 pages

PINK PAGES

ARTICLE S1

Terms and Definitions

ADD S1.X *High Altitude Platform Station*: A station located on an object at an altitude of 20 to 50 km and at a specified, nominal, fixed point relative to the Earth.

ADD S1.109A *Adaptive System:* A radiocommunication system which varies its radio characteristics according to channel quality.

PINK PAGES

ARTICLE S4

Assignment and Use of Frequencies

ADD **S4.15A** Transmissions to or from high altitude platform stations shall be limited to bands specifically identified in Article **S5**.

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MOD S5.388 The bands 1 885 - 2 025 MHz and 2 110 - 2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000). Such use does not preclude the use of these bands by other services to which these bands are allocated. The bands should be made available for IMT-2000 in accordance with Resolution **212 (Rev.WRC-97)**.

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ARTICLE S21

TABLE S21-4

MOD

Frequency band	Service	Limit in dB(W/m^2) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
		0° - 5°	5° - 25°	25° - 90°	
…					
7 250 - 7 850 MHz	Meteorological-Satellite (S-E)	-152	-152+0.5(δ-5)	-142	4 kHz
…					

PINK PAGES

TABLE S21-4

MOD

Frequency band	Service	Limits in dB(W/m²) for angle of arrival δ above the horizontal plane			Reference bandwidth
		0° - 5°	5° - 25°	25° - 90°	
10.7 - 11.7 GHz	Fixed-satellite (S-E)	–150 *6bis)*	–150 + 0.5(δ-5) *6bis)*	–140 *6bis)*	4 kHz
12.2 - 12.5 GHz (R3) 12.5 - 12.75 GHz (R1 and R3 countries listed in Nos. S5.494 and S5.496)	Fixed-satellite (S-E)	–148 *6bis)*	–148 + 0.5(δ-5) *6bis)*	–138 *6bis)*	4 kHz
15.43 - 15.63 GHz	Fixed-satellite (S-E)	–127	5° - 20°: -127 20° - 25°: –127 + 0.56 (δ-20)²	25° - 29°: –113 29° - 31°: –136.9 + 25 log (δ-20) 31° - 90°: –111	1 MHz
11.7 - 12.5 GHz (R1) 12.2 - 12.7 GHz (R2) 11.7 - 12.2 GHz (R3) 11.7 - 12.2 GHz (R2)	Fixed-satellite (S-E), non-GSO	–148 *6ter)*	–148 + 0.5(δ-5) *6ter)*	–138 *6ter)*	4 kHz
17.7 - 19.3 GHz *1) 1bis)*	Fixed-satellite (S-E)	–115 or –125 *6)*	–115 + 0.5 (δ–5) or –125 + (δ-5) *6)*	–105 or –105 *6)*	1 MHz
19.3 - 19.7 GHz	Fixed-satellite (S-E)	–115	–115 + 0.5 (δ–5)	–105	1 MHz

1) The equality of rights to operate when a frequency band is allocated in different Regions to different services of the same category is established in No. **S4.8**. Therefore, any limits concerning inter-Regional interference which may appear in ITU-R Recommendations should, as far as practicable, be observed by administrations.

1bis) The band 18.6 - 18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.

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MOD **S21.16.6** [6)] These values shall apply provisionally only to emissions of space stations on non-geostationary satellites in networks operating with a large number of satellites, that is systems operating with more than 100 satellites (see Resolution [**COM5-23**]).

ADD **S21.16.6*bis*** [6*bis*)] Although these limits apply to both GSO and non-GSO FSS satellites, values for non-GSO systems require further study (see Resolution [**COM5-23**]).

ADD **S21.16.6*ter*** [6*ter*)] These values require further study (see Resolution [**COM5-23**]).

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ARTICLE S30

General Provisions

Section I. Introduction

MOD S30.1 § 1. This Chapter contains the provisions for the operational use of the Global Maritime Distress and Safety System (GMDSS), which is fully defined in the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended. Distress, urgency and safety transmissions may also be made, using Morse telegraphy or radiotelephony techniques, in accordance with the provisions of Appendix **S13** and relevant ITU-R Recommendations. Stations of the maritime mobile service, when using frequencies and techniques in conformity with Appendix **S13**, shall comply with the appropriate provisions of that Appendix.

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ARTICLE S31

Frequencies for the Global Maritime Distress and Safety System (GMDSS)

Section I. General

MOD S31.1 § 1. The frequencies to be used for the transmission of distress and safety information under the GMDSS are contained in Appendix **S15**. In addition to the frequencies listed in Appendix **S15**, coast stations should use other appropriate frequencies for the transmission of safety messages.

ADD S31.16 *C. Ship Stations*

MOD S31.17 § 8. (1) Ship stations, where so equipped, shall, while at sea, maintain an automatic digital selective calling watch on the appropriate distress and safety calling frequencies in the frequency bands in which they are operating. Ship stations, where so equipped, shall also maintain watch on the appropriate frequencies for the automatic reception of transmissions of meteorological and navigational warnings and other urgent information to ships. However, ship stations shall also continue to apply the appropriate watch-keeping provisions of Appendix **S13** (see Resolution **331 (Rev.WRC-97)**).

NOC S31.18

MOD S31.20 § 9. Ship earth stations complying with the provisions of this Chapter shall, while at sea, maintain watch except when communicating on a working channel.

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ARTICLE S32

Operational Procedures for Distress and Safety Communications in the Global Maritime Distress and Safety System (GMDSS)

Section I. General

ADD S32.5A § 4A. Each administration shall ensure that suitable arrangements are made for assigning and registering identities used by ships participating in the GMDSS, and shall make registration information available to rescue coordination centres on a 24-hour day, 7-day week basis. Where appropriate, administrations shall notify responsible organizations immediately of additions, deletions and other changes in these assignments (see Nos. **S19.39, S19.96** and **S19.99**). Registration information shall be in accordance with Resolution [**COM4-1**].

ADD S32.5B Any GMDSS shipboard equipment which is capable of transmitting position coordinates as part of a distress alert message and which does not have an integral electronic position fixing system receiver shall be interconnected to a separate navigation receiver, if one is installed, to automatically provide that information.

MOD S32.9 § 7. (1) The transmission of a distress alert indicates that a mobile unit[1] or person[2] is threatened by grave and imminent danger and requests immediate assistance. The distress alert is a digital selective call using a distress call format[3] in the bands used for terrestrial radiocommunication or a distress message format, in which case it is relayed through space stations.

ADD S32.10A § 7A. A distress alert is false if it was transmitted without any indication that a mobile unit or person was in distress and required immediate assistance (see No. **S32.9**). Administrations receiving a false distress alert shall report this infringement in accordance with Section V of Article **S15**, if that alert:

a) was transmitted intentionally;

b) was not cancelled in accordance with Resolution [**COM4-12**];

c) could not be verified as a result of either the ship's failure to keep watch on appropriate frequencies in accordance with Nos. **S31.16 - S31.20**, or its failure to respond to calls from an authorized rescue authority;

d) was repeated; or

e) was transmitted using a false identity.

Administrations receiving such a report shall take appropriate steps to ensure that the infringement does not recur. No action should normally be taken against any ship or mariner for reporting and cancelling a false distress alert.

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ARTICLE S33

Operational Procedures for Urgency and Safety Communications in the Global Maritime Distress and Safety System (GMDSS)

Section V. Transmission of Maritime Safety Information[1]

NOC **S33.39** *A. General*

ADD **S33.39A** § 20A.(1) Messages from ship stations containing information concerning the presence of cyclones shall be transmitted, with the least possible delay, to other mobile stations in the vicinity and to the appropriate authorities at the first point of the coast with which contact can be established. These transmissions shall be preceded by the safety signal.

_____

ADD **S33.39.1** [1] Maritime safety information includes navigation and meteorological warnings, meteorological forecasts and other urgent messages pertaining to safety normally transmitted to or from ships, between ships and between ship and coast stations or coast earth stations.

ADD **S33.39B** (2) Messages from ship stations containing information on the presence of dangerous ice, dangerous wrecks, or any other imminent danger to marine navigation, shall be transmitted as soon as possible to other ships in the vicinity, and to the appropriate authorities at the first point of the coast with which contact can be established. These transmissions shall be preceded by the safety signal.

ADD **Section VIII. Medical Advice**

ADD **S33.54** § 29. (1) Mobile stations requiring medical advice may obtain it through any of the land stations shown in the List of Radiodetermination and Special Service Stations.

ADD **S33.55** (2) Communications concerning medical advice may be preceded by the urgency signal.

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ARTICLE S47

Operator's Certificates

Section II. Categories of Operator's Certificates

NOC **S47.19**

NOC **S47.23**

NOC **S47.24**

NOC TABLE S47-1

Requirements for Radio Electronic and Operator's Certificates

ARTICLE S48

Personnel

NOC **S48.5**

NOC **S48.6**

MOD **S48.7**

§ 5. The personnel of ship stations and ship earth stations for which a radio installation is not compulsory either under international agreements or national regulations and which use the frequencies and techniques prescribed in Chapter **SVII** shall be adequately qualified and certificated in accordance with the administration’s requirements. Guidance concerning appropriate qualifications and certification is provided in Resolution [**COM4-4**]. This Resolution describes two appropriate certificates for use by personnel of ship stations and ship earth stations for which a radio installation is not compulsory.

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ARTICLE S51

Conditions to Be Observed in the Maritime Services

Section I. Maritime Mobile Service

D. Ship Stations Using Radiotelephony

MOD **S51.53** *a)* send class J3E emissions on a carrier frequency of 2 182 kHz and receive class J3E emissions on a carrier frequency of 2 182 kHz, except for such apparatus as is referred to in No. **S51.56** (see also Appendix **S13**);

ARTICLE S52

MOD **S52.3** (2) Where these provisions specify class F1B emission, classes J2B and J2D emission shall be considered equivalent. However, class J2D emission shall not be used with the HF distress and safety frequencies listed in Appendix **S15**.

MOD **S52.7** (2) From 1 February 1999, in the maritime mobile service, the frequency 490 kHz is used exclusively for the transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing telegraphy.

MOD **S52.54** § 19. (1) Ship Morse radiotelegraph stations equipped to operate in the bands specified in Appendix **S17,** Part B, Sections IV and V, shall employ the classes of emission mentioned in No. **S52.2** for Morse telegraphy at speeds not exceeding 40 bauds. Survival craft stations may use class A2A or H2A emissions in these bands (see Appendix **S13**)[6].

ADD **S52.54.1** [6] Additionally, use of classes J2B and J2D emissions are permitted on a non-interference basis to A1A Morse operations. However, these emissions shall not be used on the HF safety and distress frequencies listed in Appendix **S15**.

MOD **S52.55** (2) Except as provided for in Nos. **S52.222.1** and **S52.54.1**, coast Morse radiotelegraph stations operating in the bands exclusively allocated to the maritime mobile service between 4 000 kHz and 27 500 kHz shall not use Type 2 emissions (see No. **S52.18**).

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MOD **S52.189** § 87. (1) The frequency 2 182 kHz[1] is an international distress frequency for radiotelephony (see Appendix **S13** for details of its use for distress, urgency, safety and emergency position-indicating radiobeacon (EPIRB) purposes).

NOC **S52.189.1**

MOD **S52.217** § 96. (1) The class of emission to be used for analogue radiotelephony in the bands between 4 000 and 27 500 kHz shall be J3E; for digital telecommunications in those bands, the class of emission shall be J2D.

MOD **S52.219** (3) Coast stations employing class J3E or J2D emissions in accordance with No. **S52.217** in the bands between 4 000 and 27 500 kHz shall use the minimum power necessary to cover their service area and shall at no time use a peak envelope power in excess of 10 kW per channel.

MOD **S52.220** (4) Ship stations employing class J3E or J2D emissions in accordance with No. **S52.217** in the bands between 4 000 and 27 500 kHz shall at no time use a peak envelope power in excess of 1.5 kW per channel.

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APPENDIX S15

NOC

TABLE S15.1

Frequencies below 30 MHz

TABLE S15.2

Frequencies above 30 MHz (VHF/UHF)

	Frequency (in MHz)	Description of usage	Notes
NOC	*156.8	VHF-CH16	The frequency 156.8 MHz is used for distress and safety communications by radiotelephony (see also Appendix **S13**). Additionally, the frequency 156.8 MHz may be used by aircraft stations for safety purposes only.
MOD	1 530 - 1 544	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 530 - 1 544 MHz is used for distress and safety purposes in the space-to-Earth direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band; see No. **S5.353A**.
MOD	1 626.5 - 1 645.5	SAT-COM	In addition to its availability for routine non-safety purposes, the band 1 626.5 - 1 645.5 MHz is used for distress and safety purposes in the Earth-to-space direction in the maritime mobile-satellite service. GMDSS distress, urgency and safety communications have priority in this band; see No. **S5.353A**.

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RESOLUTION 212 (Rev.WRC-97)

IMPLEMENTATION OF INTERNATIONAL MOBILE TELECOMMUNICATIONS-2000 (IMT-2000)*

The World Radiocommunication Conference (Geneva, 1997),

considering

a) that ITU-R has recommended the 1 - 3 GHz band as the most suitable for IMT-2000;

b) that ITU-R has recommended approximately 60 MHz for use by personal stations and approximately 170 MHz for use by mobile stations;

c) that ITU-R has recognized that space techniques are an integral part of IMT-2000;

d) that, in No. **S5.388** of the Radio Regulations, this Conference has identified bands to accommodate this future service,

considering further

a) that ITU-R has not completed its studies regarding duplexing methods, modulation techniques, channelling arrangements, signalling or communication protocols;

b) that no worldwide intersystem numbering plan currently exists that would facilitate worldwide roaming,

noting

a) that the implementation of the terrestrial components of IMT-2000 in the bands 1885 - 2025 MHz and 2110 - 2200 MHz is expected to commence around the year 2000 subject to market and technical considerations;

b) that the availability of the satellite component of IMT-2000 in the bands 1980 - 2010 MHz and 2170 - 2200 MHz simultaneously with the terrestrial component of IMT-2000 in the bands identified in No. **S5.388** would improve the overall implementation and the attractiveness of IMT-2000 to both developed and developing countries,

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* IMT-2000 was previously known as Future Public Land Mobile Telecommunication Systems (FPLMTS).

invites administrations

to give due consideration to the accommodation of other services currently operating in these bands when implementing IMT-2000,

invites ITU-R

to continue its studies with a view to developing suitable and acceptable technical characteristics for IMT-2000 that will facilitate worldwide use and roaming, and ensure that IMT-2000 can also meet the telecommunication needs of the developing countries and rural areas,

invites ITU-T

a) to complete its studies of signalling and communication protocols;

b) to develop a common worldwide intersystem numbering plan and associated network capabilities that will facilitate worldwide roaming,

resolves

that administrations which implement IMT-2000:

a) should make the necessary frequencies available for system development;

b) should use those frequencies when IMT-2000 are implemented;

c) should use the relevant international technical characteristics, as identified by ITU-R and ITU-T Recommendations.

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RESOLUTION COM4-23 (WRC-97)

OPERATION OF BROADCASTING SATELLITES SERVING OTHER COUNTRIES

The World Radiocommunication Conference (Geneva, 1997),

considering

a) the institutional nature of ITU which is founded on an agreement between its Member States;

b) the treaty status of the Plans in Appendices **S30** and **S30A**;

c) that these Plans were established on the basis of planning principles which included, *inter alia*, that the Plans should be based mainly on national coverage;

d) the increasing number of applications under Article **4** for modifications to the Plans, leading to many multinational systems;

e) that **S23.13 [2674]** requires that: "in devising the characteristics of a space station in the broadcasting-satellite service, all technical means available shall be used to reduce, to the maximum extent practicable, the radiation over the territory of other countries unless an agreement has been previously reached with such countries",

recognizing

a) that current technology provides opportunities to implement broadcasting-satellite systems with service areas that exceed national coverage;

b) that several such systems have been implemented and others are being planned;

c) that successful Article **4** coordination of such systems does not in any way imply licensing authorization to provide a service within the territory of a Member State,

resolves

that, in addition to observing **S23.13 [2674]**, and before providing satellite broadcasting services to other administrations, administrations originating the services [should] obtain the agreement of those other administrations.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 394-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.9 **PLENARY MEETING**

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**

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ARTICLE S5

MOD **S5.55** *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, Georgia, Kazakstan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the band 14 - 17 kHz is also allocated to the radionavigation service on a primary basis.

MOD **S5.56** The stations of services to which the bands 14 - 19.95 kHz and 20.05 - 70 kHz and in Region 1 also the bands 72 - 84 kHz and 86 - 90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Russia, Tajikistan, Turkmenistan and Ukraine, the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions.

MOD **S5.58** *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, Georgia, Kazakstan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the band 67 - 70 kHz is also allocated to the radionavigation service on a primary basis.

SUP **S5.63**

MOD **S5.67** *Additional allocation:* in Azerbaijan, Bulgaria, Georgia, Mongolia, Kyrgyzstan, Romania, Turkmenistan and Ukraine, the band 130 - 148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate.

MOD **S5.73** The band 285 - 325 kHz (283.5 - 325 kHz in Region 1), in the maritime radionavigation service may be used to transmit supplementary navigational information using narrow-band techniques, on condition that no harmful interference is caused to radiobeacon stations operating in the radionavigation service.

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MOD

kHz
315 – 495

<table>
<tr><td colspan="3">Allocation to Services</td></tr>
<tr><td>Region 1</td><td>Region 2</td><td>Region 3</td></tr>
<tr><td>315 – 325
AERONAUTICAL RADIONAVIGATION
Maritime Radionavigation (radiobeacons) [S5.73]
S5.72 S5.75</td><td>315 – 325
MARITIME RADIONAVIGATION (radiobeacons) [S5.73]
Aeronautical Radionavigation</td><td>315 – 325
AERONAUTICAL RADIONAVIGATION
MARITIME RADIONAVIGATION (radiobeacons) [S5.73]</td></tr>
<tr><td rowspan="2">325 – 405
AERONAUTICAL RADIONAVIGATION
S5.72</td><td>325 – 335
AERONAUTICAL RADIONAVIGATION
Aeronautical Mobile
Maritime Radionavigation (radiobeacons)</td><td rowspan="2">325 – 405
AERONAUTICAL RADIONAVIGATION
Aeronautical Mobile</td></tr>
<tr><td>335 – 405
AERONAUTICAL RADIONAVIGATION
Aeronautical Mobile</td></tr>
<tr><td>405 – 415
RADIONAVIGATION S5.76
S5.72</td><td colspan="2">405 – 415
RADIONAVIGATION S5.76
Aeronautical Mobile</td></tr>
<tr><td>415 – 435
MARITIME MOBILE S5.79
AERONAUTICAL RADIONAVIGATION
S5.72</td><td colspan="2" rowspan="2">415 – 495
MARITIME MOBILE S5.79 ADD S5.79A
Aeronautical Radionavigation S5.80
S5.77 S5.78 S5.81 S5.82</td></tr>
<tr><td>435 – 495
MARITIME MOBILE S5.79 ADD S5.79A
Aeronautical Radionavigation
S5.72 S5.81 S5.82</td></tr>
</table>

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ADD S5.79A When establishing coast stations in the NAVTEX service on the frequencies 490 kHz, 518 kHz and 4 209.5 kHz, administrations are strongly recommended to coordinate the operating characteristics in accordance with the procedures of the International Maritime Organization (IMO) (see Resolution **339 (Rev.WRC-97)**).

MOD S5.81 The bands 490 - 495 kHz and 505 - 510 kHz shall be subject to the provisions of Appendix **S13,** paragraph 15(1), Part A2.

MOD S5.82 In the maritime mobile service, the frequency 490 kHz is, from the date of full implementation of the GMDSS (see Resolution **331 (Rev.WRC-97)**), to be used exclusively for the transmission by coast stations of navigational and meteorological warnings and urgent information to ships, by means of narrow-band direct-printing telegraphy. The conditions for use of the frequency 490 kHz are prescribed in Articles **S31** and **S52**. In using the band 415 - 495 kHz for the aeronautical radionavigation service, administrations are requested to ensure that no harmful interference is caused to the frequency 490 kHz.

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MOD

kHz
495 – 1 606.5

<table>
<tr><td colspan="3">Allocation to Services</td></tr>
<tr><td>Region 1</td><td>Region 2</td><td>Region 3</td></tr>
<tr><td colspan="3">495 – 505
MOBILE (distress and calling)
S5.83</td></tr>
<tr><td rowspan="2">505 – 526.5
MARITIME MOBILE
S5.79 ADD S5.79A
S5.84
AERONAUTICAL
RADIONAVIGATION

S5.72 S5.81</td><td>505 – 510
MARITIME MOBILE
S5.79
S5.81</td><td rowspan="2">505 – 526.5
MARITIME MOBILE
S5.79 ADD S5.79A
S5.84
AERONAUTICAL
RADIONAVIGATION
Aeronautical Mobile
Land Mobile

S5.81</td></tr>
<tr><td>510 – 525
MOBILE ADD S5.79A
S5.84
AERONAUTICAL
RADIONAVIGATION</td></tr>
<tr><td rowspan="2">526.5 – 1 606.5
BROADCASTING

S5.87</td><td>525 – 535
BROADCASTING S5.86
AERONAUTICAL
RADIONAVIGATION</td><td>526.5 – 535
BROADCASTING
Mobile
S5.88</td></tr>
<tr><td>535 – 1 605
BROADCASTING</td><td>535 – 1 606.5
BROADCASTING</td></tr>
</table>

MOD **S5.84** The conditions for the use of the frequency 518 kHz by the maritime mobile service are prescribed in Articles **S31** and **S52** and in Appendix **S13**.

MOD **S5.91** *Additional allocation:* in the Philippines and Sri Lanka, the band 1606.5 - 1705 kHz is also allocated to the broadcasting service on a secondary basis.

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MOD S5.98 *Alternative allocation:* in Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Eritrea, Spain, Ethiopia, Georgia, Greece, Italy, Kazakstan, Lebanon, Lithuania, Moldova, the Netherlands, Syria, Kyrgyzstan, Russia, Somalia, Tajikistan, Tunisia, Turkmenistan, Turkey and Ukraine, the band 1 810 - 1 830 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD S5.99 *Additional allocation:* in Saudi Arabia, Bosnia and Herzegovina, Iraq, Libya, Slovakia, the Czech Republic, Romania, Slovenia, Chad, Togo and Yugoslavia, the band 1 810 - 1 830 kHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD S5.107 *Additional allocation:* in Saudi Arabia, Botswana, Eritrea, Ethiopia, Iraq, Lesotho, Libya, Somalia, Swaziland and Zambia, the band 2 160 - 2 170 kHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a primary basis. The mean power of stations in these services shall not exceed 50 W.

MOD S5.112 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Denmark, France, Greece, Iceland, Italy, Malta, Norway, Sri Lanka, Turkey and Yugoslavia, the band 2 194 - 2 300 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD S5.114 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Denmark, France, Greece, Iraq, Italy, Malta, Norway, Turkey and Yugoslavia, the band 2 502 - 2 625 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD S5.117 *Alternative allocation:* in Bosnia and Herzegovina, Cyprus, Côte d'Ivoire, Denmark, Egypt, France, Greece, Iceland, Italy, Liberia, Malta, Norway, Sri Lanka, Togo, Turkey and Yugoslavia, the band 3 155 - 3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

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MOD

kHz
4 063 – 5 450

Allocation to Services		
Region 1	Region 2	Region 3
4 063 – 4 438	MARITIME MOBILE ADD S5.79A S5.109 S5.110 S5.130 S5.131 S5.132 S5.128 S5.129	
4 438 – 4 650 FIXED MOBILE except aeronautical mobile (R)		**4 438 – 4 650** FIXED MOBILE except aeronautical mobile
4 650 – 4 700	AERONAUTICAL MOBILE (R)	
4 700 – 4 750	AERONAUTICAL MOBILE (OR)	
4 750 – 4 850 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING S5.113	**4 750 – 4 850** FIXED MOBILE except aeronautical mobile (R) BROADCASTING S5.113	**4 750 – 4 850** FIXED BROADCASTING S5.113 Land Mobile
4 850 – 4 995	FIXED LAND MOBILE BROADCASTING S5.113	
4 995 – 5 003	STANDARD FREQUENCY AND TIME SIGNAL (5 000 kHz)	
5 003 – 5 005	STANDARD FREQUENCY AND TIME SIGNAL Space Research	
5 005 – 5 060	FIXED BROADCASTING S5.113	
5 060 – 5 250	FIXED Mobile except aeronautical mobile S5.133	
5 250 – 5 450	FIXED MOBILE except aeronautical mobile	

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MOD S5.128 In Afghanistan, Argentina, Armenia, Azerbaijan, Belarus, Botswana, Burkina Faso, Central African Republic, China, Georgia, India, Kazakstan, Mali, Niger, Kyrgyzstan, Russia, Tajikistan, Chad, Turkmenistan and Ukraine, in the bands 4 063 - 4 123 kHz, 4 130 - 4 133 kHz and 4 408 - 4 438 kHz, stations of limited power in the fixed service which are situated at least 600 km from the coast may operate on condition that harmful interference is not caused to the maritime mobile service.

MOD S5.131 The frequency 4 209.5 kHz is used exclusively for the transmission by coast stations of meteorological and navigational warnings and urgent information to ships by means of narrow-band direct-printing techniques.

MOD S5.134 The use of the bands 5 900 - 5 950 kHz, 7 300 - 7 350 kHz, 9 400 - 9 500 kHz, 11 600 - 11 650 kHz, 12 050 - 12 100 kHz, 13 570 - 13 600 kHz, 13 800 - 13 870 kHz, 15 600 - 15 800 kHz, 17 480 - 17 550 kHz and 18 900 - 19 020 kHz by the broadcasting service is limited to single-sideband emissions with the characteristics specified in Appendix **S11** to the Radio Regulations or to any other spectrum-efficient modulation techniques recommended by ITU-R. Access to these bands shall be subject to the decisions of a competent conference.

SUP S5.135

MOD S5.141 *Alternative allocation:* in Egypt, Eritrea, Ethiopia, Guinea, Libya and Madagascar, the band 7 000 - 7 050 kHz is allocated to the fixed service on a primary basis.

SUP S5.148

MOD S5.149 In making assignments to stations of other services to which the bands:

13 360 - 13 410 kHz,
25 550 - 25 670 kHz,
37.5 - 38.25 MHz,
73 - 74.6 MHz in Regions 1 and 3,
150.05 - 153 MHz in Region 1,
322 - 328.6 MHz*,
406.1 - 410 MHz,
608 - 614 MHz in Regions 1 and 3,
1 330 - 1 400 MHz*,
1 610.6 - 1 613.8 MHz*,
1 660 - 1 670 MHz,
1 718.8 - 1 722.2 MHz*,
2 655 - 2 690 MHz,
3 260 - 3 267 MHz*,
3 332 - 3 339 MHz*,
3 345.8 - 3 352.5 MHz*,
4 825 - 4 835 MHz*,
4 950 - 4 990 MHz,
4 990 - 5 000 MHz,
6 650 - 6 675.2 MHz*,
10.6 - 10.68 GHz,
14.47 - 14.5 GHz*,
22.01 - 22.21 GHz*,
22.21 - 22.5 GHz,
22.81 - 22.86 GHz*,
23.07 - 23.12 GHz*,
31.2 - 31.3 GHz,
31.5 - 31.8 GHz in Regions 1 and 3,
36.43 - 36.5 GHz*,
42.5 - 43.5 GHz,
42.77 - 42.87 GHz*,
43.07 - 43.17 GHz*,
43.37 - 43.47 GHz*,
48.94 - 49.04 GHz*,
72.77 - 72.91 GHz*,
93.07 - 93.27 GHz*,
97.88 - 98.08 GHz*,
140.69 - 140.98 GHz*,
144.68 - 144.98 GHz*,
145.45 - 145.75 GHz*,
146.82 - 147.12 GHz*,
150 - 151 GHz*,
174.42 - 175.02 GHz*,
177 - 177.4 GHz*,
178.2 - 178.6 GHz*,
181 - 181.46 GHz*,
186.2 - 186.6 GHz*,
250 - 251 GHz*,
257.5 - 258 GHz*,
261 - 265 GHz,
262.24 - 262.76 GHz*,
265 - 275 GHz,
265.64 - 266.16 GHz*,
267.34 - 267.86 GHz*,
271.74 - 272.26 GHz*

are allocated (* indicates radio astronomy use for spectral line observations), administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **S4.5** and **S4.6** and Article **S29**).

MOD **S5.152** *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, the Islamic Republic of Iran, Kazakstan, Moldova, Uzbekistan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the band 14 250 - 14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW.

MOD **S5.154** *Additional allocation:* in Armenia, Azerbaijan, Georgia, Kazakstan, Moldova, Uzbekistan, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the band 18 068 - 18 168 kHz is also allocated to the fixed service on a primary basis for use within their boundaries, with a peak envelope power not exceeding 1 kW.

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MOD

MHz
40.98 – 68

<table>
<tr><td colspan="3">Allocation to Services</td></tr>
<tr><td>Region 1</td><td>Region 2</td><td>Region 3</td></tr>
<tr><td>44 – 47</td><td colspan="2">FIXED
MOBILE
S5.162 ADD S5.162A</td></tr>
<tr><td rowspan="3">47 – 68
BROADCASTING

S5.163 S5.164 S5.165
S5.169 S5.171
ADD S5.162A</td><td>47 – 50
FIXED
MOBILE</td><td>47 – 50
FIXED
MOBILE
BROADCASTING</td></tr>
<tr><td colspan="2">50 – 54
AMATEUR
S5.166 S5.167 S5.168 S5.170</td></tr>
<tr><td>54 – 68
BROADCASTING
Fixed
Mobile

S5.172</td><td>54 – 68
FIXED
MOBILE
BROADCASTING</td></tr>
</table>

MOD S5.160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Namibia, Rwanda, Swaziland and Zaire, the band 41 - 44 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

ADD S5.162A *Additional allocation:* in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, Finland, France, Ireland, Iceland, Italy, Latvia, The Former Yugoslav Republic of Macedonia, Liechtenstein, Lithuania, Luxembourg, Moldova, Monaco, Norway, Netherlands, Poland, Portugal, Slovakia, the Czech Republic, the United Kingdom, Russia, Sweden, Switzerland and Turkey, the band 46 - 68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution [**COM5-5**] (WRC-97).

MOD S5.174 *Alternative allocation:* in Bulgaria, Hungary, Poland and Romania, the band 68 - 73 MHz is allocated to the broadcasting service on a primary basis and used in accordance with the decisions in the Final Acts of the Special Regional Conference (Geneva, 1960).

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MOD **S5.177** *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Russia, Tajikistan, Turkmenistan and Ukraine, the band 73 - 74 MHz is also allocated to the broadcasting service on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD **S5.181** *Additional allocation:* in Germany, Austria, Cyprus, Denmark, Egypt, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Malta, Morocco, Monaco, Norway, Syria, Sweden and Switzerland, the band 74.8 - 75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **S9.21**.

MOD **S5.184** *Additional allocation:* in Bulgaria and Romania, the band 76 - 87.5 MHz is also allocated to the broadcasting service on a primary basis and used in accordance with the decisions contained in the Final Acts of the Special Regional Conference (Geneva, 1960).

SUP **S5.186**

MOD **S5.190** *Additional allocation:* in Monaco, the band 87.5 - 88 MHz is also allocated to the land mobile service on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD **S5.192** *Additional allocation:* in China and the Republic of Korea, the band 100 - 108 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD **S5.194** *Additional allocation:* in Azerbaijan, Georgia, Lebanon, Kyrgyzstan, Syria, Somalia and Turkmenistan, the band 104 - 108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a secondary basis.

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MOD **S5.197** *Additional allocation:* in Germany, Austria, Cyprus, Denmark, Egypt, France, Italy, Japan, Jordan, Lebanon, Malta, Morocco, Monaco, Norway, Pakistan, Syria, and Sweden, the band 108 - 111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **S9.21**.

MOD

MHz
75.2 – 137

Allocation to Services		
Region 1	Region 2	Region 3
117.975 – 136	AERONAUTICAL MOBILE (R) S5.111 MOD S5.198 S5.199 S5.200 S5.201	
136 – 137	AERONAUTICAL MOBILE (R) MOD S5.202 MOD S5.203 ADD S5.203A ADD S5.203B	

MOD **S5.198** *Additional allocation:* the band 117.975 - 136 MHz is also allocated to the aeronautical mobile-satellite (R) service on a secondary basis, subject to agreement obtained under Article **14**/No. **S9.21**.

MOD **S5.201** *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Georgia, Hungary, the Islamic Republic of Iran, Iraq, Japan, Kazakstan, Latvia, Moldova, Mongolia, Mozambique, Uzbekistan, Papua New Guinea, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russia, Tajikistan, Turkmenistan and Ukraine, the band 132 - 136 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service.

MOD **S5.202** *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, United Arab Emirates, Georgia, the Islamic Republic of Iran, Jordan, Kazakstan, Latvia, Moldova, Oman, Uzbekistan, Poland, Syria, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russia, Tajikistan, Turkmenistan, Turkey and Ukraine, the band 136 - 137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service.

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MOD **S5.203** In the band 136 - 137 MHz, existing operational meteorological satellites may continue to operate, under the conditions defined in No. **S4.4** with respect to the aeronautical mobile service, until 1 January 2002. Administrations shall not authorize new frequency assignments in this band to stations in the meteorological-satellite service.

ADD **S5.203A** *Additional allocation:* in Israel, Mauritania, Qatar and Zimbabwe, the band 136 - 137 MHz is also allocated to the fixed and mobile, except aeronautical mobile (R), services on a secondary basis until 1 January 2005.

ADD **S5.203B** *Additional allocation:* in Saudi Arabia, United Arab Emirates, Jordan, Oman and Syria, the band 136 - 137 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a secondary basis until 1 January 2005.

MOD **S5.208** The use of the band 137 - 138 MHz by the mobile-satellite service is subject to coordination under Resolution **46 (Rev.WRC-97)**/No. **S9.11A**.

MOD **S5.208A** In making assignments to space stations in the mobile-satellite service in the bands 137 - 138 MHz, 387 - 390 MHz and 400.15 - 401 MHz, administrations shall take all practicable steps to protect the radio astronomy service in the bands 150.05 - 153 MHz, 322 - 328.6 MHz, 406.1 - 410 MHz and 608 - 614 MHz from harmful interference from unwanted emissions. The threshold levels of interference detrimental to the radio astronomy service are shown in Table 1 of Recommendation ITU-R RA.769-1.

MOD **S5.209** The use of the bands 137 - 138 MHz, 148 - 150.05 MHz, 399.9 - 400.05 MHz, 400.15 - 401 MHz, 454 - 456 MHz and 459 - 460 MHz by the mobile-satellite service is limited to non-geostationary-satellite systems.

MOD **S5.210** *Additional allocation:* in Austria, France, Italy, Liechtenstein, Slovakia, the Czech Republic, the United Kingdom and Switzerland, the bands 138 - 143.6 MHz and 143.65 - 144 MHz are also allocated to the space research service (space-to-Earth) on a secondary basis.

MOD

MHz
148 – 156.8375

Allocation to Services		
Region 1	Region 2	Region 3
149.9 – 150.05	MOBILE-SATELLITE (Earth-to-space) MOD S5.209 ADD S5.224A RADIONAVIGATION-SATELLITE ADD S5.224B MOD S5.220 S5.222 S5.223	

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(MOD) S5.219 The use of the band 148 - 149.9 MHz by the mobile-satellite service is subject to coordination under Resolution **46 (Rev.WRC-97)/** No. **S9.11A**. The mobile-satellite service shall not constrain the development and use of the fixed, mobile and space operation services in the band 148 - 149.9 MHz.

MOD S5.220 The use of the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz by the mobile-satellite service is subject to coordination under Resolution **46 (Rev.WRC-97)/**No. **S9.11A**. The mobile-satellite service shall not constrain the development and use of the radionavigation-satellite service in the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz.

SUP S5.224

ADD S5.224A The use of the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz by the mobile-satellite service (Earth-to-space) is limited to the land mobile-satellite service (Earth-to-space) until 1 January 2015.

ADD S5.224B The allocation of the bands 149.9 - 150.05 MHz and 399.9 - 400.05 MHz to the radionavigation-satellite service shall be effective until 1 January 2015.

MOD

MHz
322 – 400.15

Allocation to Services		
Region 1	Region 2	Region 3
399.9 – 400.05	MOBILE-SATELLITE (Earth-to-space) MOD S5.209 ADD S5.224A RADIONAVIGATION-SATELLITE S5.222 S5.260 ADD S5.224B MOD S5.220	

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MOD

MHz
400.15 – 410

Allocation to Services		
Region 1	Region 2	Region 3
401 - 402	EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (Earth-to-space) SPACE OPERATION (space-to-Earth) Fixed Mobile except aeronautical mobile	
402 - 403	EARTH EXPLORATION-SATELLITE (Earth-to-space) METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (Earth-to-space) Fixed Mobile except aeronautical mobile	

MOD

MHz
410 – 420

Allocation to Services		
Region 1	Region 2	Region 3
410 – 420	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (space-to-space) MOD S5.268	

MOD S5.268 Use of the band 410 - 420 MHz by the space research service is limited to communications within 5 km of an orbiting, manned space vehicle. The power flux-density at the surface of the Earth produced by emissions from extra-vehicular activities shall not exceed -153 dB(W/m^2) for $0° \leq \Phi \leq 5°$, -153 + 0.077 (Φ-5) dB(W/m^2) for $5° \leq \Phi \leq 70°$ and -148 dB(W/m^2) for $70° \leq \Phi \leq 90^o$, where Φ is the angle of arrival of the radio-frequency wave and the reference bandwidth is 4 kHz. No. **S4.10** does not apply to extra-vehicular activities. In this frequency band the space research (space-to-space) service shall not claim protection from, nor constrain the use and development of, stations of the fixed and mobile service.

PINK PAGES

MHz
450 – 460

Allocation to Services		
Region 1	Region 2	Region 3
450 – 455 FIXED MOBILE MOD S5.209 S5.271 S5.286 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286D ADD S5.286E		
455 – 456 FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E	**455 – 456** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C	**455 – 456** FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E
456 – 459 FIXED MOBILE S5.271 S5.287 S5.288		
459 – 460 FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E	**459 – 460** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C	**459 – 460** FIXED MOBILE MOD S5.209 S5.271 MOD S5.286A MOD S5.286B MOD S5.286C ADD S5.286E

MOD S5.286A The use of the bands 454 - 456 MHz and 459 - 460 MHz by the mobile-satellite service is subject to coordination under Resolution **46 (Rev.WRC-97)**/No. **S9.11A**.

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MOD **S5.286B** The use of the band 454 - 455 MHz in the countries listed in S5.286D, 455 - 456 MHz and 459 - 460 MHz in Region 2, and 454 - 456 MHz and 459 - 460 MHz in the countries listed in S5.286E ,by stations in the mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed or mobile services.

MOD **S5.286C** The use of the band 454 - 455 MHz in the countries listed in S5.286D, 455 - 456 MHz and 459 - 460 MHz in Region 2, and 454 - 456 MHz and 459 - 460 MHz in the countries listed in S5.286E, by stations in the mobile-satellite service, shall not constrain the development and use of the fixed and mobile services.

ADD **S5.286D** *Additional allocation:* in Canada, the United States, Mexico and Panama, the band 454 - 455 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis.

ADD **S5.286E** *Additional allocation:* in Cape Verde, Ghana, Indonesia, Mali, Nigeria and Papua New Guinea, the bands 454 - 456 MHz and 459 - 460 MHz are also allocated to the mobile-satellite (Earth-to-space) service on a primary basis.

MOD **S5.287** In the maritime mobile service, the frequencies 457.525 MHz, 457.550 MHz, 457.575 MHz, 467.525 MHz, 467.550 MHz and 467.575 MHz may be used by on-board communication stations. Where needed, equipment designed for 12.5 kHz channel spacing using also the additional frequencies 457.5375 MHz, 457.5625 MHz, 467.5375 MHz and 467.5625 MHz may be introduced for on-board communications. The use of these frequencies in territorial waters may be subject to the national regulations of the administration concerned. The characteristics of the equipment used shall conform to those specified in Recommendation ITU-R M.1174 (see Resolution [**COM4-2**]).

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MOD

MHz
470 – 890

Allocation to Services		
Region 1	Region 2	Region 3
470 – 790 BROADCASTING MOD S5.149 S5.294 S5.296 S5.300 S5.302 S5.304 S5.306 S5.311 S5.312 ADD S5.291A	**470 – 512** BROADCASTING Fixed Mobile S5.292 S5.293	**470 – 585** FIXED MOBILE BROADCASTING S5.291 S5.298

ADD S5.291A *Additional allocation:* in Germany, Austria, Denmark, Estonia, Finland, Liechtenstein, Norway, Netherlands, the Czech Republic and Switzerland, the band 470 - 494 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with Resolution [**COM5-5**] (WRC-97).

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MOD

MHz
890 – 1 240

Allocation to Services		
Region 1	Region 2	Region 3
1 215 – 1 240	RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) S5.329 S5.330 S5.331 S5.332	

ADD S5.332 In the band 1 215 - 1 300 MHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, the radionavigation-satellite service and other services allocated on a primary basis.

SUP S5.333

MOD

MHz
1 240 – 1 452

Allocation to Services		
Region 1	Region 2	Region 3
1 240 – 1 260	RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) Amateur S5.329 S5.330 S5.331 S5.332 S5.334 S5.335	
1 260 – 1 300	RADIOLOCATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) Amateur S5.282 S5.330 S5.331 S5.332 S5.334 S5.335	

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ADD S5.335 In Canada, the United States and Viet Nam in the band 1 240 - 1 300 MHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause interference to, claim protection from, or otherwise impose constraints on operation or development of the aeronautical radionavigation service.

MOD S5.340 All emissions are prohibited in the following bands:

1 400 - 1 427 MHz,	
2 690 - 2 700 MHz	except those provided for by Nos. **S5.421** and **S5.422**,
10.68 - 10.7 GHz	except those provided for by No. **S5.483**,
15.35 - 15.4 GHz	except those provided for by No. **S5.511**,
23.6 - 24 GHz,	
31.3 - 31.5 GHz,	
31.5 - 31.8 GHz	in Region 2,
48.94 - 49.04 GHz	from airborne stations,
50.2 - 50.4 GHz[1]	except those provided for by No. **S5.555A**,
52.6 - 54.25 GHz,	
86 - 92 GHz,	
105 - 116 GHz,	
140.69 - 140.98 GHz	from airborne stations and from space stations in the space-to-Earth direction,
182 - 185 GHz	except those provided for by No. **S5.563**,
217 - 231 GHz.	

[1] The allocation to the earth exploration-satellite service (passive) and the space research service (passive) in the band 50.2 - 50.4 GHz should not impose undue constraints on the use of the adjacent bands by the primary allocated services in those bands.

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MOD

MHz
1 452 – 1 530

Allocation to Services		
Region 1	Region 2	Region 3
1 525 – 1 530	**1 525 – 1 530**	**1 525 – 1 530**
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)
FIXED	MOBILE-SATELLITE (space-to-Earth)	FIXED
MOBILE-SATELLITE (space-to-Earth)	Earth Exploration-Satellite	MOBILE-SATELLITE (space-to-Earth)
Earth Exploration-Satellite	Fixed	Earth Exploration-Satellite
Mobile except aeronautical mobile S5.349	Mobile S5.343	Mobile S5.349
S5.341 S5.342 S5.350 S5.351 ADD S5.352A S5.354	S5.341 S5.351 S5.354	S5.341 S5.351 ADD S5.352A S5.354

SUP S5.352

ADD S5.352A In the band 1 525 - 1 530 MHz, stations in the mobile-satellite service, except stations in the maritime mobile-satellite service, shall not cause harmful interference to, or claim protection from, stations of the fixed service in France and French overseas territories in Region 3, Algeria, Saudi Arabia, Egypt, Guinea, India, Israel, Italy, Jordan, Kuwait, Mali, Malta, Morocco, Mauritania, Nigeria, Oman, Pakistan, Philippines, Qatar, Syria, Tanzania, Viet Nam and Yemen notified prior to 1 April 1998.

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MOD

MHz
1 530 – 1 535

Allocation to Services		
Region 1	Region 2	Region 3
1 530 – 1 533 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530 – 1 533** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	
1 533 – 1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 533 – 1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.353A Earth Exploration-Satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	

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SUP **S5.353**

ADD **S5.353A** In applying the procedures of No. **S9.11A** to the mobile-satellite service in the bands 1 530 - 1 544 MHz and 1 626.5 - 1 645.5 MHz, priority shall be given to accommodating the spectrum requirements for distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS). Maritime mobile-satellite distress, urgency and safety communications shall have priority access and immediate availability over all other mobile satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, distress, urgency and safety communications of the GMDSS. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (See Resolution [COM5-24].)

MOD

MHz
1 535 – 1 610.6

Allocation to Services		
Region 1	Region 2	Region 3
1 535 – 1 544	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 ADD S5.353A S5.354 S5.355	
1 544 – 1 545	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.354 S5.355 S5.356	
1 545 – 1 555	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 S5.354 S5.355 S5.357 S5.359 ADD S5.362A	
1 555 – 1 559	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 S5.354 S5.355 S5.359 ADD S5.362B	

NOC **S5.356**

SUP **S5.358**

SUP **S5.360**

SUP **S5.361**

SUP **S5.362**

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ADD **S5.362A** In applying the procedures of No. **S9.11A** to the mobile-satellite service in the bands 1 545 - 1 555 MHz and 1 646.5 - 1 656.5 MHz, priority shall be given to accommodating the spectrum requirements of the aeronautical mobile-satellite (R) service (AMS(R)S) providing transmission of messages with priority 1 to 6 in Article **S44**. AMS(R)S communications with priority 1 to 6 in Article **S44** shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, AMS(R)S communications with priority 1 to 6 in Article **S44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services. (See Resolution [COM5-24].)

ADD **S5.362B** In the United States, in the bands 1 555 - 1 559 MHz and 1 656.5 - 1 660.5 MHz, the aeronautical mobile-satellite (R) service (AMS(R)S) shall have priority access and immediate availability, by pre-emption if necessary, over all other mobile-satellite communications operating within a network. Mobile-satellite systems shall not cause unacceptable interference to, or claim protection from, AMS(R)S communications with priority 1 to 6 in Article **S44**. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services.

MOD **S5.369** *Different category of service:* in Angola, Australia, Burundi, China, Côte d'Ivoire, Eritrea, Ethiopia, India, the Islamic Republic of Iran, Israel, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Syria, Senegal, Sudan, Swaziland, Togo, Zaire and Zambia, the allocation of the band 1 610 - 1 626.5 MHz to the radiodetermination-satellite service (Earth-to-space) is on a primary basis (see No. **S5.33**) subject to agreement obtained under No. **S9.21** from countries not listed in this provision.

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MOD

MHz
1 610.6 – 1 631.5

Allocation to Services		
Region 1	Region 2	Region 3
1 626.5 – 1 631.5 MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 S5.354 S5.355 S5.359 ADD S5.353A	**1 626.5 – 1 631.5** MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 S5.354 S5.355 S5.359 ADD S5.353A	

MOD

MHz
1 631.5 – 1 670

Allocation to Services		
Region 1	Region 2	Region 3
1 631.5 – 1 636.5	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 S5.354 S5.355 S5.359 MOD S5.374 ADD S5.353A	
1 636.5 – 1 645.5	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 ADD S5.353A S5.354 S5.355 S5.359	
1 645.5 – 1 646.5	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.354 S5.375	
1 646.5 – 1 656.5	MOBILE-SATELLITE (Earth-to-space) ADD S5.362A S5.341 S5.351 S5.354 S5.355 S5.359 S5.376	
1 656.5 – 1 660	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 S5.354 S5.355 S5.359 MOD S5.374 ADD S5.362B	
1 660 – 1 660.5	MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY MOD S5.149 S5.341 S5.351 S5.354 ADD S5.376A ADD S5.362B	

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SUP **S5.373A**

MOD **S5.374** Mobile earth stations in the mobile-satellite service operating in the bands 1 631.5 - 1 634.5 MHz and 1 656.5 - 1 660 MHz shall not cause harmful interference to stations in the fixed service operating in the countries listed in No. **S5.359**.

NOC **S5.375**

ADD **S5.376A** Mobile earth stations operating in the band 1 660.0 - 1 660.5 MHz shall not cause harmful interference to stations in the radio astronomy service.

NOC

MHz
1 700 – 2 010

Allocation to Services		
Region 1	Region 2	Region 3
1 980 – 2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.388 S5.389A S5.389B S5.389F	

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MHz
2 010 – 2 170

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**2 010 – 2 025** FIXED MOBILE S5.388	**2 010 – 2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.388 MOD S5.389C S5.389D S5.389E ADD S5.390	**2 010 – 2 025** FIXED MOBILE S5.388
	…		
MOD	**2 160 – 2 170** FIXED MOBILE S5.388 S5.392A	**2 160 – 2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.388 MOD S5.389C S5.389D S5.389E ADD S5.390	**2 160 – 2 170** FIXED MOBILE S5.388

MOD **S5.389C** The use of the bands 2 010 - 2 025 MHz and 2 160 - 2 170 MHz in Region 2 by the mobile-satellite service shall not commence before 1 January 2002 and is subject to coordination under Resolution **46 (Rev.WRC-97)**/No. **S9.11A** and to the provisions of Resolution **716 (WRC-95)**.

ADD **S5.390** In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador and Suriname, the use of the bands 2 010 - 2 025 MHz and 2 160 - 2 170 MHz by the mobile-satellite services shall not cause harmful interference to stations in the fixed and mobile services before 1 January 2005. After this date the use of these bands is subject to coordination under Resolution **46 (Rev.WRC-97)**/No. **S9.11A** and to the provisions of Resolution **716 (WRC-95)**.

MOD **S5.391** In making assignments to the mobile service in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz, administrations shall not introduce high-density mobile systems, as described in Recommendation ITU-R **SA.1154,** and shall take this Recommendation into account for the introduction of any other type of mobile system.

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NOC **MHz**
2 170 – 2 450

Allocation to Services		
Region 1	Region 2	Region 3
2 170 – 2 200	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.388 S5.389A S5.389F S5.392A	

MOD **MHz**
2 450 – 2 520

Allocation to Services		
Region 1	Region 2	Region 3
2 500 – 2 520 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) S5.403 S5.405 S5.407 S5.408 S5.412 S5.414	**2 500 – 2 520** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) S5.403 S5.404 S5.407 S5.414	**2 500 – 2 520** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) S5.403 S5.404 S5.407 S5.414 S5.403A

ADD **S5.403A** *Additional allocation*: in Japan, subject to agreement obtained under No. **S9.21**, the band 2 515 - 2 535 MHz may also be used for the aeronautical mobile-satellite service (space-to-Earth) for operation limited to within its national boundary from 1 January 2000.

PINK PAGES

MOD

MHz
2 520 – 2 670

<table>
<tr><th colspan="3">Allocation to Services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr>
<td rowspan="2">2 520 – 2 655
FIXED S5.409 S5.410 S5.411
MOBILE except aeronautical mobile
BROADCASTING-SATELLITE S5.413 S5.416
S5.339 S5.403 S5.405 S5.408 S5.412 S5.417 S5.418</td>
<td rowspan="2">2 520 – 2 655
FIXED S5.409 S5.411
FIXED-SATELLITE (space-to-Earth) S5.415
MOBILE except aeronautical mobile
BROADCASTING-SATELLITE S5.413 S5.416
S5.339 S5.403</td>
<td>2 520 – 2 535
FIXED S5.409 S5.411
FIXED-SATELLITE (space-to-Earth) S5.415
MOBILE except aeronautical mobile
BROADCASTING-SATELLITE S5.413 S5.416
S5.403 S5.403A</td>
</tr>
<tr>
<td>2 535 – 2 655
FIXED S5.409 S5.411
MOBILE except aeronautical mobile
BROADCASTING-SATELLITE S5.413 S5.416
S5.339 S5.418</td>
</tr>
</table>

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MOD

MHz
2 670 – 3 300

Allocation to Services		
Region 1	Region 2	Region 3
2 670 – 2 690 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) MOD S5.149 S5.419 S5.420	**2 670 – 2 690** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.415 MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) MOD S5.149 S5.419 S5.420	**2 670 – 2 690** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) S5.415 MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) MOD S5.149 S5.419 S5.420 S5.420A

ADD S5.420A *Additional allocation:* in Japan, subject to agreement obtained under No. **S9.21**, the band 2 670 - 2 690 MHz may also be used for the aeronautical mobile-satellite service (Earth-to-space) for operations limited to within its national boundary from 1 January 2000.

MOD

MHz
2 670 – 3 300

Allocation to Services		
Region 1	Region 2	Region 3
3 100 – 3 300	RADIOLOCATION Earth Exploration-Satellite (active) Space Research (active) MOD S5.149 S5.428	

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MOD

MHz
4 500 – 5 470

Allocation to Services		
Region 1	Region 2	Region 3
5 250 – 5 255	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH S5.447D S5.448 S5.448A	
5 255 – 5 350	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) S5.448 S5.448A	

MOD S5.441 The use of the bands 4500 - 4800 MHz (space-to-Earth), 6725 - 7025 MHz (Earth-to-space) by the fixed-satellite service shall be in accordance with the provisions of Appendix **S30B**. The use of the bands 10.7 - 10.95 GHz (space-to-Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by GSO satellite systems in the fixed-satellite service shall be in accordance with the provisions of Appendix **S30B**. The use of the bands 10.7 - 10.95 GHz (space-to-Earth), 11.2 - 11.45 GHz (space-to-Earth) and 12.75 - 13.25 GHz (Earth-to-space) by non-GSO satellite systems in the fixed-satellite service shall be in accordance with the provisions of Resolution [**COM5-18**].

ADD S5.441A* The use of the bands 10.95 - 11.2 GHz (space-to-Earth), 11.45 - 11.7 GHz (space-to-Earth), 11.7 - 12.2 GHz (space-to-Earth) in Region 2, 12.2 - 12.75 GHz (space-to-Earth) in Region 3, 12.5 - 12.75 GHz (space-to-Earth) in Region 1, 13.75 - 14.5 GHz (Earth-to-space), 17.8 - 18.6 GHz (space-to-Earth), 19.7 - 20.2 GHz (space-to-Earth), 27.5 - 28.6 GHz (Earth-to-space), 29.5 - 30 GHz (Earth-to-space) by non-GSO and GSO satellite systems in the fixed-satellite service is subject to the provisions of Resolution [**COM5-18**]. The use of the band 17.8 - 18.1 GHz (space-to-Earth) by non-GSO FSS systems is also subject to the provisions of Resolution [**COM5-19**].

* NOTE - Footnote S5.441A shall be placed in all boxes in the Table in Article S5 relating to frequency bands referred to in that note.

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ADD **S5.447D** The allocation of the band 5 250 - 5 255 MHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis.

ADD **S5.448A** The use of the frequency band 5 250 - 5 350 MHz by the earth exploration-satellite (active) and space research (active) services shall not constrain the future development and deployment of the radiolocation service.

MOD

MHz
4 500 – 5 470

Allocation to Services		
Region 1	Region 2	Region 3
5 350 – 5 460	AERONAUTICAL RADIONAVIGATION S5.449 EARTH EXPLORATION-SATELLITE (active) Radiolocation S5.448B	

ADD **S5.448B** The earth exploration-satellite (active) service operating in the band 5 350 - 5 460 MHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service.

MOD

MHz
5 580 – 7 450

Allocation to Services		
Region 1	Region 2	Region 3
7 075 – 7 250	FIXED MOBILE S5.458 MOD S5.459 S5.460	

MOD **S5.459** *Additional allocation:* in Russia, the frequency bands 7 100 - 7 155 MHz and 7 190 - 7 235 MHz are also allocated to the space operation service (Earth-to-space) on a primary basis, subject to agreement obtained under No. **S9.21**.

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MOD

MHz
7 450 – 8 175

Allocation to Services		
Region 1	Region 2	Region 3
7 450 - 7 550	FIXED FIXED-SATELLITE (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile S5.461A	
7 550 - 7 750	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile	
7 750 - 7 850	FIXED MOBILE except aeronautical mobile METEOROLOGICAL-SATELLITE (space-to-Earth) S5.461B	
7 850 - 7 900	FIXED MOBILE except aeronautical mobile	

ADD S5.461A The use of the band 7 450 - 7 550 MHz by the meteorological-satellite service (space-to-Earth) is limited to geostationary-satellite systems. Non-geostationary meteorological-satellite systems in this band notified before 30 November 1997 may continue to operate on primary basis until the end of their lifetime.

ADD S5.461B The use of the band 7 750 - 7 850 MHz by the meteorological-satellite service (space-to-Earth) is limited to non-geostationary satellite systems.

MOD

MHz
7 450 – 8 175

Allocation to Services		
Region 1	Region 2	Region 3
8 025 - 8 175	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE ADD S5.462A S5.463	

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ADD S5.462A In Regions 1 and 3 (except for Japan), in the band 8 025 - 8 400 MHz, the earth exploration-satellite service using geostationary satellites shall not produce a power flux-density in excess of the following provisional values for angles of arrival (θ), without the consent of the affected administration:

-174 dB(W/m^2) in a 4 kHz band	for	$0° \le \theta < 5°$
-174 + 0.5 (θ - 5) dB(W/m^2) in a 4 kHz band	for	$5° \le \theta < 25°$
-164 dB(W/m^2) in a 4 kHz band	for	$25° \le \theta \le 90°$

These values are subject to study under Resolution [**COM5-9**].

MOD S5.463 Aircraft stations are not permitted to transmit in the band 8 025 - 8 400 MHz.

MOD

MHz
8 175 – 8 750

Allocation to Services		
Region 1	Region 2	Region 3
8 175 - 8 215	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) METEOROLOGICAL-SATELLITE (Earth-to-space) MOBILE ADD S5.462A S5.463	
8 215 - 8 400	EARTH EXPLORATION-SATELLITE (space-to-Earth) FIXED FIXED-SATELLITE (Earth-to-space) MOBILE ADD S5.462A S5.463	

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MOD

MHz
8 175 – 8 750

Allocation to Services		
Region 1	Region 2	Region 3
8 500 – 8 550	RADIOLOCATION S5.468 S5.469	
8 550 – 8 650	RADIOLOCATION SPACE RESEARCH (active) EARTH EXPLORATION-SATELLITE (active) S5.463A S5.468 S5.469	
8 650 – 8 750	RADIOLOCATION S5.468 S5.469	

ADD S5.463A In the band 8 550 - 8 650 MHz, stations in the earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radiolocation service.

MOD

MHz
8 750 – 10 000

Allocation to Services		
Region 1	Region 2	Region 3
9 500 – 9 800	RADIOLOCATION RADIONAVIGATION SPACE RESEARCH (active) EARTH EXPLORATION-SATELLITE (active) S5.476A	

ADD S5.476A In the band 9 500 - 9 800 MHz, stations in the earth exploration-satellite service (active) and space research service (active) shall not cause harmful interference to, or constrain the use and development of, stations of the radionavigation and radiolocation services.

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MOD

GHz
10.7 – 12.7

Allocation to Services		
Region 1	Region 2	Region 3
11.7 – 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE Mobile except aeronautical mobile	**11.7 – 12.1** FIXED S5.486 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile S5.485 S5.488	**11.7 – 12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE
	12.1 – 12.2 FIXED-SATELLITE (space-to-Earth) S5.485 S5.488 S5.489	S5.487 S5.487A
S5.487 S5.487A	**12.2 – 12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE S5.488 S5.490 S5.492 S5.487A	**12.2 – 12.5** FIXED MOBILE except aeronautical mobile BROADCASTING S5.487 S5.491

ADD S5.487A *Additional allocation:* in Region 1, the band 11.7 - 12.5 GHz, in Region 2, the band 12.2 - 12.7 GHz and in Region 3, the band 11.7 - 12.2 GHz, are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis, limited to non-GSO systems and subject to the provisions of Resolution [**COM5-19**].

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GHz
12.5 – 14.25

	Allocation to Services		
	Region 1	Region 2	Region 3
NOC	**12.75 – 13.25**	FIXED FIXED-SATELLITE (Earth-to-space) S5.441 MOBILE Space Research (deep space) (space-to-Earth)	
MOD	**13.25 – 13.4**	AERONAUTICAL RADIONAVIGATION S5.497 EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) S5.498A S5.499	
	13.4 – 13.75	RADIOLOCATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH Standard Frequency and Time Signal-Satellite (Earth-to-space) S5.499 S5.500 S5.501 S5.501A S5.501B	
	13.75 – 14	FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research S5.499 S5.500 S5.501 S5.502 S5.503 S5.503A	

SUP **S5.498**

ADD **S5.498A** The earth exploration-satellite (active) and space research (active) services operating in the band 13.25 - 13.4 GHz shall not cause harmful interference to, or constrain the use and development of, the aeronautical radionavigation service.

ADD **S5.501A** The allocation of the band 13.4 - 13.75 GHz to the space research service on a primary basis is limited to active spaceborne sensors. Other uses of the band by the space research service are on a secondary basis.

ADD **S5.501B** In the band 13.4 - 13.75 GHz, the earth exploration-satellite (active) and space research (active) services shall not cause harmful interference to, or constrain the use and development of, the radiolocation service.

MOD

GHz
12.5 – 14.25

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Allocation to Services		
Region 1	Region 2	Region 3
14 – 14.25	FIXED-SATELLITE (Earth-to-space) S5.506 RADIONAVIGATION S5.504 Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research S5.505	

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MOD

GHz
14.25 – 14.8

Allocation to Services		
Region 1	Region 2	Region 3
14.25 – 14.3	FIXED-SATELLITE (Earth-to-space) S5.506 RADIONAVIGATION S5.504 Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research S5.505 S5.508 S5.509	
14.3 – 14.4 FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-Satellite	**14.3 – 14.4** FIXED-SATELLITE (Earth-to-space) S5.506 Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-Satellite	**14.3 – 14.4** FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radionavigation-Satellite
14.4 – 14.47	FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Space Research (space-to-Earth)	
14.47 – 14.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.506 MOBILE except aeronautical mobile Mobile-Satellite (Earth-to-space) except aeronautical mobile-satellite Radio Astronomy MOD S5.149	

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MOD

GHz
14.8 – 17.3

Allocation to Services		
Region 1	Region 2	Region 3
15.4 – 15.43	AERONAUTICAL RADIONAVIGATION ADD S5.511D	
15.43 - 15.63	FIXED-SATELLITE (space-to-Earth) (Earth-to-space) MOD S5.511A AERONAUTICAL RADIONAVIGATION MOD S5.511C ADD S5.511D	
15.63 – 15.7	AERONAUTICAL RADIONAVIGATION ADD S5.511D	

MOD S5.511A Use of the band 15.43 - 15.63 GHz by the fixed-satellite service (space-to-Earth) (see Resolution [**COM5-8**] **(WRC-97)**) and (Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under Resolution **46 (Rev.WRC-97)/** No. **S9.11A**. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. Also in the space-to-Earth direction, harmful interference shall not be caused to stations of the radio astronomy service using the band 15.35 - 15.4 GHz. The threshold levels of interference and associated power flux-density limits which are detrimental to the radio astronomy service are given in Recommendation ITU-R RA.769-1. Special measures will need to be employed to protect the radio astronomy service in the band 15.35 - 15.4 GHz.

SUP S5.511B

MOD S5.511C Stations operating in the aeronautical radionavigation service shall limit the effective e.i.r.p. in accordance with Recommendation ITU-R S.1340. The minimum coordination distance required to protect the aeronautical radionavigation stations (No. **S4.10** applies) from harmful interference from feeder-link earth stations and the maximum e.i.r.p. transmitted towards the local horizontal plane by a feeder-link earth station shall be in accordance with Recommendation ITU-R S.1340.

ADD S5.511D Fixed-satellite service systems for which complete information for advance publication has been received by the Bureau by 21 November 1997 may operate in the bands 15.4 - 15.43 GHz and 15.63 - 15.7 GHz in the space-to-Earth direction and 15.63 - 15.65 GHz in the Earth-to-space direction. In the bands 15.4 - 15.43 GHz and 15.65 - 15.7 GHz, emissions from a non-geostationary space station shall not exceed the power flux-density limits at the Earth's surface of -146 dB(W/m^2/MHz) for all angles of arrival. In the band 15.63 - 15.65 GHz, where an administration plans emissions from a non-geostationary space station that exceed -146 dB(W/m^2/MHz) for any angle of

arrival, it shall coordinate under Resolution **46 (Rev.WRC-97)**/No. **S9.11A** with the affected administrations. Stations in the fixed-satellite service operating in the band 15.63 - 15.65 GHz in the Earth-to-space direction shall not cause harmful interference to stations in the aeronautical radionavigation service (No. **S4.10** applies).

GHz
14.8 – 17.3

	Allocation to Services		
	Region 1	Region 2	Region 3
NOC	**16.6 – 17.1**	RADIOLOCATION Space Research (deep space) (Earth-to-space) S5.512 S5.513	
MOD	**17.2 – 17.3**	RADIOLOCATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) S5.512 S5.513 S5.513A	

ADD S5.513A Spaceborne active sensors operating in the band 17.2 - 17.3 GHz shall not cause harmful interference to, or constrain the development of, the radiolocation and other services allocated on a primary basis.

MOD S5.516 The use of the band 17.3 - 18.1 GHz by GSO satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. For the use of the band 17.3 - 17.8 GHz in Region 2 by feeder links for the broadcasting-satellite service in the band 12.2 - 12.7 GHz, see Article **S11**. The use of the bands 17.3 - 18.1 GHz (Earth-to-space) in Regions 1 and 3 and 17.8 - 18.1 GHz (Earth-to-space) in Region 2 by non-GSO satellite systems in the fixed-satellite service is subject to the provisions of Resolution [**COM5-19**].

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MOD

GHz
18.6 – 20.2

Allocation to Services		
Region 1	Region 2	Region 3
18.8 – 19.3	FIXED FIXED-SATELLITE (space-to-Earth) MOD S5.523A MOBILE	

MOD **S5.523A** The use of the bands 18.8 - 19.3 GHz (space-to-Earth) and 28.6 - 29.1 GHz (Earth-to-space) by GSO and non-GSO fixed-satellite service networks is subject to the application of the provisions of No. **S9.11A**/Resolution **46 (Rev.WRC-97)** and No. **S22.2** [**2613**] does not apply. Administrations having GSO networks under coordination prior to 18 November 1995 shall cooperate to the maximum extent possible to coordinate pursuant to No. **S9.11A**/Resolution **46** (**Rev.WRC-97**) with non-GSO networks for which notification information has been received by the Bureau prior to that date, with a view to reaching results acceptable to all the parties concerned. Non-GSO networks shall not cause unacceptable interference to GSO fixed-satellite service networks for which complete Appendix **3** notification information is considered as having been received by the Bureau prior to 18 November 1995.

MOD

GHz
18.6 – 20.2

Allocation to Services		
Region 1	Region 2	Region 3
19.3 – 19.7	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) S5.523B MOD S5.523C ADD S5.523E MOD S5.523D MOBILE	

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MOD **S5.523C** No. **S22.2** of the Radio Regulations shall continue to apply in the bands 19.3 - 19.6 GHz and 29.1 - 29.4 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **S4** coordination information, or notification information, is considered as having been received by the Bureau prior to 18 November 1995.

MOD **S5.523D** The use of the band 19.3 - 19.7 GHz (space-to-Earth) by GSO/FSS systems and by feeder links for non-geostationary satellite systems in the MSS is subject to the application of the provisions of Resolution **46 (Rev.WRC-97)/** No. **S9.11A**, but not subject to the provisions of No. **S22.2**. The use of this band for other non-GSO/FSS systems, or for the cases indicated in No. **MOD S5.523C** and **ADD S5.523E**, is not subject to the provisions of Resolution **46 (Rev.WRC-97)/**No. **S9.11A** and shall continue to be subject to Articles **S9** (except No. **S9.11A**) and **S11** procedures, and to the provisions of No. **S22.2**.

ADD **S5.523E** No. **S22.2** of the Radio Regulations shall continue to apply in the bands 19.6 - 19.7 GHz and 29.4 - 29.5 GHz, between feeder links of non-geostationary mobile-satellite service networks and those fixed-satellite service networks for which complete Appendix **S4** coordination information, or notification information, is considered as having been received by the Bureau by 21 November 1997.

MOD

GHz
24.45 – 27

Allocation to Services		
Region 1	Region 2	Region 3
25.5 – 27	EARTH EXPLORATION-SATELLITE (space-to Earth) ADD S5.536A ADD S5.536B FIXED INTER-SATELLITE S5.536 MOBILE Standard Frequency and Time Signal-Satellite (Earth-to-space)	

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MOD

GHz
27 – 29.9

Allocation to Services		
Region 1	Region 2	Region 3
28.5 – 29.1	FIXED FIXED-SATELLITE (Earth-to-space) MOD S5.523A S5.539 MOBILE Earth Exploration-Satellite (Earth-to-space) S5.541 S5.540	

MOD

GHz
27 – 29.9

Allocation to Services		
Region 1	Region 2	Region 3
29.1 – 29.5	FIXED FIXED-SATELLITE (Earth-to-space) MOD S5.523C ADD S5.523E MOD S5.535A S5.539 MOD S5.541A MOBILE Earth Exploration-Satellite (Earth-to-space) S5.541 S5.540	

MOD S5.535A The use of the band 29.1 - 29.5 GHz (Earth-to-space) by the FSS is limited to GSO satellite systems and feeder links to non-GSO satellite systems in the mobile-satellite service. Such use is subject to the application of the provisions of Resolution **46 (Rev.WRC-97)**/No. **S9.11A**, but not subject to the provisions of No. **S22.2**, except as indicated in No. **MOD S5.523C** and **ADD S5.523E** where such use is not subject to the provisions of Resolution **46 (Rev.WRC-97)**/No. **S9.11A** and shall continue to be subject to Articles **11/S9** (except No. **S9.11A**) and **13/S11** procedures, and to the provisions of No. **S22.2**.

ADD S5.536A Administrations installing earth exploration-satellite earth stations cannot claim protection from fixed and mobile stations operated by neighbouring administrations. In addition, earth stations operating in the earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

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ADD S5.536B In Germany, Saudi Arabia, Austria, Belgium, Brazil, Bulgaria, China, the Republic of Korea, Denmark, Egypt, United Arab Emirates, Spain, Estonia, Finland, France, Hungary, India, Islamic Republic of Iran, Ireland, Israël, Italy, Jordan, Kenya, Kuwait, Lebanon, Libya, Liechtenstein, Lithuania, Moldova, Norway, Oman, Uganda, Pakistan, the Philippines, Poland, Portugal, Syria, Slovakia, Czech Republic, Romania, the United Kingdom, Singapore, Sweden, Switzerland, Tanzania, Turkey, Viet Nam and Zimbabwe, earth stations operating in the earth exploration-satellite service in the band 25.5 - 27.0 GHz shall not claim protection from, or constrain the use and deployment of, stations of the fixed and mobile services.

MOD S5.541A Feeder links of non-GSO/MSS networks and GSO/FSS networks operating in the band 29.1 - 29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix **S4** coordination information is considered as having been received by the Bureau after 17 May 1996 and until it is changed by a future competent world radiocommunication conference. Administrations submitting Appendix **S4** information for coordination before this date are encouraged to utilize these techniques to the extent practicable. These methods are also subject to review by the ITU-R (see Resolution **121 (WRC-97)**).

MOD

GHz
29.9 – 31.8

Allocation to Services		
Region 1	Region 2	Region 3
31.5 – 31.8	**31.5 – 31.8**	**31.5 – 31.8**
EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)	EARTH EXPLORATION-SATELLITE (passive)
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY
SPACE RESEARCH (passive)	SPACE RESEARCH (passive)	SPACE RESEARCH (passive)
Fixed		Fixed
Mobile except aeronautical mobile		Mobile except aeronautical mobile
MOD S5.149 MOD S5.546	S5.340	MOD S5.149

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MOD **S5.546** *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, Iran (Islamic Rep. of), Israel, Jordan, Kazakstan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, Russia, Tajikistan, Turkmenistan, Turkey and Ukraine, the allocation of the band 31.5 - 31.8 GHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. **S5.33**).

ADD **S5.547** The bands 31.8 - 33.4 GHz, 51.4 - 52.6 GHz, 55.78 - 59 GHz and 64 - 66 GHz are available for high-density applications in the fixed service (see Resolution [**COM5-12 (WRC-97)**]).

ADD **S5.547A** Use of the band 31.8 - 33.4 GHz by the fixed service shall be in accordance with Resolution [**COM5-11 (WRC-97)**].

MOD

GHz
31.8 – 37

Allocation to Services		
Region 1	Region 2	Region 3
31.8 – 32	RADIONAVIGATION FIXED ADD S5.547A SPACE RESEARCH (deep space) (space-to-Earth) S5.548 ADD S5.547 ADD S5.547B	
32 – 32.3	INTER-SATELLITE FIXED ADD S5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) S5.548 ADD S5.547 ADD S5.547C	
32.3 – 33	INTER-SATELLITE FIXED ADD S5.547A RADIONAVIGATION S5.548 ADD S5.547 ADD S5.547D	
33 – 33.4	RADIONAVIGATION FIXED ADD S5.547A ADD S5.547 ADD S5.547E	

PINK PAGES

ADD **S5.547B** *Alternative allocation*: in the United States, the band 31.8 - 32 GHz is allocated to the radionavigation and space research (deep space) (space-to-Earth) services on a primary basis.

ADD **S5.547C** *Alternative allocation*: in the United States, the band 32 - 32.3 GHz is allocated to the inter-satellite, radionavigation and space research (deep space) (space-to-Earth) services on a primary basis.

ADD **S5.547D** *Alternative allocation*: in the United States, the band 32.3 - 33 GHz is allocated to the inter-satellite and radionavigation services on a primary basis.

ADD **S5.547E** *Alternative allocation*: in the United States, the band 33 - 33.4 GHz is allocated to the radionavigation service on a primary basis.

MOD

GHz
31.8 – 37

Allocation to Services		
Region 1	Region 2	Region 3
35.2 – 35.5	METEOROLOGICAL AIDS RADIOLOCATION S5.549	
35.5 – 36	EARTH EXPLORATION-SATELLITE (active) METEOROLOGICAL AIDS RADIOLOCATION SPACE RESEARCH (active) S5.549 ADD S5.551A	

SUP **S5.551**

ADD **S5.551A** In the band 35.5 - 36.0 GHz, active spaceborne sensors in the earth exploration-satellite and space research services shall not cause harmful interference to, claim protection from, or otherwise impose constraints on operation or development of the radiolocation service, meteorological aids and other services allocated on a primary basis.

PINK PAGES

MOD

GHz
40.5 – 42.5

Allocation to Services		
Region 1	Region 2	Region 3
40.5 – 42.5	**40.5 – 42.5**	**40.5 – 42.5**
BROADCASTING	BROADCASTING	BROADCASTING
BROADCASTING-SATELLITE	BROADCASTING-SATELLITE	BROADCASTING-SATELLITE
FIXED	FIXED	FIXED
Mobile	Mobile	Mobile
	FIXED-SATELLITE (space-to-Earth) ADD S5.551B	FIXED-SATELLITE (space-to-Earth) ADD S5.551B ADD S5.551E
ADD S5.551B ADD S5.551D	ADD S5.551C	ADD S5.551C ADD S5.551F

ADD S5.551B The use of the band 41.5 - 42.5 GHz by the fixed-satellite service (space-to-Earth) is subject to Resolution [**COM5-16 (WRC-97)**].

ADD S5.551C *Alternative allocation:* in the French overseas territories in Regions 2 and 3, the Republic of Korea and India, the band 40.5 - 42.5 GHz is allocated to the broadcasting, broadcasting-satellite and fixed services on a primary basis.

ADD S5.551D *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Benin, Cameroon, Egypt, United Arab Emirates, Israel, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Nigeria, Oman, Qatar, Syria, Tunisia and Yemen, the band 40.5 - 42.5 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. The use of this band by the fixed-satellite service shall be in accordance with Resolution [**COM5-29 (WRC-97)**].

ADD S5.551E Use of the band 40.5 - 42.5 GHz by the fixed-satellite service shall be in accordance with Resolution [**COM5-29 (WRC-97)**].

ADD S5.551F *Different category of service*: in Japan, the allocation of the band 41.5 - 42.5 GHz to the mobile service is on a primary basis (see No. **S5.33**).

PINK PAGES

MOD

GHz
42.5 – 54.25

Allocation to Services		
Region 1	Region 2	Region 3
47.2 – 50.2	FIXED FIXED-SATELLITE (Earth-to-space) S5.552 MOBILE MOD S5.149 S5.340 ADD S5.552A S5.555	

ADD S5.552A The allocation to the fixed service in the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz is designated for use by high altitude platform stations. The use of the bands 47.2 - 47.5 GHz and 47.9 - 48.2 GHz is subject to the provisions of Resolution [**COM5-7**].

MOD

GHz
42.5 – 54.25

Allocation to Services		
Region 1	Region 2	Region 3
50.2 – 50.4	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) MOD S5.340 ADD S5.555A	

ADD S5.555A The band 50.2 - 50.4 GHz is also allocated, on a primary basis, to the fixed and mobile services until 1 July 2000.

MOD

GHz
42.5 – 54.25

Allocation to Services		
Region 1	Region 2	Region 3
51.4 – 52.6	FIXED MOBILE S5.556 ADD S5.547	
52.6 – 54.25	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) MOD S5.340 S5.556	

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MOD

GHz
54.25 – 71

Allocation to Services		
Region 1	Region 2	Region 3
54.25 – 55.78	EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE ADD S5.556A SPACE RESEARCH (passive) ADD S5.557A	
55.78 – 56.9	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
56.9 – 57	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556B MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
57 – 58.2	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 SPACE RESEARCH (passive) MOD S5.557 ADD S5.547	
58.2 – 59	EARTH EXPLORATION-SATELLITE (passive) FIXED MOBILE SPACE RESEARCH (passive) S5.556 ADD S5.547	

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Allocation to Services		
Region 1	Region 2	Region 3
59 – 59.3	EARTH EXPLORATION-SATELLITE (passive) SPACE RESEARCH (passive) FIXED INTER-SATELLITE ADD S5.556A MOBILE MOD S5.558 RADIOLOCATION S5.559	
59.3 – 64	FIXED INTER-SATELLITE MOBILE MOD S5.558 RADIOLOCATION S5.559 S5.138	
64 – 65	FIXED INTER-SATELLITE MOBILE except aeronautical mobile S5.556 ADD S5.547	
65 – 66	EARTH EXPLORATION-SATELLITE SPACE RESEARCH INTER-SATELLITE FIXED MOBILE except aeronautical mobile ADD S5.547	
66 – 71	MOBILE S5.553 MOD S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE INTER-SATELLITE S5.554	

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ADD **S5.556A** Use of the bands 54.25 - 56.9 GHz, 57.0 - 58.2 GHz and 59.0 - 59.3 GHz by the inter-satellite service is limited to satellites in the geostationary satellite orbit. The single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m^2/100 MHz) for all angles of arrival.

ADD **S5.556B** Use of the band 56.9 - 57 GHz by inter-satellite systems is limited to links between satellites in geostationary satellite orbit and to transmissions from non-geostationary satellites in high-Earth orbit to those in low-Earth orbit. For links between satellites in the geostationary satellite orbit, the single entry power flux-density at all altitudes from 0 km to 1 000 km above the Earth's surface, for all conditions and for all methods of modulation, shall not exceed -147 dB(W/m^2/100 MHz) for all angles of arrival.

ADD **S5.557A** *Additional allocation:* in Japan, the band 54.25 - 55.78 GHz is also allocated to the mobile service on a primary basis for low density use.

MOD **S5.557** *Additional allocation:* in Japan, the band 55.78 - 58.2 GHz is also allocated to the radiolocation service on a primary basis.

MOD **S5.558** In the bands 55.78 - 58.2 GHz, 59 - 64 GHz, 66 - 71 GHz, 116 - 134 GHz, 170 - 182 GHz and 185 - 190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

PINK PAGES

MOD

GHz
86 – 116

Allocation to Services		
Region 1	Region 2	Region 3
92 – 94	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIOLOCATION MOD S5.149 S5.556	
94 – 94.1	RADIOLOCATION EARTH EXPLORATION-SATELLITE (active) SPACE RESEARCH (active) S5.562	
94.1 – 95	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIOLOCATION MOD S5.149 S5.556	

ADD **S5.562** The use of the band 94 - 94.1 GHz by the earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 395-E
20 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

R.10 **PLENARY MEETING**

TENTH SERIES OF TEXTS BY THE
EDITORIAL COMMITTEE TO THE PLENARY

The following texts are submitted to the Plenary Meeting for **second reading**:

Source	**Document**	**Title**
COM 6	DT/5	Revision to Annex 5 of Appendix 30 (S30) and Annex 3 of Appendix 30A (S30A) for Regions 1 and 3

A.-M. NEBES
Chairman of Committee 6

Annex: 75 pages

PINK PAGES

(MOD)

Technical Data Used in Establishing the Provisions and Associated Plans and Which Should Be Used for Their Application[1]

1. DEFINITIONS

(MOD)

1.1 Downlink service area

The area on the surface of the Earth in whichthe administration responsible for the service has the right to demand that the agreed protection conditions be provided.

NOTE - In the definition of service area, it is made clear that within the service area the agreed protection conditions can be demanded. This is the area where there should be at least the wanted power flux-density and protection against interference based on the agreed protection ratio for the agreed percentage of time.

(MOD)

1.2 Downlink coverage area

The area on the surface of the Earth delineated by a contour of a constant given value of power flux-density which would permit the wanted quality of reception in the absence of interference.

NOTE 1 - In accordance with the provisions of No. **S23.13** of the Radio Regulations, the coverage area must be the smallest area which encompasses the service area.

NOTE 2 - The coverage area, which will normally encompass the entire service area, will result from the intersection of the antenna beam (elliptical, circular, or shaped) with the surface of the Earth, and will be defined by a given value of power flux-density. For example, it would be the area delineated by the contour corresponding to the level specified in 3.16 of this Annex. There will usually be an area outside the service area but within the coverage area in which the power flux-density will be at least equivalent to the minimum specified value; however, protection against interference will not be provided in this area.

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[1] In revising this Annex at WRC-97, no changes have been made to the technical data applicable to the Region 2 Plan. However, for all three Regions, it should be noted that some of the parameters of networks proposed as modifications to the Plans may differ from the technical data presented herein.

NOTE 3 - If coverage is provided by a steerable beam, the contour delineating the coverage area will depend on the pointing capability of the beam and will not necessarily cover the entire service area.

(MOD)

1.3 Downlink beam area

The area delineated by the intersection of the half-power beam of the satellite transmitting antenna with the surface of the Earth. The downlink beam area concept was generally used for planning purposes in conjunction with elliptical beams.

NOTE - The beam area is simply that area on the Earth's surface corresponding to the –3 dB points on the satellite antenna radiation pattern. In many cases the beam area would almost coincide with the coverage area, the discrepancy being accounted for by the permanent difference in path lengths from the satellite throughout the beam area, and also by the permanent variations, if any, in propagation factors across the area. However, for a service area where the maximum dimension as seen from the satellite position is less than 0.6° in Regions 1 and 3, and less than 0.8° in Region 2 (the agreed minimum practicable satellite antenna half-power beamwidths), there could be a significant difference between the beam area and the coverage area.

NOC

1.4 Nominal orbital position

The longitude of a position in the geostationary-satellite orbit associated with a frequency assignment to a space station in a space radiocommunication service. The position is given in degrees from the Greenwich meridian.

NOC

1.5 Adjacent channel

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder link frequency Plan, which is situated immediately higher or lower in frequency with respect to the reference channel.

NOC

1.6 Second adjacent channel

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately beyond either of the adjacent channels, with respect to the reference channel.

NOC

1.7 Overall carrier-to-interference ratio

The overall carrier-to-interference ratio is the ratio of the wanted carrier powerto the sum of all interfering RF powers in a given channel including both feeder links and downlinks. The overall carrier-to-interference ratio due to interference from the given channel is calculated as the reciprocal of the sum of the reciprocals of the feeder link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively.[1]

NOC

1.8 Overall co-channel protection margin

The overall co-channel protection margin in a given channel is the difference in decibels between the overall co-channel carrier-to-interference ratio and the co-channel protection ratio.

NOC

1.9 Overall adjacent channel protection margin

The overall adjacent channel protection margin is the difference in decibels between the overall adjacent channel carrier-to-interference ratio and the adjacent channel protection ratio.

NOC

1.10 Overall second adjacent channel protection margin

The overall second adjacent channel protection margin is the difference in decibels between the overall second adjacent channel carrier-to-interference ratio and the second adjacent channel protection ratio

---

(MOD)

[1] There are a total of five overall carrier-to-interference ratios used in the analysis of the Plan for the broadcasting-satellite service in Region 2, namely, co-channel, upper and lower adjacent channels, and upper and lower second adjacent channels. In Regions 1 and 3, three ratios are normally used, namely, co-channel and upper and lower adjacent channels. However, see the footnote to the definition of M_4 and M_5 in Section 1.11 of this Annex.

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NOC

1.11 Overall equivalent protection margin[1]

The overall equivalent protection margin M is given in decibels by the expression:

$$M = -10 \log \left(\sum_{i=1}^{5} 10^{(-M_i/10)} \right) \quad \text{(dB)}$$

where:

M_1 = overall co-channel protection margin, in dB (as defined in Section 1.8 of this Annex);

M_2, M_3 = overall adjacent channel protection margins for the upper and lower adjacent channels respectively, in dB (as defined in Section 1.9 of this Annex);

M_4, M_5[2] = overall second adjacent channel protection margins for the upper and lower second adjacent channels respectively, in dB (as defined in Section 1.10 of this Annex).

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent and second adjacent channels as well as co-channel interference sources have been included.

2. RADIO PROPAGATION F ACTORS

In Regions 1 and 3:

(MOD)

2.1 The propagation loss on the space-to-Earth path (used for computing downlink e.i.r.p. and as a guide in choosing orbital locations during the development of the Plan) is equal to the free space path loss plus the atmospheric absorption and the rain attenuation exceeded for 1% of the worst month. Values of this attenuation can be calculated as a function of angle of elevation for the rain-climatic zones shown in Figures 1 and 2 from Recommendation ITU-R P.837-1 by applying the method described in Recommendation ITU-R P.618-5.

(MOD)

[1] For calculation of over all equivalent protection margin for Regions 1 and 3, as defined at WARC-88, see alternative formula in Section 1.12 of Annex 3 of Appendix 30A (S30A).

(MOD)

[2] M4 and M5 are normally applicable only for Region 2. However, in certain cases (e.g. when the channel spacing and/or bandwidth of an assignment are different from the values given in Sections 3.5 and 3.8 of this Annex), these margins may also be used for Regions 1 and 3, provided that appropriate protection masks are included in ITU-R Recommendations. Until a relevant ITU-R Recommendation is incorporated in this Annex by reference, the Bureau will use the worst case approach as adopted by the Radio Regulations Board.

In Region 2:

NOC

2.2 The propagation loss on a space-Earth path is equal to the free space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month.

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FIGURE 2
(See Table 1)

FIGURE 1

Rain climatic zones for Regions 1 and 3 between longitudes 45° W and 105° E

FIGURE 3
(See Table 1)

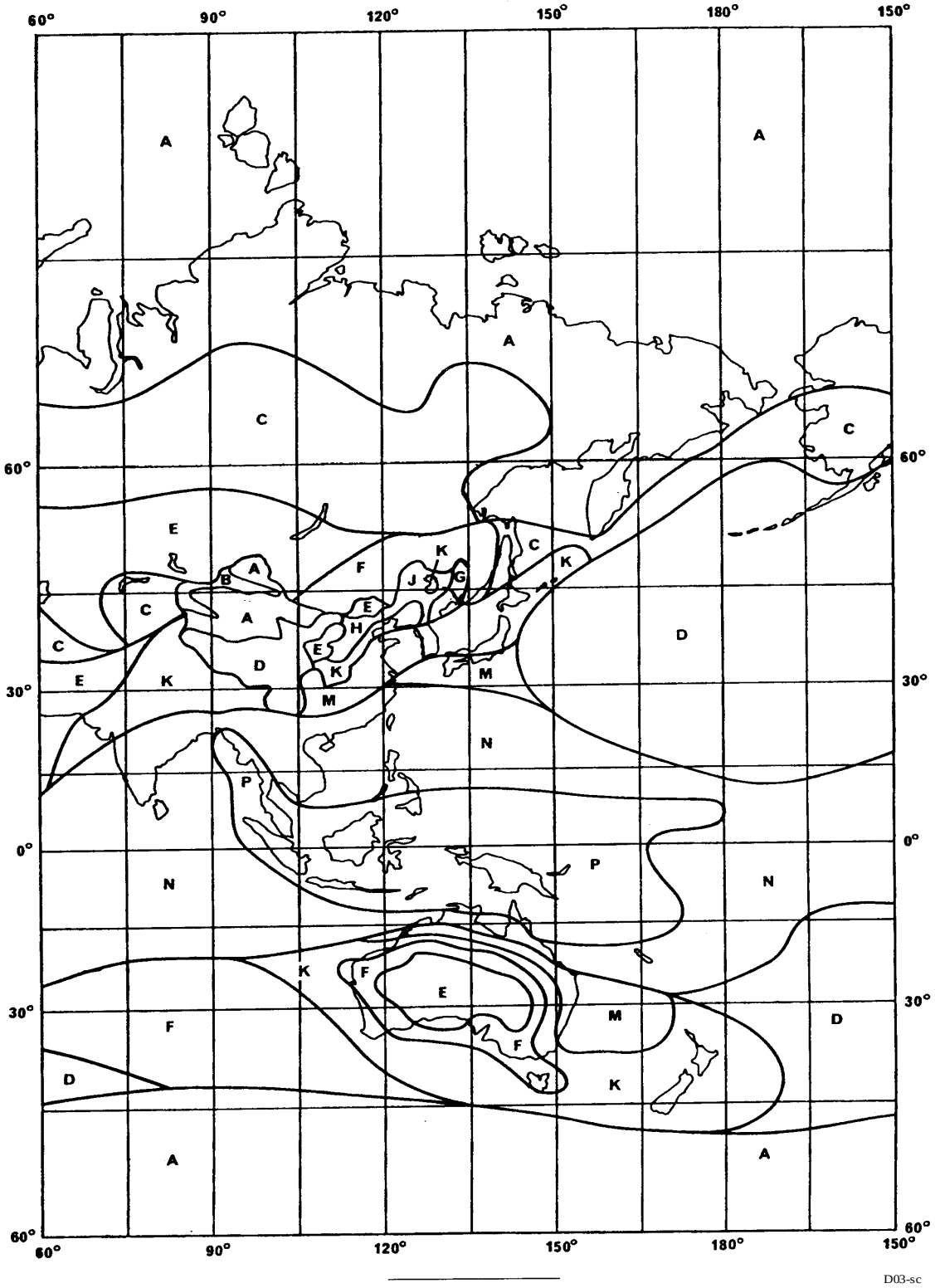

FIGURE 2

Rain climatic zones for Regions 1 and 3 between longitudes 60° E and 150° W

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2.2.1 Atmospheric absorption

The loss due to atmospheric absorption (i.e. clear sky attenuation) is given by:

$$A_a = \frac{92.20}{\cos\theta}\left[\, 0.017F_o \;+\; 0.002\,\rho F_w \,\right] \quad \text{(dB)} \qquad \text{for } \theta < 5°$$

where:

$$F_o = \left[\, 24.88\tan\theta \;+\; 0.339\,\sqrt{1416.77\tan^2\theta \;+\; 5.51}\,\right]^{-1}$$

$$F_w = \left[\, 40.81\tan\theta \;+\; 0.339\,\sqrt{3811.66\tan^2\theta \;+\; 5.51}\,\right]^{-1}$$

and:

$$A_a = \frac{0.042 \;+\; 0.003\,\rho}{\sin\theta} \quad \text{(dB)} \qquad \text{for } \theta \geq 5°$$

where:

θ = elevation angle (degrees),

ρ = surface water vapour concentration, g/m^3, being

ρ = 10 g/m^3 for rain-climatic zones A to K and

ρ = 20 g/m^3 for rain-climatic zones M to P (see Figure 3).

NOC

2.2.2 Rain attenuation

The rain attenuation A_p of circularly polarized signals exceeded for 1% of the worst month at 12.5 GHz is given by:

$$A_p = 0.21\,\gamma\,L\,r \qquad \text{(dB)} \qquad (1)$$

where:

L is the slant path length through rain

$$= \frac{2(h_R - h_0)}{\left\{\sin^2\theta \;+\; 2\,\dfrac{h_R - h_0}{8500}\right\}^{1/2} \;+\; \sin\theta} \qquad \text{(km)}$$

r is the rain path length reduction factor

$$= \frac{90}{90 \;+\; 4L\cos\theta}$$

h_R is the rain height (km)

$$c = \left\{ 5.1 - 2.15 \log \left(1 + 10^{(\zeta - 27)/25} \right) \right\} \quad \text{(km)}$$

$c = 0.6$ for $|\zeta| \leq 20°$

$c = 0.6 + 0.02\,(|\zeta| - 20)$ for $20° < |\zeta| \leq 40°$

$c = 1.0$ for $|\zeta| > 40°$

h_0: is the height (km) above mean sea level of the earth station;

ζ: is the earth station latitude (degrees);

θ: is the elevation angle (degrees);

γ: is the specific rain attenuation $= 0.0202\,R^{1.198}$ dB/km;

R: is the rain intensity (mm/h) obtained from the Table below for the rain climatic zones identified in Figure 3.

(NOTE - The method is based on R exceeded for 0.01% of an average year.)

Rainfall intensity (R) for the rain climatic zones
(exceeded for 0.01% of an average year) (see Figure 3)

Rain climatic zone	A	B	C	D	E	F	G	K	M	N	P
Rainfall intensity (mm/h)	8	12	15	19	22	28	30	42	63	95	145

Figure 4 presents plots of rain attenuation, as calculated using equation (1), of circularly polarized signals exceeded for 1% of the worst month at 12.5 GHz, as a function of earth station latitude and elevation angle for each of the rain climatic zones shown in Figure 3.

NOC

2.2.3 Rain attenuation limit

In the analysis of the Plan for the broadcasting-satellite service in Region 2, a maximum down-link attenuation of 9 dB was agreed in order to limit the inhomogeneity of broadcasting-satellite power flux-density and to facilitate sharing during clear-sky conditions.

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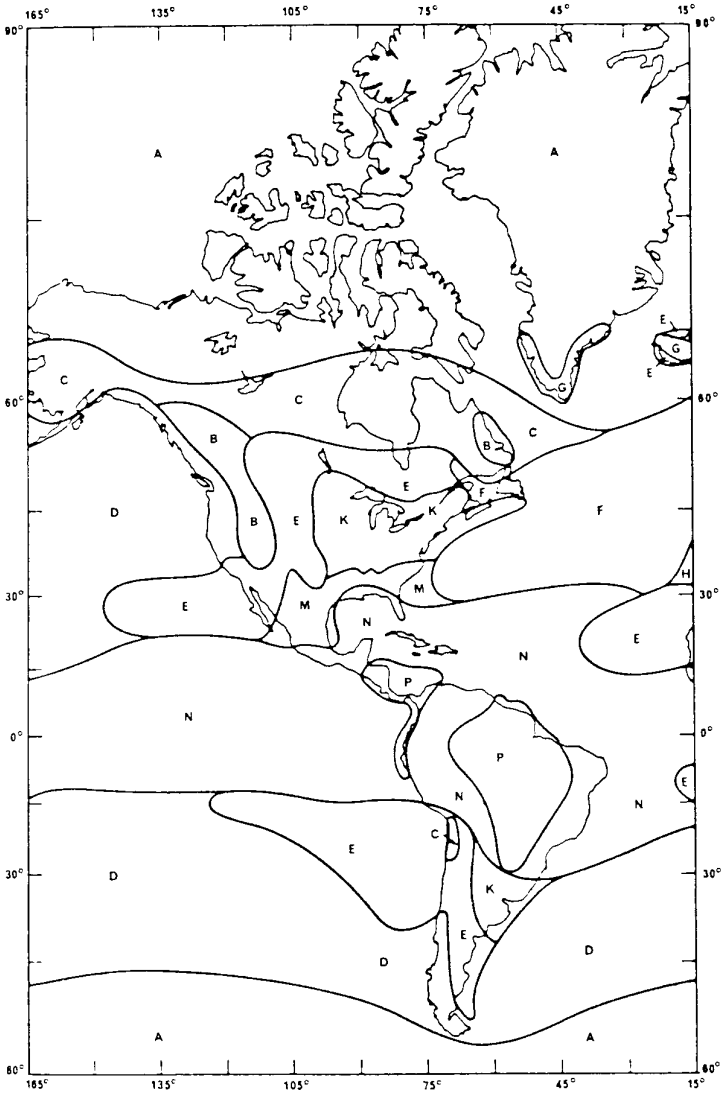

FIGURE 3

Rain-climatic zones (Region 2)

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2.2.4 Procedure for calculating the carrier-to-interference ratio at a test point

The calculation of the down-link carrier-to-interference ratio (exceeded for 99% of the worst month) used to obtain the overall equivalent protection margin at a test point is the minimum value of the carrier-to-interference ratio obtained assuming:

i) clear-sky conditions (i.e. including atmospheric absorption);*or*

ii) rain-faded conditions corresponding to an attenuation value exceeded for 1% of the worst month.

NOC

2.3 Depolarization

Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For circularly polarized emissions, the XPD ratio, in dB, exceeded for 99% of the worst month is obtained from:

$$XPD = 30 \log f - 40 \log (\cos \theta) - 20 \log A_p \quad \text{(dB)} \qquad (2)$$

$$\text{for } 5° \leq \theta \leq 60°$$

where A_p (dB) is the co-polar rain attenuation exceeded for 1% of the worst month (calculated in Section 2.2), f is the frequency in GHz and θ is the elevation angle. For angles of θ greater than 60°, use $\theta = 60°$ in equation (2).

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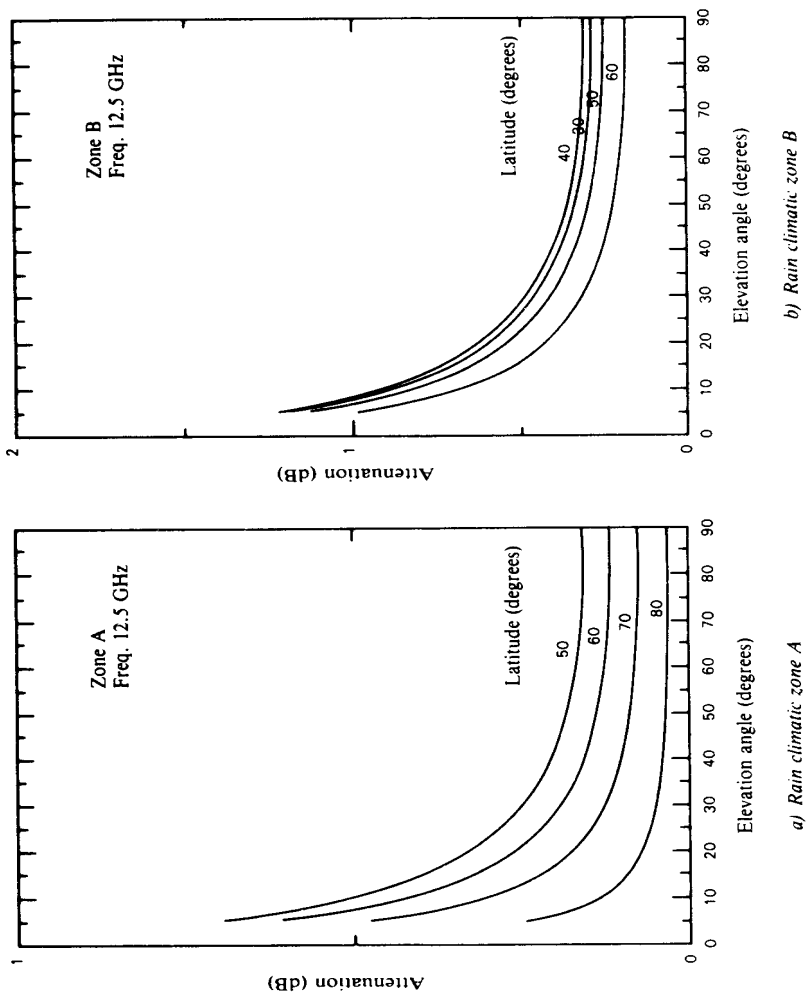

FIGURE 4

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain-climatic zones

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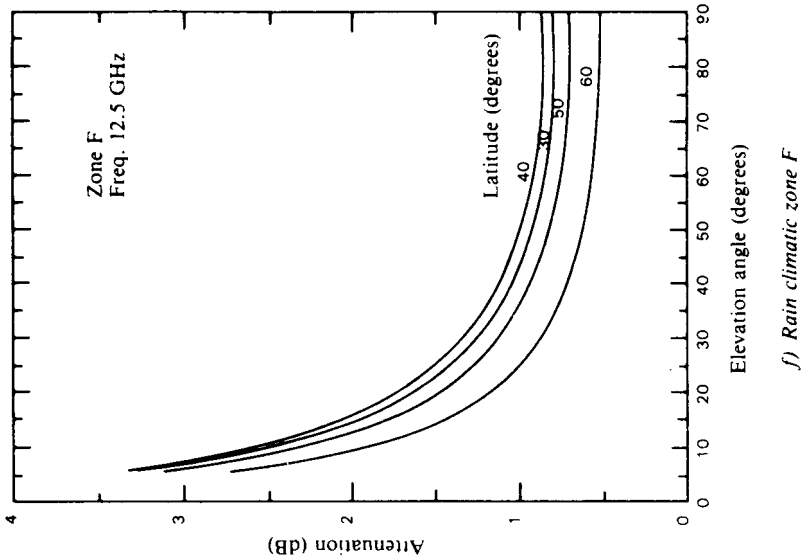
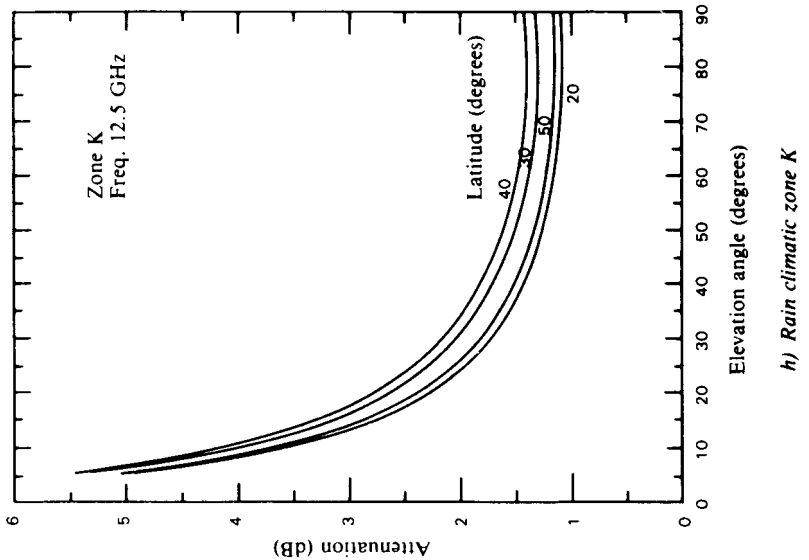
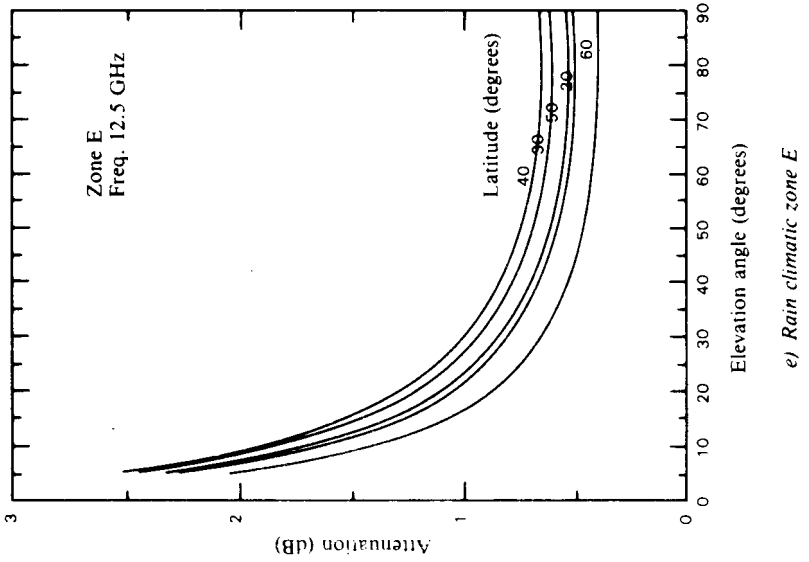


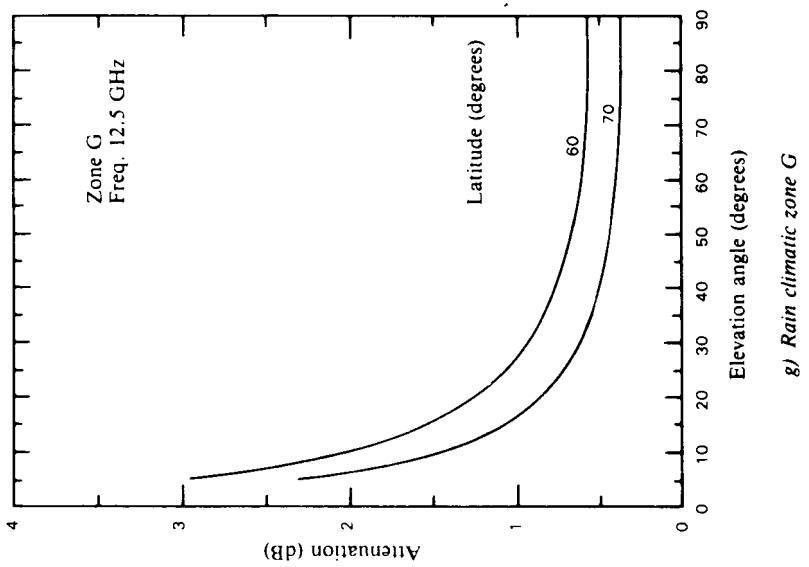
f) Rain climatic zone F



h) Rain climatic zone K



e) Rain climatic zone E



g) Rain climatic zone G

FIGURE 4 *(cont.)*

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain-climatic zones

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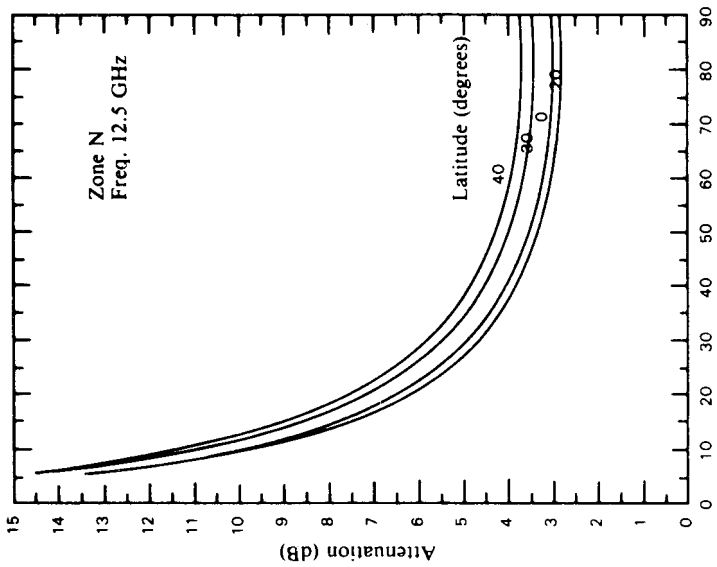
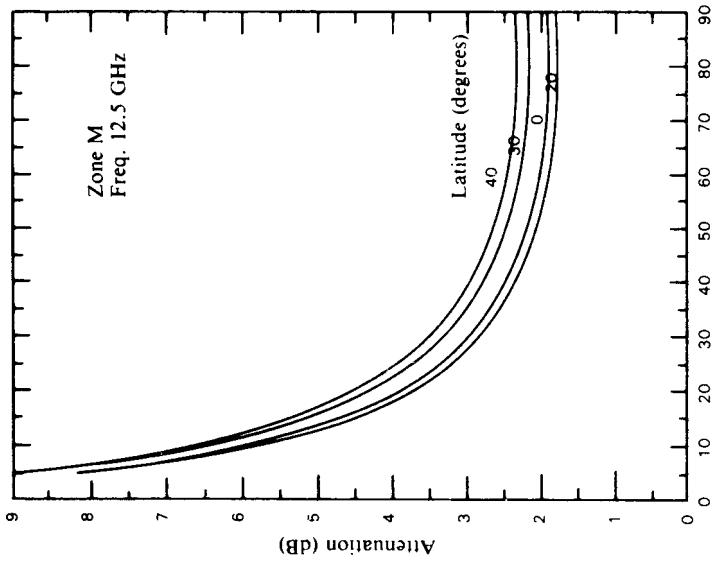
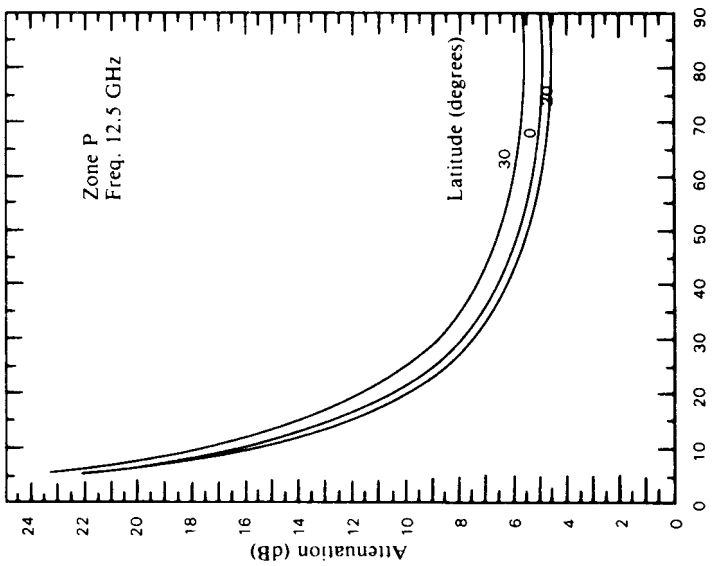


k) Rain climatic zone N



j) Rain climatic zone M



l) Rain climatic zone P

FIGURE 4 *(cont.)*

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain-climatic zones

d04_03-sc

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3. BASIC TECHNICAL CHARACTERISTICS

(MOD)

3.1 Type of modulation

(MOD)

3.1.1 In Regions 1 and 3, planning of the broadcasting-satellite service is normally based on the use of a signal consisting of a video signal with an associated carrier, frequency-modulated by a sound signal, both frequency-modulating a carrier in the 12 GHz band, with a pre-emphasis characteristic in accordance with Figure 5 (from Recommendation ITU-RF.405-1).

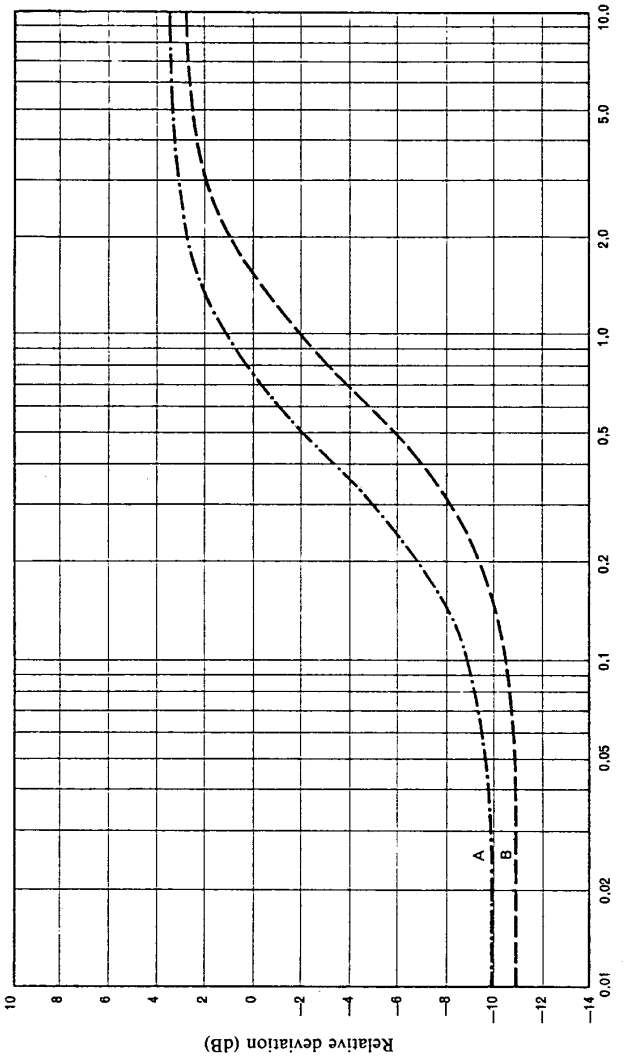

FIGURE 5

Pre-emphasis characteristic for television on 525- and 625-line systems

Curve A: 525-line system

Curve B: 625-line system

NOC

3.1.2 In Region 2, planning is based on the use of a frequency-modulated composite-coded colour television signal with two sound sub-carriers. However, in recognition of the need to provide for the use of new, enhanced television coding and modulation formats (e.g. time-compressed, multiplexed analogue video component signals and digitally-coded sound and data signals), values of the important technical characteristics have been chosen to take into consideration the implementation of these new formats within the provisions of the Plan.

(ADD)

3.1.3 Nevertheless, other modulating signals having different characteristics (e.g. modulation with sound channels frequency-multiplexed within the bandwidth of a television channel, digital modulation of sound and television signals, or other pre-emphasis characteristics) are not precluded, provided that appropriate protection masks and calculation methods[1] are applied or if the use of such characteristics complies with the provisions of paragraph 3.2 of Article 3 of this Appendix.

(MOD)

3.2 Polarization

(MOD)

3.2.1 For the planning of the broadcasting-satellite service, circular polarization is generally used. However, for implementation of assignments in the Plan, linear polarization may also be used, subject to the successful application of the modification procedure of Article 4.

NOC

3.2.2 In Regions 1 and 3, the polarization of different beams intended to serve the same area should, if possible, be the same.

NOC

3.2.3 The terms "direct" and "indirect" used in the Plans to indicate the direction of rotation of circularly-polarized waves correspond to right-hand (clockwise) and left-hand (anti-clockwise) polarization respectively according to the following definitions:

Direct polarization (right-hand or clockwise polarization):

An elliptically or circularly-polarized electromagnetic wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e. not against) the direction of propagation, rotates *with time* in a *right-hand* or clockwise direction.

---

[1] Protection masks for verifying that this provision is met are not yet fully defined in existing ITU-R Recommendations. Recommendations for interference between analogue and digital signals are still under development. In absence of criteria to evaluate interference, the Bureau will use the worst-case approach as adopted by the Radio Regulations Board.

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NOTE - For right-hand circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *left-hand* helix.

Indirect polarization (left-hand or anti-clockwise polarization):

An elliptically or circularly-polarized electromagnetic wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e. not against) the direction of propagation, rotates *with time* in a *left-hand* or anti-clockwise direction.

NOTE - For left-hand circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *right-hand* helix.

(ADD)

3.2.4 Linear polarization is defined in Recommendation ITU-R BO.1212. This Recommendation should be used when analysing linearly polarized signals.

NOC

3.3 Carrier-to-noise ratio

For the purpose of planning the broadcasting-satellite service, the carrier-to-noise ratio used is equal to or greater than 14 dB for 99% of the worst month.

In Regions 1 and 3, the reduction in quality in the down-link due to thermal noise in the up-link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio not exceeding 0.5 dB for 99% of the worst month. In Region 2, as a guide for planning, the reduction in quality in the down-link due to thermal noise in the feeder link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio of approximately 0.5 dB not exceeded for 99% of the worst month, but the feeder-link and down-link Plans are evaluated on the basis of the overall carrier-to-noise ratio of 14 dB for the combined down-link and feeder-link contributions.

(MOD)

3.4 Protection ratio between television signals

For developing the original 1977 BSS Plan for Regions 1 and 3, the following protection ratios were used[1]:

– 31 dB for co-channel signals;

– 15 dB for adjacent channel signals.

[1] These protection ratio values may be used for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

PINK PAGES

For revising this Plan at WRC-97, the following aggregate downlink protection ratios were specified in Recommendation ITU-R BO.1297 for the purpose of calculating downlink equivalent protection margins[2]:

– 24 dB for co-channel signals;

– 16 dB for adjacent channel signals;

In revising the Regions 1 and 3 Plan at WRC-97, the following aggregate overall protection ratio values were used (as specified in Recommendation 521 (WRC-95)) for calculating the overall co-channel and adjacent-channel protection margins as defined in Sections 1.8 and 1.9 of this Annex

– 23 dB for co-channel signals;

– 15 dB for adjacent channel signals.

Recommendation 521 also specified that for the revision of the Regions 1 and 3 Plan, no overall co-channel single entry C/I should be lower than 28 dB.

However, for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997 the overall equivalent protection margins were calculated using a co-channel overall protection ratio of 30 dB and lower and upper overall adjacent channel protection ratios of 14 dB[1].

Revision of the Regions 1 and 3 Plan at WRC-97 was generally based on set of reference parameters such as the average e.i.r.p., the reference earth station receiving antenna, all test points placed within -3 dB contour, bandwidth 27 MHz and the predetermined value of C/N.

---

[2] The equivalent protection margin M is given in dB by the formula

$$M = -10 \log (10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10})$$

where M_1 is the value in dB of the protection margin for the same channel. This is defined in the following expression where the powers are evaluated at the receiver input:

$$\frac{\text{wanted power}}{\text{sum of the co-channel interfering powers}} \text{ (dB)} - \text{co-channel protection ratio (dB)}$$

M_2 and M_3 are the values in dB of the upper and lower adjacent-channel protection margins respectively.

The definition of the adjacent-channel protection margin is similar to that for the co-channel case except that the adjacent-channel protection ratio and the sum of the interfering powers due to emissions in the adjacent channel are considered.

[1] The overall protection margin calculation method used is based on the first formula in 1.12 of Annex 3 to Appendix 30A (S30A).

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Protection masks and associated calculation methods for interference into broadcast satellite systems involving digital emissions are given in Recommendation ITU-R BO.1293.

In Region 2, the following protection ratios have been adopted for the purpose of calculating the overall equivalent protection margin[1]:

28 dB for co-channel signals;

13.6 dB for adjacent-channel signals;

-9.9 dB for second adjacent-channel signals.

In Region 2, as a guide for planning, the reduction in the overall carrier-to-interference ratio due to co-channel interference in the feeder link is taken as equivalent to a degradation in the down-link co-channel carrier-to-interference ratio of approximately 0.5 dB not exceeded for 99% of the worst month, but the feeder-link and down-link Plans are evaluated on the basis of the overall equivalent protection margin, which includes the combined down-link and feeder-link contributions.

In Region 2, an overall equivalent protection margin of zero decibels, or greater, indicates that the individual protection ratios have been met for the co-channel, the adjacent channels and the second adjacent channels.

NOC

3.4.1 Adjacent channel protection ratio template for Region 2[2] (FMTV into FMTV)

The protection ratios for adjacent channels are derived from the template given in Figure 6. The template is symmetrical and is given in terms of absolute levels for the carrier-to-interference ratios.

The template is obtained by joining the segment for adjacent channels to the horizontal extension of the co-channel protection ratio value. The adjacent channel protection ratio cannot be adjusted relative to the co-channel value.

---

[1] The definitions in Sections 1.7, 1.8, 1.9, 1.10 and 1.11 of this Annex apply to these calculations.

(MOD)

[2] See Annex 6 for the protection ratio template for interference between TV/FM signals in Regions 1 and 3.

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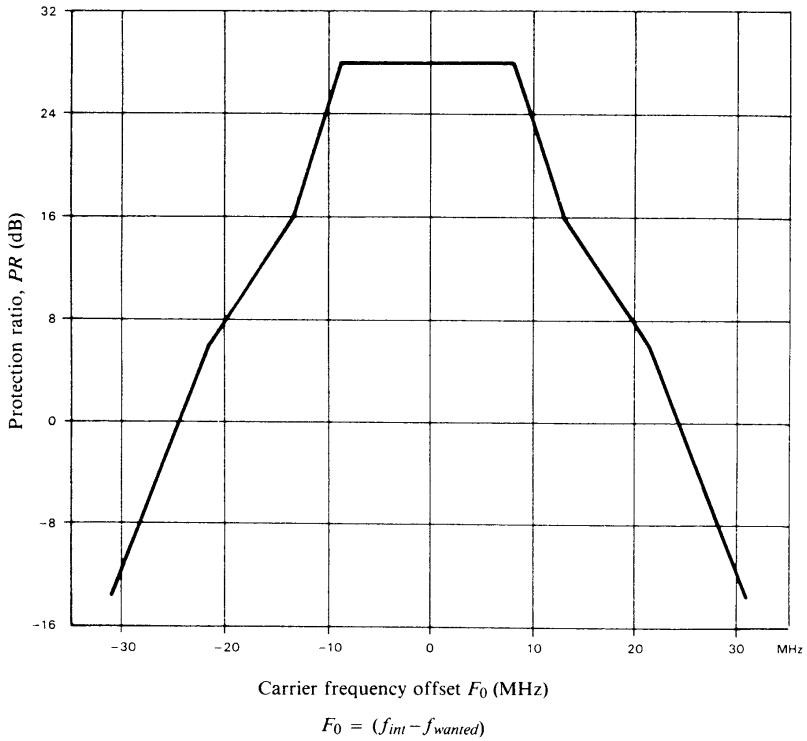

FIGURE 6

Protection ratio template (FMTV/FMTV), for planning of broadcasting-satellite systems in Region 2

The template is given by the following expressions:

$$PR = \begin{cases} 28 & \text{dB} & \text{for} & |F_0| \leq 8.36 \text{ MHz} \\ -2.762 \; |F_0| + 51.09 & \text{dB} & \text{for} & 8.36 < |F_0| \leq 12.87 \text{ MHz} \\ -1.154 \; |F_0| + 30.4 & \text{dB} & \text{for} & 12.87 < |F_0| \leq 21.25 \text{ MHz} \\ -2.00 \; |F_0| + 48.38 & \text{dB} & \text{for} & |F_0| > 21.25 \text{ MHz} \end{cases}$$

where:

PR is the protection ratio in dB and $|F_0|$ is the carrier spacing between the interfering and wanted signals in MHz.

3.5 Channel spacing

NOC

3.5.1 Channel spacing in the Plans

In Regions 1 and 3, the spacing between the assigned frequencies of two adjacent channels is 19.18 MHz.

In Region 2, the spacing between the assigned frequencies of two adjacent channels is 14.58 MHz, which corresponds to 32 channels in the 500 MHz bandwidth allocated to the broadcasting-satellite service.

The Plans give the assigned frequencies for each channel.

However, in the Regions 1 and 3 Plan, for implementation of assignments to different frequency spacing may be used subject to the successful application of the modification procedure of Article 4, ITU-R Recommendations for protection masks should be used if available. In the absence of such Recommendations, BR should apply the worst-case approach as adopted by the Radio Regulations Board.

(MOD)

3.5.2 Arrangement of channels in the same beam

Planning in Region 1 at WARC-77 was carried out by trying to restrict all the channels radiated within a single antenna beam within a frequency range of 400 MHz, in order to simplify receiver construction. Such a restriction was considered unnecessary for the revision of the Regions 1 and 3 Plan at WRC-97.

(MOD)

3.5.3 Spacing between assigned channel frequencies feeding a common antenna

In the 1977 Plan for Regions 1 and 3, owing to technical difficulties in the output circuit of a satellite transmitter, spacing between the assigned frequencies of two channels feeding a common antenna was required to be greater than 40 MHz. This restriction was not imposed in the revision of the Plan.

(MOD)

3.6 Figure of merit (*G/T*) of a receiving station in the broadcasting- satellite service

In planning the broadcasting-satellite service, the value of the figure of merit *G/T* for clear-sky conditions is:

for Regions 1 and 3:

The original 1977 BSS Plan used values[1] of:

6 dB(K^{-1}) for individual reception

14 dB(K^{-1}) for community reception, *and*

[1] These values are still used for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

PINK PAGES

for Region 2:

10 dB(K^{-1}) for individual reception.

The 1997 revision of the Regions 1 and 3 Plan is based on a uniform value of the figure of merit G/T equal to 11 dB(K^{-1}).

These values were calculated from a formula which allows for pointing error, polarization effects and equipment ageing.

See also Report ITU-R BO.473-3 (Annex 1).

3.7 Receiving antennas

(MOD)

3.7.1 Half-power beamwidth of receiving antennas

In the development of the original 1977 BSS Plan for Regions 1 and 3, the minimum receiving antenna diameter was such that the half-power beamwidth was 2° for individual reception and 1° for community reception.

In revising this Plan at WRC-97, the minimum receiving antenna diameter was such that the half-power beamwidth was 2.96°.

For planning the broadcasting-satellite service in Region 2, the minimum receiving antenna diameter must be such that the half-power beamwidth φ_0 is 1.7°.

(MOD)

3.7.2 Receiving antenna reference patterns

The co-polar and cross-polar receiving antenna reference patterns are given in Figures 7, 7*bis* and 8.

a) For Regions 1 and 3, the original WARC-77 Plan was based on the antenna pattern[2] shown in Figure 7 where the relative antenna gain (dB) is given by the curves for:

- individual reception, for which use should be made of:
  - Curve A for the co-polar component;
  - Curve B for the cross-polar component;
- community reception, for which use should be made of:
  - Curve A′ up to the intersection with Curve C, then Curve C, for the co-polar component;
  - Curve B for the cross-polar component.

[2] This antenna pattern is used in the BSS Plan for Regions 1 and 3 for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

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The WRC-97 revision to the Regions 1 and 3 BSS Plan was based on the absolute gain (dBi) patterns for a 60 cm antenna given in Recommendation ITU-R BO.1213 as shown in Figure 7*bis*.

b) For Region 2, the relative antenna gain (dB) is given by the curves in Figure 8 for individual reception, for which use should be made of:

– Curve A for the co-polar component;

– Curve B for the cross-polar component.

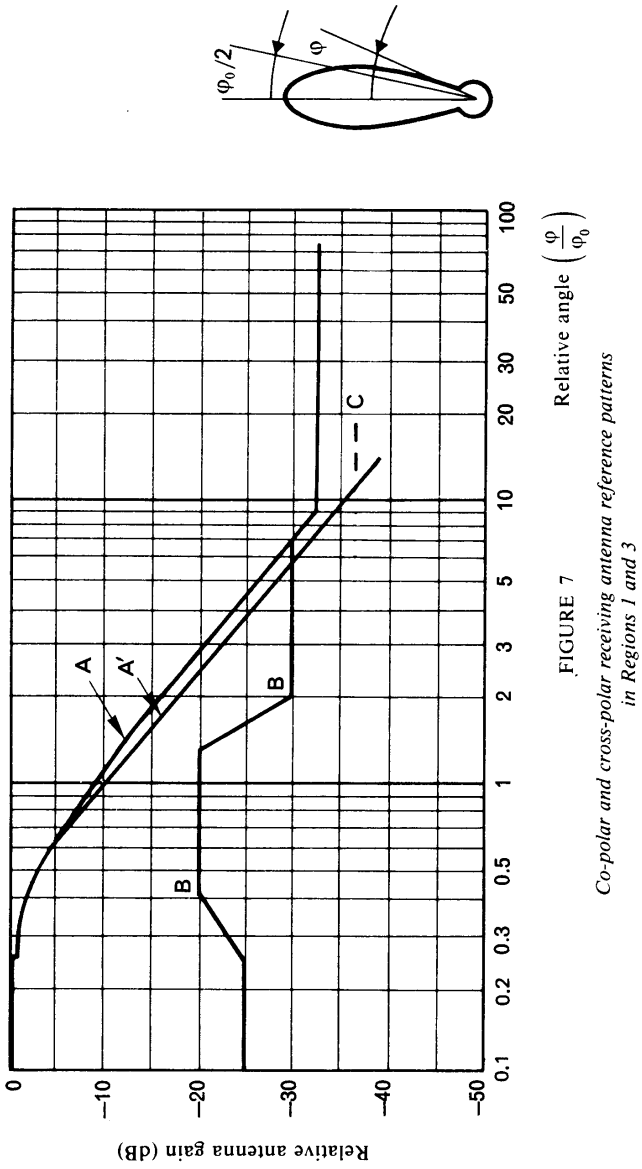

FIGURE 7

Co-polar and cross-polar receiving antenna reference patterns in Regions 1 and 3

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Antenna pattern formulae for Figure 7

Curve A: Co-polar component for individual reception without side-lobe suppression (dB relative to main beam gain)

0 for $0 \le \varphi \le 0.25\ \varphi_0$

$-12 \left(\frac{\varphi}{\varphi_0}\right)^2$ for $0.25\ \varphi_0 < \varphi \le 0.707\ \varphi_0$

$-\left[9.0 + 20 \log\left(\frac{\varphi}{\varphi_0}\right)\right]$ for $0.707\ \varphi_0 < \varphi \le 1.26\ \varphi_0$

$-\left[8.5 + 25 \log\left(\frac{\varphi}{\varphi_0}\right)\right]$ for $1.26\ \varphi_0 < \varphi \le 9.55\ \varphi_0$

-33 for $\varphi > 9.55\ \varphi_0$

Curve A′: Co-polar component for community reception without side-lobe suppression (dB relative to main beam gain)

0 for $0 \le \varphi \le 0.25\ \varphi_0$

$-12 \left(\frac{\varphi}{\varphi_0}\right)^2$ for $0.25\ \varphi_0 < \varphi \le 0.86\ \varphi_0$

$-\left[10.5 + 25 \log\left(\frac{\varphi}{\varphi_0}\right)\right]$ for $\varphi > 0.86\ \varphi_0$ up to intersection with Curve C (thenCurve C)

Curve B: Cross-polar component for both types of reception (dB relative to main beam gain)

-25 for $0 \le \varphi \le 0.25\ \varphi_0$

$-\left(30 + 40 \log\left|\frac{\varphi}{\varphi_0} - 1\right|\right)$ for $0.25\ \varphi_0 < \varphi \le 0.44\ \varphi_0$

-20 for $0.44\ \varphi_0 < \varphi \le 1.4\ \varphi_0$

$-\left(30 + 25 \log\left|\frac{\varphi}{\varphi_0} - 1\right|\right)$ for $1.4\ \varphi_0 < \varphi \le 2\ \varphi_0$

-30 until intersection with co-polar component curve; then co-polar component curve.

Curve C: Minus the on-axis gain (CurveC in this figure illustrates the particular case of an antenna with an on-axis gain of 37 dBi).

NOTE - for values of φ_0 see Section 3.7.1

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FIGURE 2

Reference receiving earth station antenna patterns

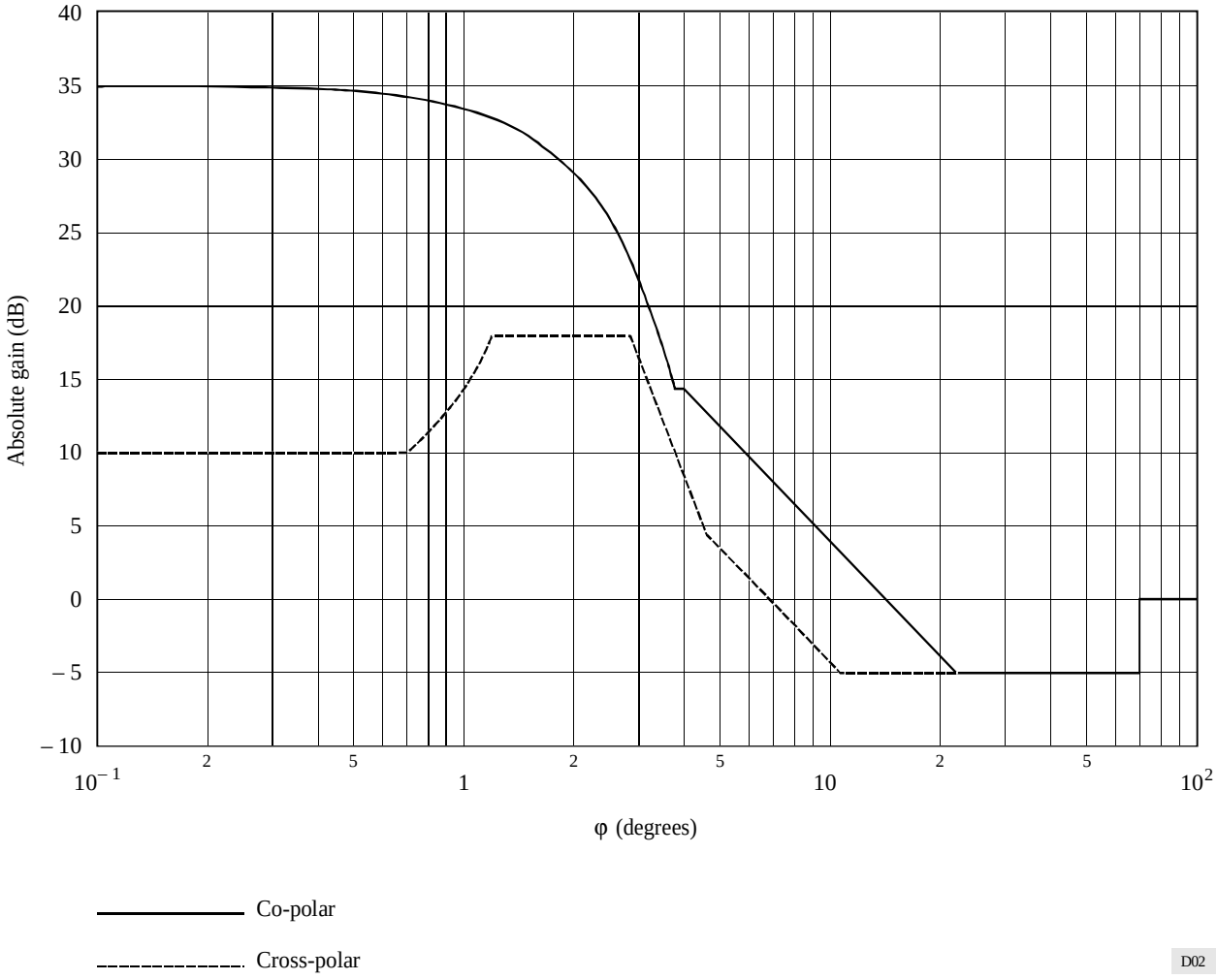

FIGURE 7*bis*

Reference receiving earth station antenna patterns used at WRC-97 for revising the Regions 1 and 3 BSS Plan

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Antenna pattern formulae for Figure 7*bis*

Co-polar pattern:

$G_{co}(\varphi) = G_{max} - 2.5 \times 10^{-3} \left(\frac{D}{\lambda}\varphi\right)^2$ for $0 \le \varphi < \varphi_m$ where $\varphi_m = \frac{\lambda}{D}\sqrt{\frac{G_{max} - G_1}{0.0025}}$

$G_{co}(\varphi) = G_1 = 29 - 25 \log \varphi_r$ for $\varphi_m \le \varphi < \varphi_r$ where $\varphi_r = 95 \frac{\lambda}{D}$

$G_{co}(\varphi) = 29 - 25 \log \varphi$ for $\varphi_r \le \varphi < \varphi_b$ where $\varphi_b = 10^{(34/25)}$

$G_{co}(\varphi) = -5$ dBi for $\varphi_b \le \varphi < 70°$

$G_{co}(\varphi) = 0$ dBi for $70° \le \varphi < 180°$

Cross-polar pattern:

$G_{cross}(\varphi) = G_{max} - 25$ for $0 \le \varphi < 0.25\,\varphi_0$

where $\varphi_0 = 2\frac{\lambda}{D}\sqrt{\frac{3}{0.0025}}$ = 3 dB beamwidth

$G_{cross}(\varphi) = G_{max} - 25 + 8\left(\frac{\varphi - 0.25\,\varphi_0}{0.19\,\varphi_0}\right)$ for $0.25\,\varphi_0 \le \varphi < 0.44\,\varphi_0$

$G_{cross}(\varphi) = G_{max} - 17$ for $0.44\,\varphi_0 \le \varphi < \varphi_0$

$G_{cross}(\varphi) = G_{max} - 17 - 13.5625\left|\frac{\varphi - \varphi_0}{\varphi_1 - \varphi_0}\right|$ for $\varphi_0 \le \varphi < \varphi_1$ where $\varphi_1 = \frac{\varphi_0}{2}\sqrt{10.1875}$

$G_{cross}(\varphi) = 21 - 25 \log \varphi$ for $\varphi_1 \le \varphi < \varphi_2$ where $\varphi_2 = 10^{(26/25)}$

$G_{cross}(\varphi) = -5$ dBi for $\varphi_2 \le \varphi < 70°$

$G_{cross}(\varphi) = 0$ dBi for $70° \le \varphi < 180°$

For the 60 cm antenna pattern which is to be used as a reference for replanning, the following parameters apply:

Co-polar:

$G_{max} = 35.5$ dBi

$D/\lambda = 23.4$

$\varphi_m = 3.66°$

$\varphi_r = 4.04°$

$G_1 = 13.84$ dBi

$\varphi_b = 10^{(34/25)}$

Cross-polar:

$\varphi_0 = 2.96°$

$\varphi_1 = 4.73°$

$\varphi_2 = 10.96°$

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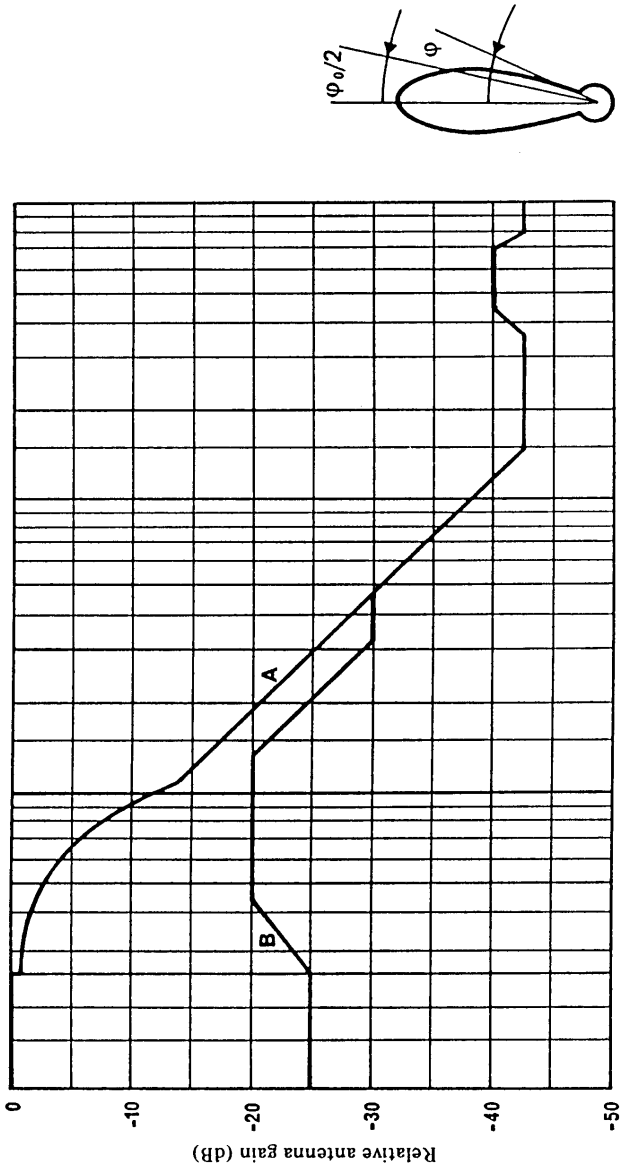

FIGURE 8

Reference patterns for co-polar and cross-polar components for receiving earth station antennas in Region 2

Antenna pattern formulae for Figure 8

Curve A: Co-polar component without side-lobe suppression (dB relative to main beam gain)

0	for $0 \le \varphi \le 0.25\ \varphi_0$
$-12\ (\varphi/\varphi_0)^2$	for $0.25\ \varphi_0 < \varphi \le 1.13\ \varphi_0$
$-\{14 + 25 \log (\varphi/\varphi_0)\}$	for $1.13\ \varphi_0 < \varphi \le 14.7\ \varphi_0$
-43.2	for $14.7\ \varphi_0 < \varphi \le 35\ \varphi_0$
$-\{85.2 - 27.2 \log (\varphi/\varphi_0)\}$	for $35\ \varphi_0 < \varphi \le 45.1\ \varphi_0$
-40.2	for $45.1\ \varphi_0 < \varphi \le 70\ \varphi_0$
$-\{-55.2 + 51.7 \log (\varphi/\varphi_0)\}$	for $70\ \varphi_0 < \varphi \le 80\ \varphi_0$
-43.2	for $80\ \varphi_0 < \varphi \le 180°$

Curve B: Cross-polar component (dB relative to main beam gain)

-25 for $0 \le \varphi \le 0.25\ \varphi_0$

$-\left(30 + 40 \log \left| \frac{\varphi}{\varphi_0} - 1 \right| \right)$ for $0.25\ \varphi_0 < \varphi \le 0.44\ \varphi_0$

-20 for $0.44\ \varphi_0 < \varphi \le 1.28\ \varphi_0$

$-\left(17.3 + 25 \log \left| \frac{\varphi}{\varphi_0} \right| \right)$ for $1.28\ \varphi_0 < \varphi \le 3.22\ \varphi_0$

-30 until intersection with co-polar component curve; then co-polar component curve.

NOTE 1 - For values of φ_0 see paragraph 3.7.1.

NOTE 2 - In the angular range between $0.1\varphi_0$ and $1.13\ \varphi_0$ the co-polar and cross-polar gains must not exceed the reference patterns.

NOTE 3 - At off-axis angles larger than $1.13\ \varphi_0$ and for 90% of all sidelobe peaks in each of the reference angular windows, the gain must not exceed the reference patterns. The reference angular windows are $1.13\ \varphi_0$ to $3\ \varphi_0$, $3\ \varphi_0$ to $6\ \varphi_0$, $6\ \varphi_0$ to $10\ \varphi_0$, $10\ \varphi_0$ to $20\ \varphi_0$, $20\ \varphi_0$ to $40\ \varphi_0$, $40\ \varphi_0$ to $75\ \varphi_0$ and $75\ \varphi_0$ to 180°.

(MOD)

3.8 Necessary bandwidth

The necessary bandwidths considered are as follows for:

– 625-line systems in Regions 1 and 3: 27 MHz;

– 525-line systems in Region 3: 27 MHz.

However, in Regions 1 and 3, if different bandwidths are submitted, they will be treated in accordance with applicable ITU-R Recommendations for protection masks when available. In the absence of such Recommendations, the Bureau will use the worst-case approach as adopted by the Radio Regulations Board.

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In Region 2, the Plan is based on a channel bandwidth of 24 MHz[1], but different bandwidths may be implemented in accordance with the provisions of this Appendix, provided that applicable ITU-R Recommendations are available. In the absence of such Recommendations, the Bureau will use the worst-case approach as adopted by the Radio Regulations Board.

(MOD)

3.9 Guardbands

NOC

3.9.1 A guardband is defined as the portion of the frequency spectrum between the edge of the allocated band and the edge of the necessary bandwidth of the emission in the nearest channel.

(MOD)

3.9.2 For the planning of the broadcasting-satellite service, the guardbands chosen at WARC-77 to protect the services in adjacent frequency bands are shown in the table below.

Regions	Guardband at the lower edge of the band	Guardband at the upper edge of the band
1	14 MHz	11 MHz
2	12 MHz	12 MHz
3	14 MHz	11 MHz

For Regions 1 and 3, for analogue emissions the guardbands assume a maximum beam centre e.i.r.p. of 67 dBW (value relating to individual reception), and a filter roll-off of 2 dB/MHz. If smaller e.i.r.p. values are assumed, the guardbands can be reduced in width by 0.5 MHz for each decibel decrease in e.i.r.p. The degree of possible reduction also depends on improvements in technology and on the type of modulation. However, an appropriate ITU-R Recommendation concerning the sharing requirements is not yet available.

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3.9.3 The guardbands at both the lower and upper edges may be used for transmissions in the space operation service.

---

[1] For France, Denmark and some of the United Kingdom requirements which use 625-line standards with greater video bandwidth, the channels shown in the Plan have a necessary bandwidth of 27 MHz. This is indicated by an appropriate symbol in the Plan.

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NOC

3.10 Orbital spacing

The Plan for Regions 1 and 3 has been based generally on nominal orbital positions spaced uniformly at intervals of 6°. The Plan for Region 2 has been based on a non-uniform spacing.

(MOD)

3.11 Satellite station-keeping

Space stations in the broadcasting-satellite service must be maintained in position with an accuracy equal to or better than ±0.1° in the E-W directions. For such space stations, the maintenance of the tolerance ±0.1° in the N-S direction is recommended but is not a requirement.

(MOD)

3.12 Elevation angle of receiving antennas

The Plans have been based on the desirability of a minimum angle of elevation of 20° to minimize the required e.i.r.p. of the satellite and to reduce the effects of shadowing and the possibility of interference from terrestrial services. However, for areas situated in latitudes above about 60°, the angle of elevation is of necessity less than 20°. Attention is also drawn to Section 2.2 for the Regions 1 and 3 Plan and to Section 2.4.3 for the Region 2 Plan.

For mountainous areas where an elevation angle of 20° may not suffice, an angle of at least 30° has been provided, where possible, to provide an acceptable service. An angle of elevation of at least 40° has been considered for service areas subject to high precipitation, but exceptions were made in some cases in Region 2.

Some dry, non-mountainous areas may be given an acceptable service at angles of elevation less than 20°.

In areas with small elevation angles, the shadowing effect of tall buildings may have to be taken into account.

In choosing a satellite position designed to give the maximum angle of elevation at the ground, the influence of such a position on the eclipse period was taken into account at WARC-77. In the revision of the Regions 1 and 3 Plan at WRC-97, this influence was not considered to be a significant constraint on the choice of orbital position.

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3.13 Transmitting antennas

(MOD)

3.13.1 Cross-section of transmitted beam

Planning in Regions 1, 2 and 3 has been generally based on the use of satellite transmitting antennas with beams of elliptical cross-section.

If the cross-section of the emitted beam is elliptical, the effective beamwidth φ_0 is a function of the angle of rotation between the plane containing the satellite and the major axis of the beam cross-section and the plane in which the beamwidth is required.

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression:

$$G_m = \frac{27\,843}{ab}$$

where:

a and *b* are the angles (in degrees) subtended at the satellite by the major and minor axes of the elliptical cross-section of the beam; an antenna efficiency of 55% was assumed.

However, in implementing their assignments, administrations can choose beams other than elliptical, as described in Annex 2 to this Appendix, subject to successful application of the modification procedure of this Appendix.

NOC

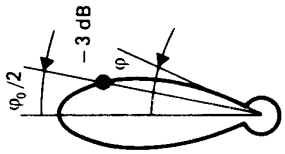
3.13.2 Minimum beamwidth of transmitting antenna

A minimum value of 0.6° for the half-power beamwidth of a transmitting antenna has been adopted for planning for Regions 1 and 3, and 0.8° for Region 2.

NOC

3.13.3 Transmitting antenna reference patterns

The reference patterns for the co-polar and cross-polar components of satellite transmitting antennas used in preparing the Plans are given in Figure 9 for Regions 1 and 3, and in Figure 10 for Region 2.



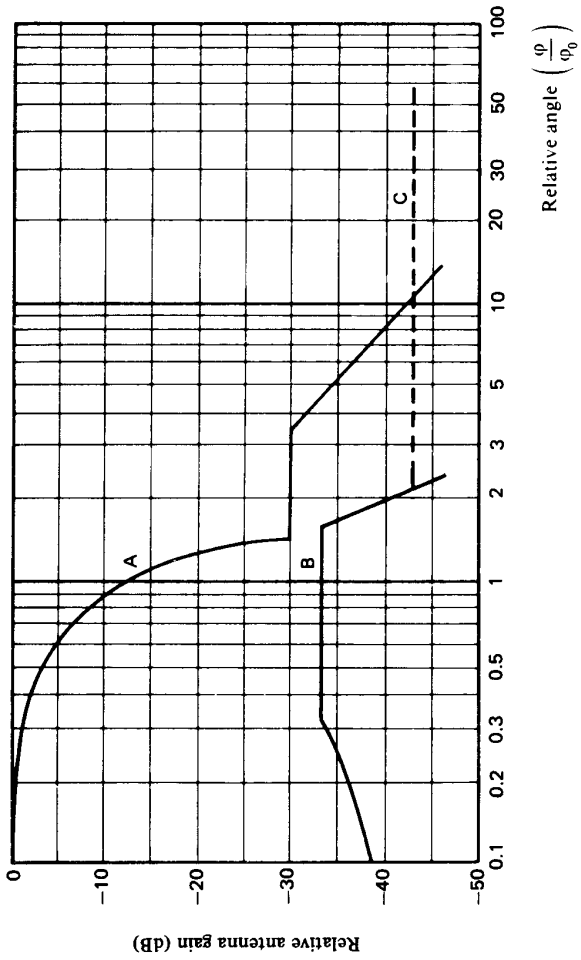


FIGURE 9

Reference patterns for co-polar and cross-polar components for satellite transmitting antennas in Regions 1 and 3

NOC

Curve A: Co-polar component (dB relative to main beam gain)

$-12\left(\frac{\varphi}{\varphi_0}\right)^2$ for $0 \le \varphi \le 1.58\ \varphi_0$

-30 for $1.58\ \varphi_0 < \varphi \le 3.16\ \varphi_0$

$-\left[17.5 + 25 \log\left(\frac{\varphi}{\varphi_0}\right)\right]$ for $\varphi > 3.16\ \varphi_0$

after intersection with Curve C: as Curve C

PINK PAGES

Curve B: Cross-polar component (dB relative to main beam gain)

$$-\left(40 + 40 \log \left| \frac{\varphi}{\varphi_0} - 1 \right| \right) \qquad \text{for } 0 \le \varphi \le 0.33\ \varphi_0$$

$$-33 \qquad \text{for } 0.33\ \varphi_0 < \varphi \le 1.67\ \varphi_0$$

$$-\left(40 + 40 \log \left| \frac{\varphi}{\varphi_0} - 1 \right| \right) \qquad \text{for } \varphi > 1.67\ \varphi_0$$

after intersection with Curve C: as Curve C

Curve C: Minus the on-axis gain (Curve C in this figure illustrates the particular case of an antenna with an on-axis gain of 43 dBi).

NOC

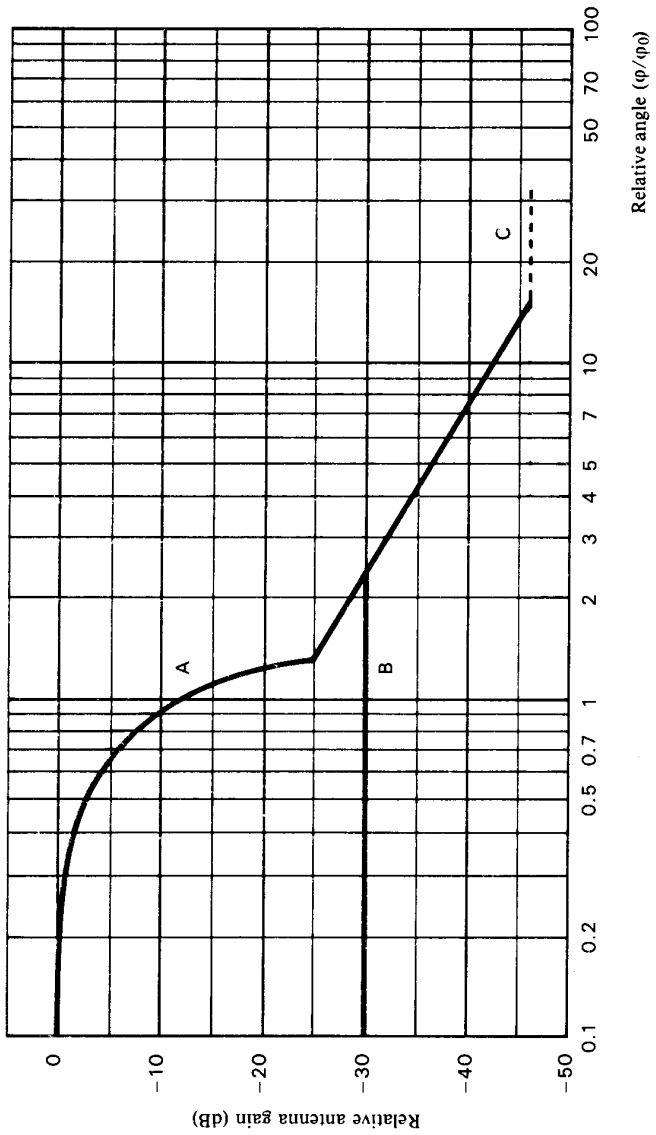


FIGURE 10

Reference patterns for co-polar and cross-polar components for satellite transmitting antennas in Region 2

(MOD)

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\varphi/\varphi_0)^2$ for $0 \le (\varphi/\varphi_0) \le 1.45$

$-(22 + 20 \log (\varphi/\varphi_0))$ for $(\varphi/\varphi_0) > 1.45$

after intersection with curve C: Curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \le (\varphi/\varphi_0) \le 2.51$

after intersection with co-polar pattern: co-polar pattern

Curve C: Minus the on-axis gain (Curve C in this figure illustrates the particular case of an antenna with an on-axis gain of 46 dBi).

In Region 2, when it was necessary to reduce interference, the pattern shown in Figure 11a was used; this use is indicated in the Plan by an appropriate symbol. This pattern is derived from an antenna producing an elliptical beam with fast roll-off in the main lobe assuming a "beamlet" half-power beamwidth of 0.8°. For Regions 1 and 3, the pattern shown in Figure 11b, based on a "beamlet" beamwidth of 0.6° was used. Curves for three different values of φ_0 are shown as examples in Figure 11a and in Figure 11b.

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(MOD)

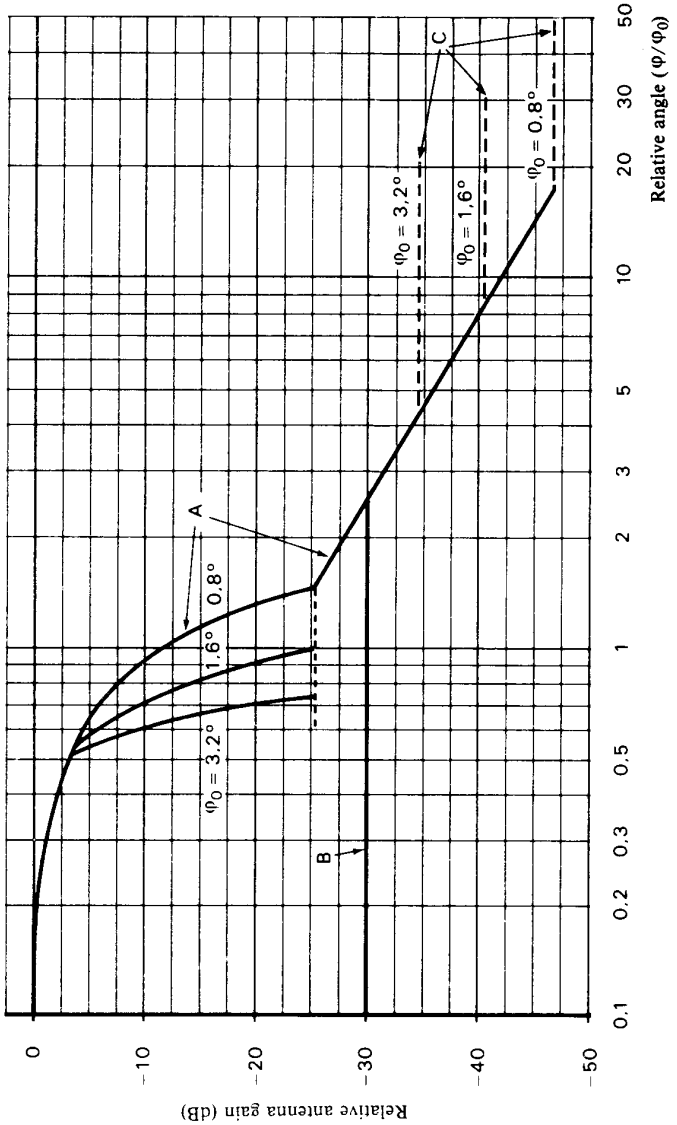

FIGURE 11
Reference patterns for co-polar and cross-polar components for satellite transmitting antennas with fast roll-off in the main beam for Region 2

FIGURE 11a

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\varphi/\varphi_0)^2$ for $0 \le (\varphi/\varphi_0) \le 0.5$

$$-12\left(\frac{\frac{j}{j_0}-x}{\frac{B_{\min}}{j_0}}\right)^2 \quad \text{for } 0.5 < (\varphi/\varphi_0) \le \left(\frac{1.45}{j_0}B_{\min}+x\right)$$

-25.23 for $\left(\frac{1.45}{j_0} B_{min} + x\right) < (\varphi/\varphi_0) \leq 1.45$

$-(22 + 20 \log (\varphi/\varphi_0))$ for $(\varphi/\varphi_0) > 1.45$

after intersection with curve C: Curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leq (\varphi/\varphi_0) < 2.51$

after intersection with co-polar pattern: co-polar pattern

Curve C: Minus the on-axis gain (Curves A and C represent examples of three antennas having different values of φ_0 as labelled in Figure11. The on-axis gains of these antennas are approximately 34, 40 and 46 dBi, respectively).

where:

φ = off-axis angle (degrees)

φ_0 = dimension of the minimum ellipse fitted around the down-link service area in the direction of interest (degrees)

$B_{min} = 0.8°$ for Region 2 and $B_{min} = 0.6°$ for Regions 1 and 3

$x = 0.5\left(1 - \frac{0.8}{\varphi_0}\right)$ in Region 2

$x = 0.5\left(1 - \frac{0.6}{\varphi_0}\right)$ in Regions 1 and 3

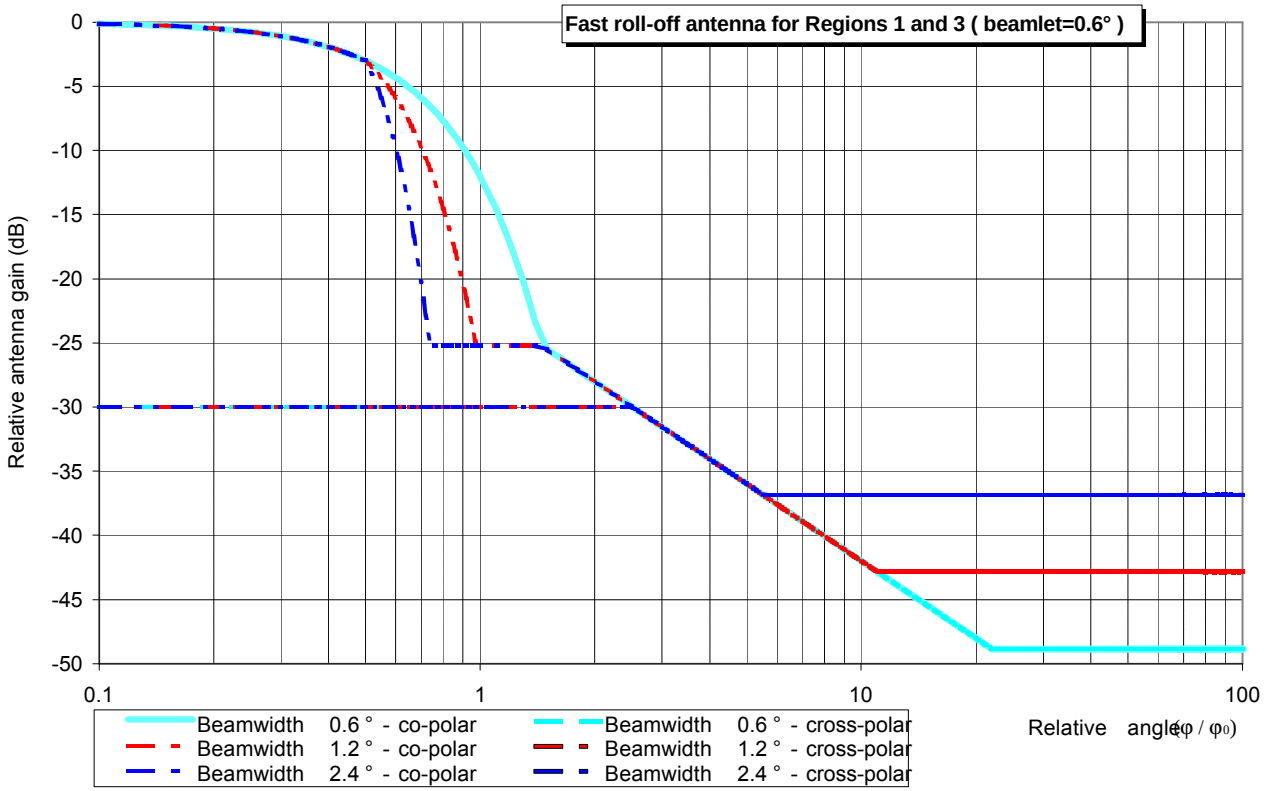

FIGURE 11b

Fast roll-off antenna for Region 1 and 3 Plan revision (beamlet beamwidth of 0.6 deg.)

The difference in performance between the fast roll-off satellite transmitting antenna and the reference satellite transmitting antenna for Regions 1 and 3 is shown in Figure 12.

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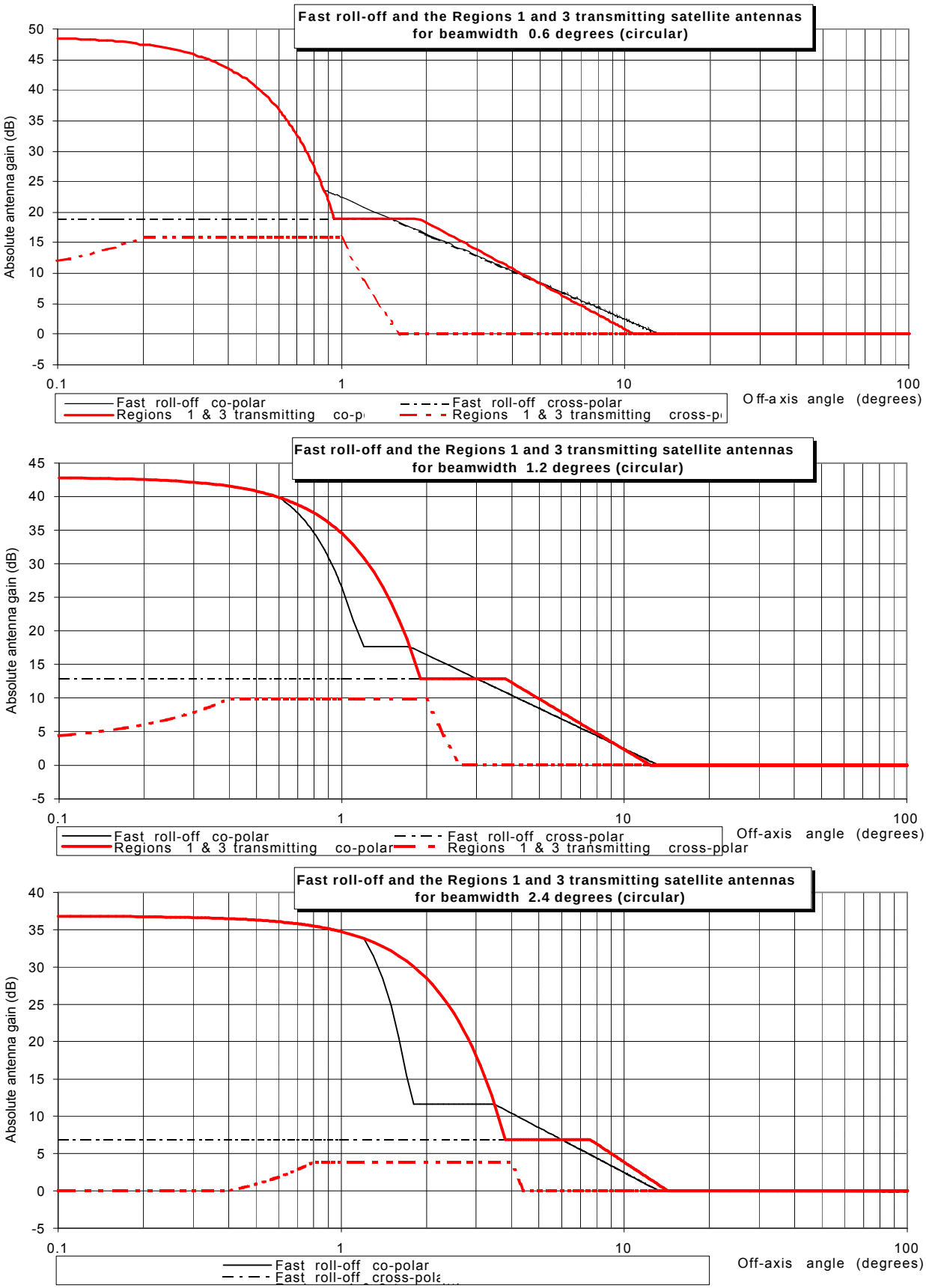

FIGURE 12

Comparison between fast roll-off and Regions 1 and 3 reference satellite transmitting antennas

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(MOD)

3.14 Satellite antenna pointing accuracy

3.14.1 The deviation of the antenna beam from its nominal pointing direction must not exceed a limit of 0.1° in any direction. Moreover, the angular rotation of a transmitting beam about its axis must not exceed a limit of ±1°; the limit on rotation is not necessary for beams of circular cross-section using circular polarization[1].

3.14.2 The following factors contribute to the total variation in the area on the surface of the Earth illuminated by the satellite beam:

– variations in satellite station-keeping;

– the variations caused by the pointing tolerances, which become more significant for coverage areas with low angles of elevation;

– the effect of the yaw error, which increases as the beam ellipse lengthens.

3.14.3 The effect of these possible variations should be assessed on a case-by-case basis, since their total effect on the area covered will vary with the geometry of the satellite beam, and it would not be reasonable to indicate a single value of shift in the area covered for all situations.

3.14.4 If linear polarization is used for an emission, yaw error makes a significant contribution to increasing the transmitted cross-polarized component; this increases the interference with other carriers which were originally cross-polarized with the emission in question.

NOC

3.15 Limitation of output power in the satellite transmitter

The output power of a space station transmitter in the broadcasting-satellite service must not rise by more than 0.25 dB relative to its nominal value throughout the life of the satellite.

---

[1] In the original WARC-77 BSS Plan for Regions 1 and 3, the angular rotation of a transmitting beam about its axis must not exceed a limit of ±2°. This limit is still applied for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

PINK PAGES

(MOD)

3.16 Power flux-density at edge of coverage area

The original 1977 BSS Plan used the following values[2] of the power flux-density at the edge of the coverage area exceeded for 99% of the worst month:

– 103 dB(W/m^2) for individual reception in Regions 1 and 3;

– 107 dB(W/m^2) for individual reception in Region 2 for 24 MHz, as well as for 27 MHz with respect to the cases mentioned in the footnote to Section 3.8.

– 111 dB(W/m^2) for community reception in Regions 1 and 3.

The 1997 revision of the Regions 1 and 3 Plan was generally based on a uniform value of the power flux-density at the edge of coverage area equal to -108 dB(W/m^2). This corresponds to the general reduction in e.i.r.p. of 5 dB referenced to the average e.i.r.p. of 63.9 dBW in the WARC-77 Plan.

NOC

3.17 Difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam

For planning, the absolute value of the difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam should preferably be 3 dB.

If the beam area is larger than the coverage area, the value will be less than 3 dB.

(MOD)

3.18 Use of energy dispersal

For planning, an energy dispersal value has been adopted which reduces by 22 dB the spectral power flux-density measured in a 4 kHz bandwidth in relation to that measured in the entire bandwidth: For frequency modulated television signals, this reduction corresponds to a peak-to-peak deviation of 600 kHz. Digital modulation can achieve appropriate energy dispersal by proper implementation of digital modulation (e.g. by applying spectrum scrambling and/or interleaving).

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[2] These values are still used for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

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ANNEX 3

(MOD)

Technical Data Used in Establishing the Provisions and Associated Plans and Which Should be Used for their Application[1]

1. DEFINITIONS

(MOD)

1.1 Feeder link

The term feeder link, as defined in No**S1.115** of the Radio Regulations, is further qualified to indicate a fixed-satellite service link in the frequency band 17.3 - 17.8 GHz in the Region 2 broadcasting-satellite service Plan and in the frequency bands 14.5 - 14.8 GHz for countries outside Europe, and 17.3 - 18.1 GHz in the Regions 1 and 3 Plan from any earth station within the feeder-link service area to the associated space station in the broadcasting-satellite service.

(MOD)

1.2 Feeder-link beam area

The area delineated by the intersection of the half-power beam of the satellite receiving antenna with the surface of the Earth.

NOC

1.3 Feeder-link service area

The area on the surface of the Earth within the feeder-link beam area within which the administration responsible for the service has the right to locate transmitting earth stations for the purpose of providing feeder links to broadcasting-satellite space stations.

NOC

1.4 Nominal orbital position

The longitude of a position in the geostationary-satellite orbit associated with a frequency assignment to a space station in a space radiocommunication service. The position is given in degrees from the Greenwich meridian.

---

[1] In revising this Annex at WRC-97, no changes were made to the technical data applicable to the Region 2 Plan. However, for all three Regions it should be noted that some of the parameters of networks proposed as modifications to the Plans may differ from the technical data presented herein.

PINK PAGES

NOC

1.5 Adjacent channel

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately higher or lower in frequency with respect to the reference channel.

(MOD)

1.6 Second adjacent channel

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately beyond either of the adjacent channels, with respect to the reference channel.

(MOD)

1.7 Feeder-link equivalent protection margin for Regions 1 and 3[1]

The feeder-link equivalent protection margin (M_u) is given by the formula:

$$M_u = -10 \log (10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10}) \text{ dB}$$

where:

M_1 is the value in dB of the protection margin for the same channel, i.e.:

$$M_1 = \left[\frac{\text{wanted power}}{\text{sum of the co-channel interfering powers}} \right] (\text{dB}) - \text{co-channel protection ratio (dB)}$$

[1] This quantity is used in the alternative formula for the overall equivalent protection margin given in Section 1.12 below. However, in certain cases (e.g. when the channel spacing and/or bandwidth are different from the values given in Sections 3.5 and 3.8 of Annex 5 to Appendix 30 (S30)), equivalent protection margins for the second adjacent channels may be used. Appropriate protection masks included in ITU-R Recommendations should be used if available. Until a relevant ITU-R Recommendation is incorporated in this Annex by reference, the Bureau will use the worst-case approach as adopted by the Radio Regulations Board.

M_2 and M_3 are the values in dB of the protection margin for the upper and lower adjacent channels respectively, i.e.:

$$M_2 = \left[\frac{\text{wanted power}}{\text{sum of the upper adjacent channel interfering powers}}\right](\text{dB}) - \begin{array}{l}\text{adjacent channel}\\ \text{protection ratio (dB)}\end{array}$$

$$M_3 = \left[\frac{\text{wanted power}}{\text{sum of the lower adjacent channel interfering powers}}\right](\text{dB}) - \begin{array}{l}\text{adjacent channel}\\ \text{protection ratio (dB)}\end{array}$$

All powers are evaluated at the receiver input. All protection ratios are given in Section 3.3 of this Annex.

(MOD)

1.8 Overall carrier-to-interference ratio

The overall carrier-to-interference ratio is the ratio of the wanted carrier power to the sum of all interfering RF powers in a given channel including both feeder links and down-links. The overall carrier-to-interference ratio due to interference from the given channel is calculated as the reciprocal of the sum of the reciprocals of the feeder-link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively[1].

(MOD)

1.9 Overall co-channel protection margin

The overall co-channel protection margin in a given channel is the difference in dB between the overall co-channel carrier-to-interference ratio and the co-channel protection ratio.

(MOD)

1.10 Overall adjacent channel protection margin

The overall adjacent channel protection margin is the difference, in dB, between the overall adjacent channel carrier-to-interference ratio and the adjacent channel protection ratio.

(MOD)

[1] In Region 2 there are a total of five overall carrier-to-interference ratios used in the analysis of the Plan, namely, co-channel, upper and lower adjacent channels and upper and lower second adjacent channels. In Regions 1 and 3, three ratios are used, namely, co-channel and upper and lower adjacent channels.

(MOD)

1.11 Overall second adjacent channel protection margin

The overall second adjacent channel protection margin is the difference in dB between the overall second adjacent channel carrier-to-interference ratio and the second adjacent channel protection ratio.

(MOD)

1.12 Overall equivalent protection margin

The overall equivalent protection margin M is given in dB by the expression[2] :

$$M = -10 \log \sum_{i=1}^{n} 10^{(-M_i/10)} \quad \text{(dB)}$$

where:

n is generally equal to 3 for Regions 1 and 3, n is equal to 5 for Region 2;

M_1 = overall co-channel protection margin, in dB (as defined in Section 1.9);

M_2, M_3 = overall adjacent channel protection margins for the upper and lower adjacent channels respectively, in dB (as defined in Section 1.10);

M_4, M_5[3] = overall second adjacent channel protection margins for the upper and lower second adjacent channels respectively, in dB (as defined in Section 1.11).

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent and second adjacent as well as co-channel interference sources have been included.

The following alternative formula for overall equivalent protection margin was used at WARC ORB-88 in developing the original feeder-link Plan for Regions 1 and 3. It may be used as a tool to assess the relative contributions of the feeder link and downlink to the overall equivalent protection margin defined above .

$$M = -10 \log \left(10^{-(M_u + R_{cu})/10} + 10^{-(M_d + R_{cd})/10} \right) - R_{co}$$

---

[2] This formula is also used to calculate the overall equivalent protection margin of the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

[3] M_4 and M_5 are applicable only for Region 2. However, in certain cases (e.g. when the channel spacing and/or bandwidth are different from the values given in Sections 3.5 and 3.8 of Annex 5 to Appendix 30 (S30)), these margins may also be used for Regions 1 and 3. Appropriate protection masks included in ITU-R Recommendations should be used if available. Until a relevant ITU-R Recommendation is incorporated in this Annex by reference, the Bureau will use the worst-case approach as adopted by the Radio Regulations Board.

where:

M_u = equivalent protection margin for the feeder link (as defined in Section 1.7 of this Annex);

M_d = equivalent protection margin for the down-link (as defined in Section 3.4, Annex 5 to Appendix **30 (S30)**);

R_{cu} = co-channel feeder-link protection ratio;

R_{cd} = co-channel down-link protection ratio;

R_{co} = co-channel overall protection ratio.

The values of the protection ratios used for the 1988 feeder-link Plan were as follows:

R_{cu} = 40 dB

R_{cd} = 31 dB

R_{co} = 30 dB

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent channels as well as co-channel interference sources have been included.

The corresponding values for analysing the 1997 feeder-link Plan are:

R_{cu} = 30 dB

R_{cd} = 24 dB

R_{co} = 23 dB

However, the latter values are restricted to the case of channels having the standard channel spacing and necessary bandwidth given in Section 3.5 and 3.8, respectively, of Annex 5 to Appendix 30.

2. RADIO PROPAGATION FACTORS

The propagation loss on an Earth-space path is equal to the free-space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month in Region 2. In Regions 1 and 3, the atmospheric absorption loss is not included.

NOC

2.1 Atmospheric absorption

For Region 2 (see Figure 2)

The loss due to atmospheric absorption (i.e. clear-sky attenuation) is given by:

$$A_a = \frac{92.20}{\cos\theta}\left(0.020F_o + 0.008\,\rho F_w\right) \text{ (dB)} \qquad \text{for } \theta < 5°$$

where:

$$F_o = \left\{ 24.88 \tan\theta + 0.339 \sqrt{1416.77 \tan^2\theta + 5.51} \right\}^{-1}$$

$$F_w = \left\{ 40.01 \tan\theta + 0.339 \sqrt{3663.79 \tan^2\theta + 5.51} \right\}^{-1}$$

and:

$$A_a = \frac{0.0478 + 0.0118\,\rho}{\sin\theta} \quad \text{(dB)} \qquad \text{for } \theta \geq 5°$$

where:

θ = the elevation angle (degrees),

ρ = the surface water vapour concentration, g/m^3, with

ρ = 10 g/m^3 for rain-climatic zones A to K and

ρ = 20 g/m^3 for rain-climatic zones M to P

For Regions 1 and 3 (see Figures 1 and 3 taken from Recommendation ITU-R P.837-1)

In the Regions 1 and 3 feeder-link Plan, the atmospheric absorption loss is not included for the calculation of margins.

(MOD)

2.2 Rain attenuation

The propagation model for feeder links using circularly polarized signals is based on the value of rain attenuation for 1% of the worst month.

Figures 1, 2 and 3 give the rain climatic zones for Regions 1, 2 and 3.

Figure 4 presents a plot of rain attenuation of circularly polarized signals exceeded for 1% of the worst month at 17.5 GHz as a function of earth station latitude and elevation angle for each of the rain climatic zones in Region 2.

For calculation, the following data are needed:

$R_{0.01}$: point rainfall rate for the location exceeded for 0.01% of an average year (mm/h)

h_o: the height above mean sea level of the earth station (km)

θ: the elevation angle (degrees)

f: frequency (GHz)

ζ: latitude of earth station (degrees).

Mean frequencies will be used for calculations for the frequency bands, i.e. 17.7 GHz and 14.65 GHz for Regions 1 and 3, 17.5 GHz for Region 2.

The calculation procedure used for the Region 2 feeder-link Plan and for the original 1988 Regions 1 and 3 feeder-link Plan consists of the following seven steps:

Step 1: The mean zero-degree isotherm height h_F is:

$$h_F = 5.1 - 2.15 \log\left[1 + 10^{\frac{(|\zeta| - 27)}{25}}\right] \quad \text{(km)}$$

Step 2: The rain height h_R is:

$$h_R = C \cdot h_F \quad \text{(km)}$$

where: $C = 0.6$ for $0° \le |\zeta| < 20°$

$C = 0.6 + 0.02\ (|\zeta| - 20)$ for $20° \le |\zeta| < 40°$

$C = 1$ for $|\zeta| \ge 40°$

Step 3: The slant-path length, L_s, below the rain height is:

$$L_s = \frac{2(h_R - h_o)}{\left[\sin^2\theta + 2\frac{(h_R - h_o)}{R_e}\right]^{1/2} + \sin\theta} \quad \text{(km)}$$

where:

R_e is the effective radius of the Earth (8500 km)

Step 4: The horizontal projection, L_G, of the slant-path is:

$$L_G = L_s \cos\theta \quad \text{(km)}$$

Step 5: The rain path reduction factor $r_{0.01}$, for 0.01% of the time is:

$$r_{0.01} = \frac{90}{90 + 4L_G}$$

Step 6: The specific attenuation γ_R is determined from:

$$\gamma_R = k\,(R_{0,01})^{\alpha} \quad \text{(dB/km)}$$

where:

$R_{0.01}$ is given in Table 5 for each rain climatic zone. The frequency dependent coefficients k and α are given in Table 6 and the rain climatic zones are given in Figures 1, 2 and 3 for Regions 1, 2 and 3.

TABLE 5

Rainfall intensity (R) for the rain climatic zones
(exceeded for 0.01% of an average year)

Rain climatic zone	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
Rainfall intensity (mm/h)	8	12	15	19	22	28	30	32	35	42	60	63	95	145	115

TABLE 6

Frequency dependent coefficients

Frequency (GHz)	k	α	
14.65	0.0327	1.149	For Regions 1 and 3
17.5	0.0521	1.114	For Region 2
17.7	0.0531	1.110	For Regions 1 and 3

Step 7: The attenuation exceeded for 1% of the worst month is:

$$A_{1\%} = 0.223\ \gamma_R\ L_s\ r_{0.01}\ \text{(dB) for Regions 1 and 3}$$

$$A_{1\%} = 0.21\ \gamma_R\ L_s\ r_{0.01}\ \text{(dB) for Region 2}$$

For calculation of the permissible increase in e.i.r.p. to overcome rain fading (power control, see 3.11.1 of this Annex) in the revised Regions 1 and 3 Plan (WRC-97), the same calculation procedure is used with the following changes to conform to Recommendation ITU-R P.618-5.

To calculate the rain height h_R, *steps 1 and 2* are replaced by:

$$h_R\ \textbf{(km)} = \begin{cases} 5 - 0.075\,(\zeta - 23) & \textbf{for}\ \ \zeta > 23^\circ \quad \textbf{Northern Hemisphere} \\ 5 & \textbf{for}\ \ 0^\circ \le \zeta \le 23^\circ \quad \textbf{Northern Hemisphere} \\ 5 & \textbf{for}\ \ 0^\circ \ge \zeta \ge -21^\circ \quad \textbf{Southern Hemisphere} \\ 5 + 0.1\,(\xi + 21) & \textbf{for}\ \ -71^\circ \le \zeta < -21^\circ \quad \textbf{Southern Hemisphere} \\ 0 & \textbf{for}\ \ \zeta < -71^\circ \quad \textbf{Southern Hemisphere} \end{cases}$$

Steps 3 and 4 remain the same. However, to calculate the rain path reduction factor $r_{0.01}$, for 0.01% of the time, the equation of Step 5 is replaced by:

$$r_{0.01} = \frac{1}{1 + L_G / L_0}$$

where:

$L_o = 35 \exp(-0.015\ R_{o.01})$

and $R_{o.01}$ is given in Table 5 for each rain climatic zone.

Step 6 remains the same except the frequency dependant coefficients k and α shall be obtained from Recommendation ITU-R P.838.

Step 7 should be replaced as follows:

$$\frac{A_p}{A_{0.01}} = 0.12\ p^{-(0.546\ +\ 0.043 \log p)}$$

where:

$$p(\%) = 0.30\, p_w(\%)^{1.15} \qquad \text{(Rec. ITU-R P.841)}$$

p is the average annual time percentage of excess corresponding to desired worst-month time percentage of excess p_w.

NOC

2.3 Rain attenuation limit

In the analysis of the Plan for Region 2, a maximum rain attenuation on the feeder link of 13 dB was considered assuming that other means would be used at the implementation stage to compensate for larger rain attenuation on the feeder link.

In the analysis of the Regions 1 and 3 Plan, no rain attenuation is included in the margins.

(MOD)

2.4 Depolarization

Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For the feeder link, the XPD ratio, in dB, not exceeded for 1% of the worst month, is given by:

$$\text{XPD} = 30 \log f - 40 \log (\cos \theta) - V \log A_p \text{ (dB) for } 5° \le \theta \le 60°$$

where: $V = 20$ for 14.5 - 14.8 GHz

and $V = 23$ for 17.3 - 18.1 GHz

where: A_p: co-polar rain attenuation exceeded for 1% of the worst month

f: frequency (GHz)

θ: elevation angle (degrees)

To calculate the depolarization value to be used for power control in the Regions 1 and 3 Plan, the following algorithm, which was obtained from ITU-R Recommendation P.618-5, shall be used:

To calculate long-term statistics of depolarization from rain attenuation statistics the following parameters are needed:

A_p: rain attenuation (dB) exceeded for the required percentage of time p, for the path in question, commonly called co-polar attenuation, CPA

τ: tilt angle of the linearly polarized electric field vector with respect to the horizontal (for circular polarization use $\tau = 45°$)

f: frequency (GHz)

θ: path elevation angle (degrees).

The method described below to calculate cross-polarization discrimination (XPD) statistics from rain attenuation statistics for the same path is valid for 8 GHz $\leq f \leq$ 35 GHz and $\theta \leq 60°$.

Step 1: Calculate the frequency-dependent term:

$$C_f = 30 \log f \quad \text{for } 8 \leq f \leq 35 \text{ GHz}$$

Step 2: Calculate the rain attenuation dependent term:

$$C_A = V(f) \log A_p$$

where:

$$V(f) = 12.8\, f^{0.19} \quad \text{for} \quad 8 \leq f \leq 20 \text{ GHz}$$

$$V(f) = 22.6 \quad \text{for} \quad 20 < f \leq 35 \text{ GHz}$$

Step 3: Calculate the polarization improvement factor:

$$C_\tau = -10 \log [1 - 0.484 (1 + \cos 4\tau)]$$

The improvement factor $C_\tau = 0$ for $\tau = 45°$ and reaches a maximum value of 15 dB for $\tau = 0°$ or 90°.

Step 4: Calculate the elevation angle-dependent term:

$$C_\theta = -40 \log (\cos \theta) \quad \text{for } \theta \leq 60°$$

Step 5: Calculate the canting angle dependent term:

$$C_\sigma = 0.0052\, \sigma^2$$

σ is the effective standard deviation of the raindrop canting angle distribution, expressed in degrees; σ takes the value 0°, 5°, 10° and 15° for 1%, 0.1%, 0.01% and 0.001% of the time, respectively.

Step 6: Calculate rain XPD not exceeded for p% of the time:

$$XPD_{rain} = C_f - C_A + C_\tau + C_\theta + C_\sigma \quad \text{dB}$$

Step 7: Calculate the ice crystal dependent term:

$$C_{ice} = XPD_{rain} \times (0.3 + 0.1 \log p)/2 \quad \text{dB}$$

Step 8: Calculate the XPD not exceeded for p% of the time, including the effects of ice:

$$XPD_p = XPD_{rain} - C_{ice} \quad \text{dB}$$

For values of θ greater than 60°, use $\theta = 60°$ in the above equations.

FIGURE 2
(See Table 1)

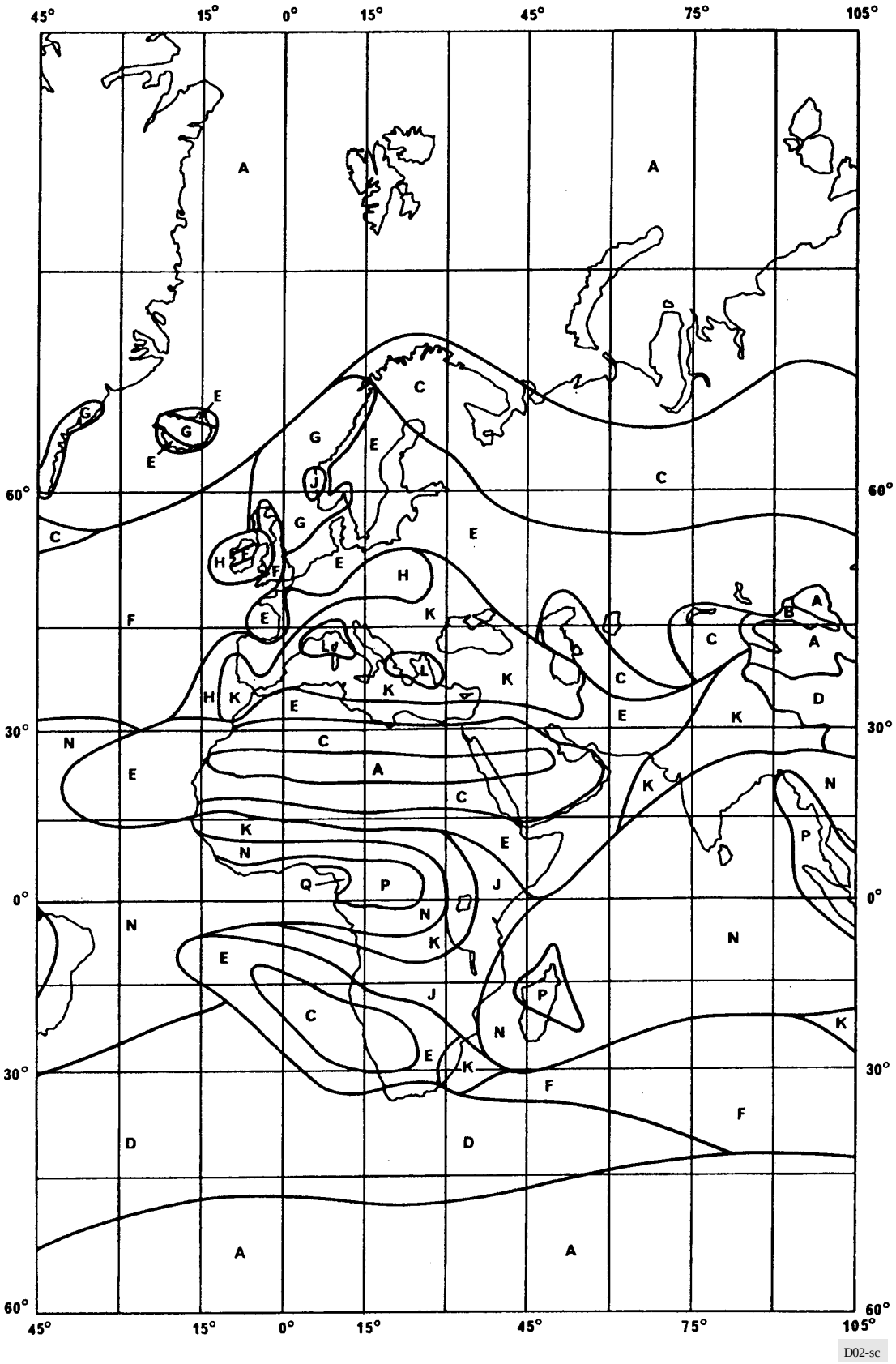

FIGURE 1
Rain climatic zones for Regions 1 and 3 between longitudes 45° W and 105° E

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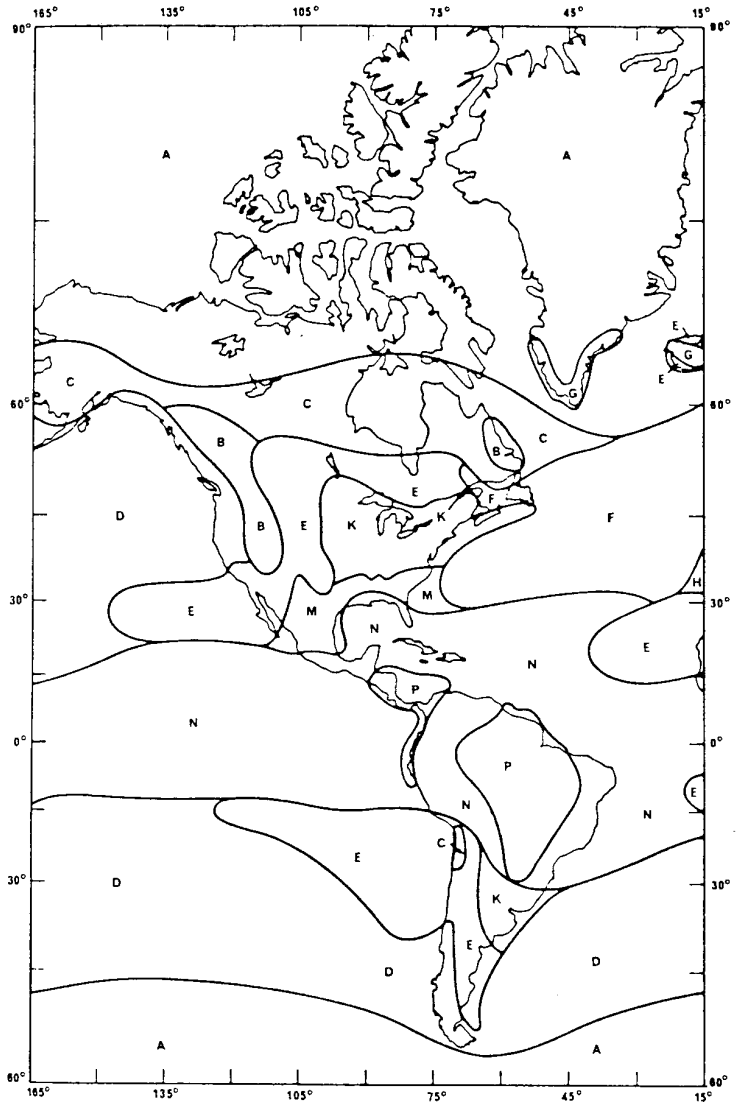

FIGURE 2

Rain climatic zones (Regions 2)

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FIGURE 3
(See Table 1)

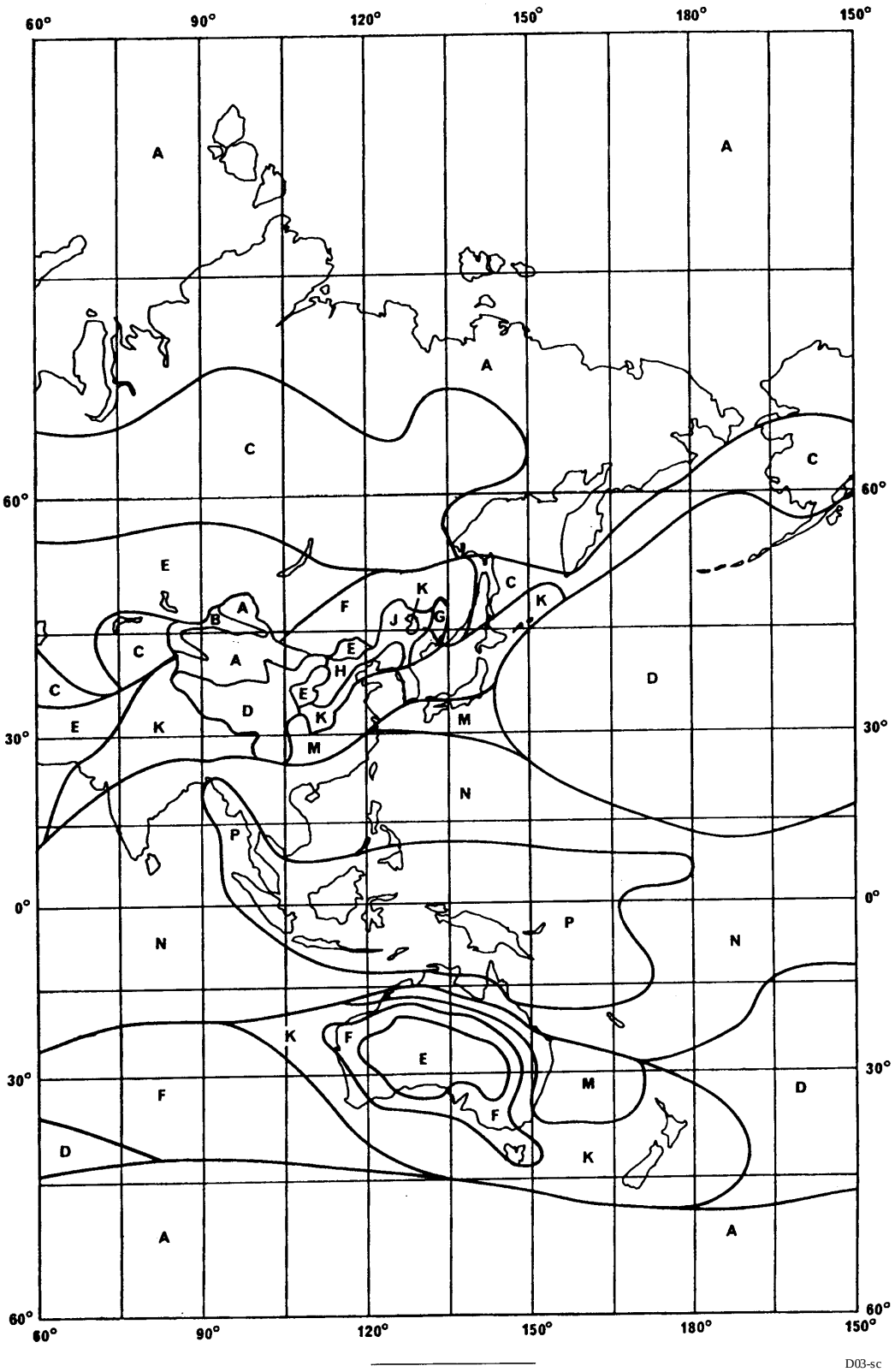

FIGURE 3

Rain climatic zones for Regions 1 and 3 between longitudes 60° E and 150° W

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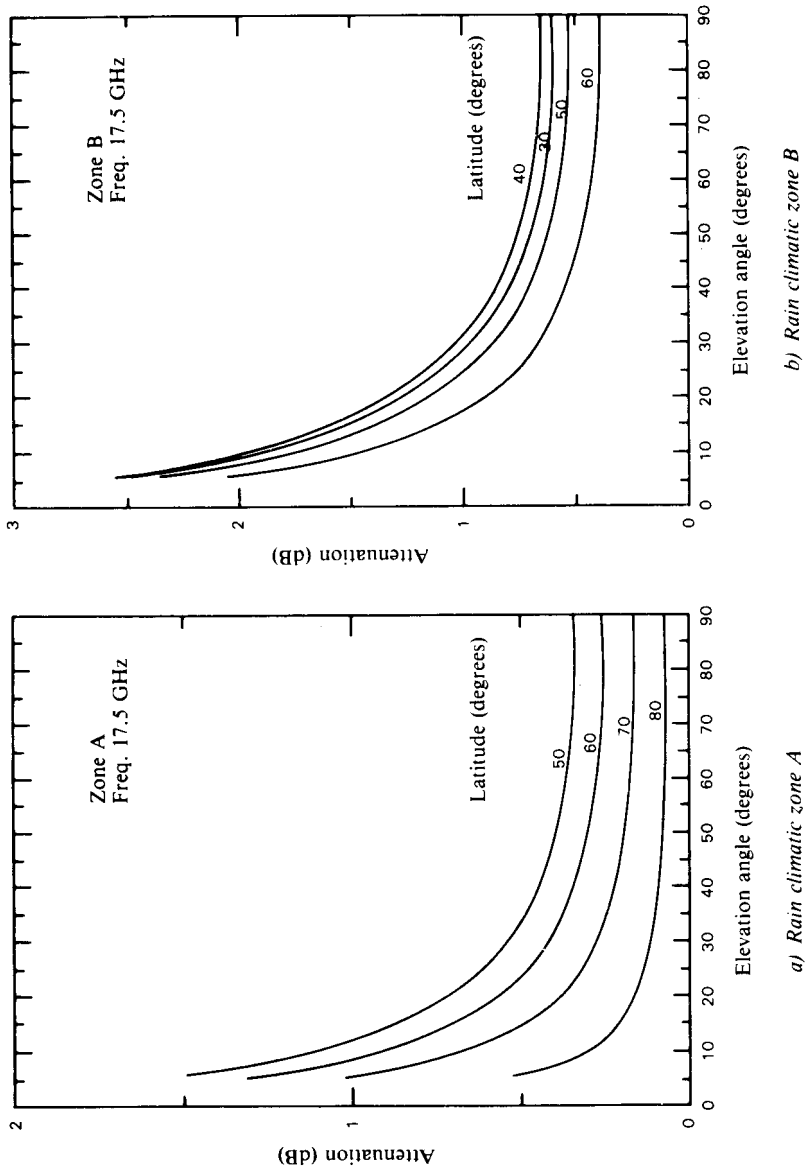
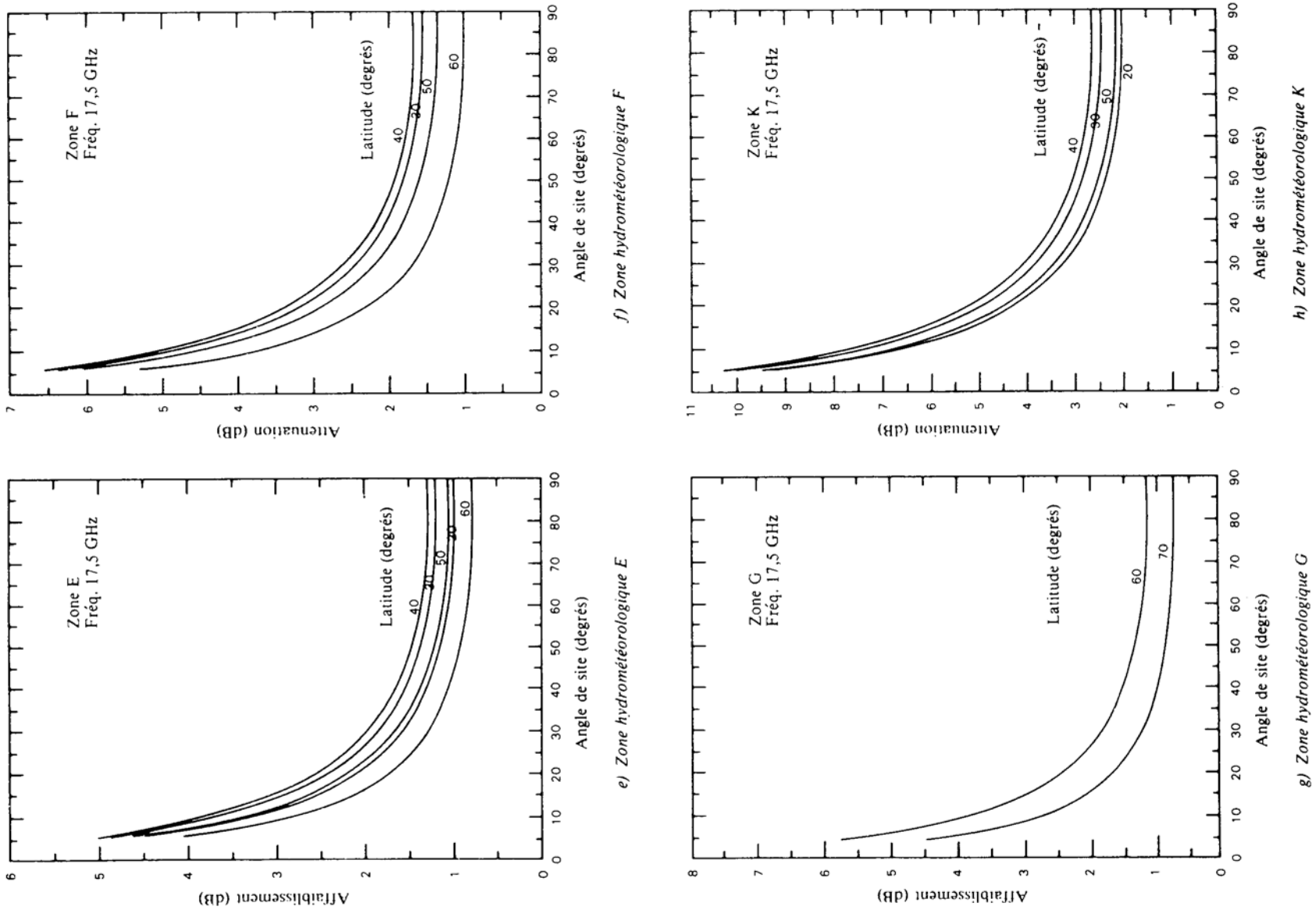


FIGURE 4

Rain attenuation values exceeded for 1% of the worst month (sea level) for Region 2 rain climatic zones

d04_04-sc



f) Zone hydrométéorologique F

h) Zone hydrométéorologique K

e) Zone hydrométéorologique E

g) Zone hydrométéorologique G

FIGURE 4 *(suite)*

Valeurs d'affaiblissement dû aux précipitations dépassées pendant 1% du mois le plus défavorable (au niveau de la mer) dans les zones hydrométéorologiques de la Région 2

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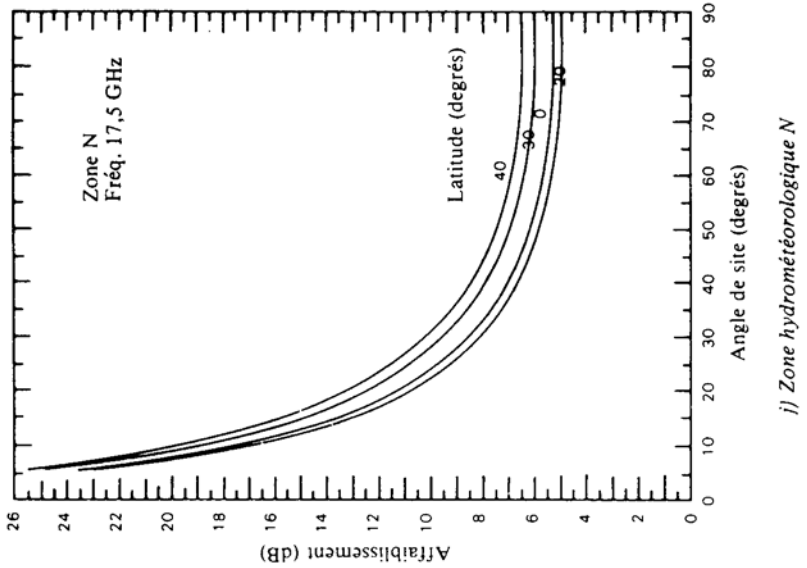
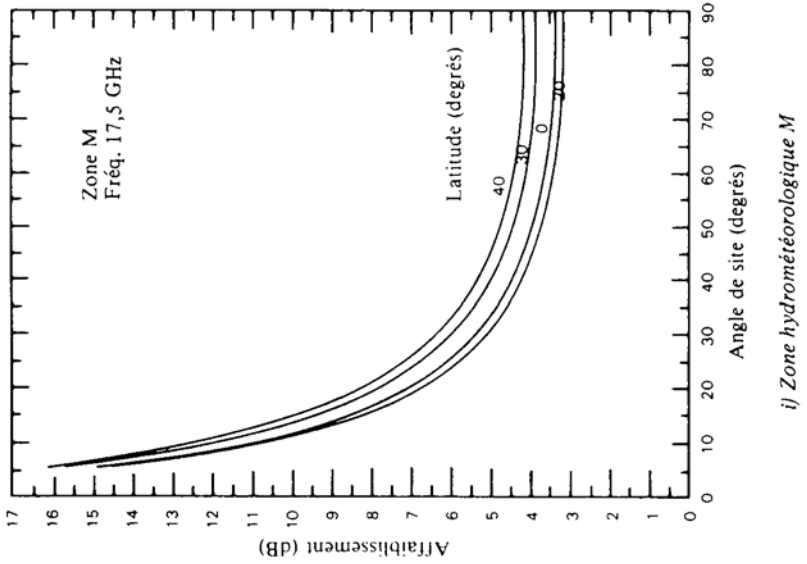
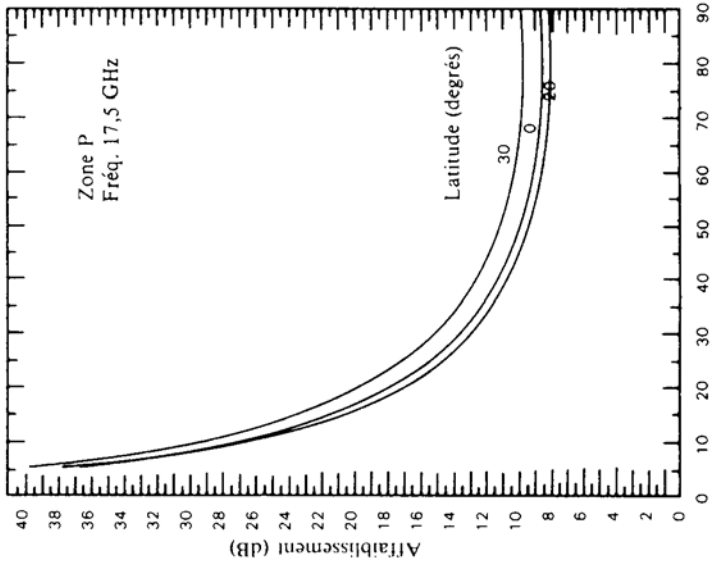


j) Zone hydrométéorologique N



i) Zone hydrométéorologique M



k) Zone hydrométéorologique P

FIGURE 4 *(fin)*

Valeurs d'affaiblissement dû aux précipitations dépassées pendant 1% du mois le plus défavorable (au niveau de la mer) dans les zones hydrométéorologiques de la Région 2

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(MOD)

2.5 Procedure for calculating the carrier-to-interference ratio at a space station receiver input

In Region 2, the calculation of the feeder-link carrier-to-interference ratio (exceeded for 99% of the worst month) at a space station receiver input used to obtain the overall equivalent protection margin at a test point assumes a rain attenuation value not exceeded for 99% of the worst month on the wanted feeder-link path. For the interfering feeder-link signal path, clear sky propagation (i.e. including atmospheric absorption only) is assumed.

In Regions 1 and 3, the calculation of the feeder-link carrier-to- interference ratio at a space station receiver input used to obtain the feeder-link equivalent protection margin at a test point assumes free space conditions on the wanted feeder-link path and on the interfering feeder-link path.

3. BASIC TECHNICAL CHARACTERISTICS FOR REGIONS 1 AND 3

(MOD)

3.1 Translation frequency and guard bands

a) 17 GHz feeder links

The feeder-link Plan generally uses a frequency translation of 5.6 GHz between the 17 GHz feeder-link channels and the 12 GHz down-link channels. Other values of the translation frequency may be used, provided that the corresponding channels have been assigned to the space station of the administration concerned.

With the value of frequency translation between the feeder-link frequency band (17.3 - 18.1 GHz in Regions 1 and 3) and the down-link frequency band (11.7 - 12.5 GHz in Region 1 and 11.7 - 12.2 GHz in Region 3), the guardbands specified in Section 3.9 of Annex 5 to Appendix 30 (S30) for the downlink Plan result in corresponding guardbands bandwidths of 11 MHz at the upper and 14 MHz at the lower feeder-link band edges. These feeder-link guardbands may be used for transmissions in the space operation service.

b) 14 GHz feeder links

As the maximum available bandwidth for the feeder-link band 14.5 - 14.8 GHz is only 300 MHz divided into fourteen 27 MHz channels against 800 MHz (40 channels) and 500 MHz (24 channels) in the down-link Plan for Regions 1 and 3 respectively, several translation frequencies must be considered to allow any channel in the Plan to be used. Consequently, a particular feeder-link channel has been assigned to several BSS Plan channels simultaneously.

Generally, the translation frequencies from the feeder-link channels are:

2797.82 MHz to down-link BSS channels 1 to 14

2529.30 MHz to down-link BSS channels 15 to 28

2260.78 MHz to down-link BSS channels 29 to 40

The guardband bandwidths are 11.80 MHz at the lower band edge and 11.86 MHz at the upper band edge.

c) Frequency translation rules

Specific rules for selecting appropriate frequency translations are given in Sections 6.2.1.2.2 and 6.2.1.3.3 (pages 95 and 96) of the WARC ORB-85 Report to WARC ORB-88. These rules permit the derivation of simple-to-use tables that define the channel translations that were avoided in revising the Regions 1 and 3 feeder-link Plan for both the 14 GHz and 17 GHz bands (see Tables 7 and 8).

TABLE 7

14.5 - 14.8 GHz/11.7 - 12.5 GHz channel translations that should be avoided as far as possible according to WARC ORB-85 frequency translation rules

14 GHz uplink channel number	**Downlink channel numbers to be avoided as far as possible**				
1	7	8	9	19	20
2	8	9	10	20	21
3	9	10	11	21	22
4	10	11	12	22	23
5	11	12	13	23	24
6	12	13	14	24	25
7	13	14	15	25	26
8	14	15	16	26	27
9	15	16	17	27	28
10	16	17	18	28	29
11	17	18	19	29	30
12	18	19	20	30	31
13	19	20	21	31	32
14	20	21	22	32	33

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TABLE 8

17.3 - 18.1 GHz/11.7 - 12.5 GHz channel translations that should be avoided according to WARC ORB-85 frequency translation rules

17 GHz uplink channel number	Downlink channel numbers to be avoided																														
1			10	11	12	13	14	15	16	17	18	19	20	21	22																
2			11	12	13	14	15	16	17	18	19	20	21	22	23																
3			12	13	14	15	16	17	18	19	20	21	22	23	24																
4			13	14	15	16	17	18	19	20	21	22	23	24	25																
5			14	15	16	17	18	19	20	21	22	23	24	25	26																
6			15	16	17	18	19	20	21	22	23	24	25	26	27																
7			16	17	18	19	20	21	22	23	24	25	26	27	28																
8			17	18	19	20	21	22	23	24	25	26	27	28	29																
9			18	19	20	21	22	23	24	25	26	27	28	29	30																
10	1			19	20	21	22	23	24	25	26	27	28	29	30	31															
11	1	2			20	21	22	23	24	25	26	27	28	29	30	31	32														
12	1	2	3			21	22	23	24	25	26	27	28	29	30	31	32	33													
13	1	2	3	4			22	23	24	25	26	27	28	29	30	31	32	33	34												
14	1	2	3	4	5			23	24	25	26	27	28	29	30	31	32	33	34	35											
15	1	2	3	4	5	6			24	25	26	27	28	29	30	31	32	33	34	35	36										
16	1	2	3	4	5	6	7			25	26	27	28	29	30	31	32	33	34	35	36	37									
17	1	2	3	4	5	6	7	8			26	27	28	29	30	31	32	33	34	35	36	37	38								
18	1	2	3	4	5	6	7	8	9			27	28	29	30	31	32	33	34	35	36	37	38	39							
19	1	2	3	4	5	6	7	8	9	10			28	29	30	31	32	33	34	35	36	37	38	39	40						
20	1	2	3	4	5	6	7	8	9	10	11			29	30	31	32	33	34	35	36	37	38	39	40						
21	1	2	3	4	5	6	7	8	9	10	11	12			30	31	32	33	34	35	36	37	38	39	40						
22	1	2	3	4	5	6	7	8	9	10	11	12	13			31	32	33	34	35	36	37	38	39	40						
23	1	2	3	4	5	6	7	8	9	10	11	12	13	14			32	33	34	35	36	37	38	39	40						
24		2	3	4	5	6	7	8	9	10	11	12	13	14	15			33	34	35	36	37	38	39	40						
25			3	4	5	6	7	8	9	10	11	12	13	14	15	16			34	35	36	37	38	39	40						
26				4	5	6	7	8	9	10	11	12	13	14	15	16	17			35	36	37	38	39	40						
27					5	6	7	8	9	10	11	12	13	14	15	16	17	18			36	37	38	39	40						
28						6	7	8	9	10	11	12	13	14	15	16	17	18	19			37	38	39	40						
29							7	8	9	10	11	12	13	14	15	16	17	18	19	20			38	39	40						
30								8	9	10	11	12	13	14	15	16	17	18	19	20	21			39	40						
31									9	10	11	12	13	14	15	16	17	18	19	20	21	22			40						
32										10	11	12	13	14	15	16	17	18	19	20	21	22	23								
33											11	12	13	14	15	16	17	18	19	20	21	22	23	24							
34												12	13	14	15	16	17	18	19	20	21	22	23	24	25						
35													13	14	15	16	17	18	19	20	21	22	23	24	25	26					
36														14	15	16	17	18	19	20	21	22	23	24	25	26	27				
37															15	16	17	18	19	20	21	22	23	24	25	26	27	28			
38																16	17	18	19	20	21	22	23	24	25	26	27	28	29		
39																	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
40																		18	19	20	21	22	23	24	25	26	27	28	29	30	31

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NOC

3.2 Carrier-to-noise ratio

Section 3.3 of Annex 5 to Appendix **30 (S30)** provides guidance for planning and the basis for the evaluation of the carrier-to-noise ratios of the feeder-link and down-link Plans.

As guidance for planning, the reduction in quality in the down-link due to thermal noise in the feeder link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio of approximately 0.5 dB not exceeded for 99% of the worst month.

For down-links, as indicated in Appendix **30 (S30)**, the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, adopted a *C/N* value of 14.5 dB for 99% of the worst month at the edge of the service area. The required feeder link *C/N* is 24 dB for 99% of the worst month, at the edge of the service area, to produce an overall *C/N* performance of 14 dB.

(MOD)

3.3 Protection ratios

For planning in Regions 1 and 3 at WARC ORB-88, the following protection ratios were applied for the purpose of calculating the feeder-link equivalent protection margins[1]:

– co-channel protection ratio = 40 dB;

– adjacent channel protection ratio = 21 dB.

The method for the calculation of the feeder-link equivalent protection margin is given in Section 1.7 of this Annex.

For revising the Regions 1 and 3 Plan at WRC-97, the corresponding values of aggregate protection ratio that were used to calculate the feeder link equivalent protection margins that appear in the alternative formula for overall equivalent protection margin given in Section 1.12 of this Annex, are specified in Recommendation ITU-R BO.1297 as follows:

– co-channel protection ratio = 30 dB

– adjacent channel protection ratio = 22 dB

---

[1] These protection ratio values may be used for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

However, it should be noted, that the revision by WRC-97 of the Regions 1 and 3 Plan, was in accordance with Recommendation 521 (WRC-95), based on "simultaneous planning of feeder link and downlink with calculation of overall equivalent protection margins" (as defined in Section 1.11 of Annex 5 to Appendix 30 (S30) and in Section 1.12 above) using the following values of aggregate protection ratio:

– co-channel 23 dB

– adjacent channel 15 dB

Recommendation 521 also specified that for the revision of the Regions 1 and 3 Plan no overall co-channel single entry C/I should be lower than 28 dB.

Nevertheless, for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997, the overall equivalent protection margins were calculated using a co-channel overall protection ratio of 30 dB and lower and upper overall adjacent channel protection ratios of 14 dB.

Revision of the Regions 1 and 3 Plan at WRC-97 was generally based on a set of reference parameters such as the average e.i.r.p., the reference earth station transmitting antenna, all test points placed within -3 dB contour, bandwidth 27 MHz and the predetermined value of C/N.

Protection masks and associated calculation methods for interference into broadcast-satellite systems involving digital emissions are given in Recommendation ITU-R BO.1293.

(MOD)

3.4 Feeder-link e.i.r.p.

The level of e.i.r.p. of each feeder link is specified in Article 9A of this Appendix.

The level of e.i.r.p. specified in the Plan can only be exceeded under certain conditions explained in Section 3.11 of this Annex (see also Article 5, paragraph 5.1.1 of this Appendix).

3.5 Transmitting antenna

MOD

3.5.1 Antenna diameter

The feeder-link Plan is based on an antenna diameter of 5 metres for the band 17.3 - 18.1 GHz and 6 metres for the band 14.5 - 14.8 GHz.

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For all antenna diameters including antennas smaller than 5[1] metres for the 17.3 - 18.1 GHz band and 6 metres for the 14.5 - 14.8 GHz band, the off-axis e.i.r.p. shall not exceed the limits indicated by the curve A in Figure A of Section 3.5.3 of this Annex for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997 and by the curve A' of Figure A for other assignments.

NOC

3.5.2 On-axis gain

The on-axis gain for the 5-metre antenna at17.3 - 18.1 GHz and for the 6-metre antenna at 14.5 to 14.8 GHz is taken as 57 dBi.

(MOD)

3.5.3 Off-axis e.i.r.p. of transmitting antennas

The co-polar and cross-polar off-axis e.i.r.p. values used for the original 1988 feeder-link Plan in Regions 1 and 3 are shown by curves A and B respectively in Figure A.

The corresponding off-axis e.i.r.p. values used for planning at WRC-97 are shown by curves A' and B' in Figure A as specified in Recommendation ITU-R BO.1295.

(MOD)

3.5.4 Pointing accuracy

The Plan has been developed to accommodate a loss in gain of 1 dB due to earth station antenna mis-pointing.

The deviation of the antenna beam from its nominal pointing direction must not exceed a limit of 0.1^0 in any direction. Moreover, the angular rotation of the receiving beam about its axis must not exceed a limit of $\pm 1^0$; the limit on rotation is not necessary for beams of circular cross section using circular polarization.

---

[1] This antenna pattern is used for in the revision of the Regions 1 and 3 Plan for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

MOD

3.6 Transmitter power

The maximum transmitter power delivered to the input of the antenna of the feeder-link earth station per 27 MHz television channel shall be such as to ensure that the off-axis e.i.r.p. envelope in Section 3.5.3 is not exceeded except under certain conditions specified in Section 3.11 of this Annex.

3.7 Satellite receiving antenna

MOD

3.7.1 Cross-section of receiving antenna beam

Planning has generally been based on beams of elliptical or circular cross-section. When the assignments are implemented, or when the Plan is modified, administrations may use non-elliptical (shaped beams) as described in Annex 2 of this Appendix.

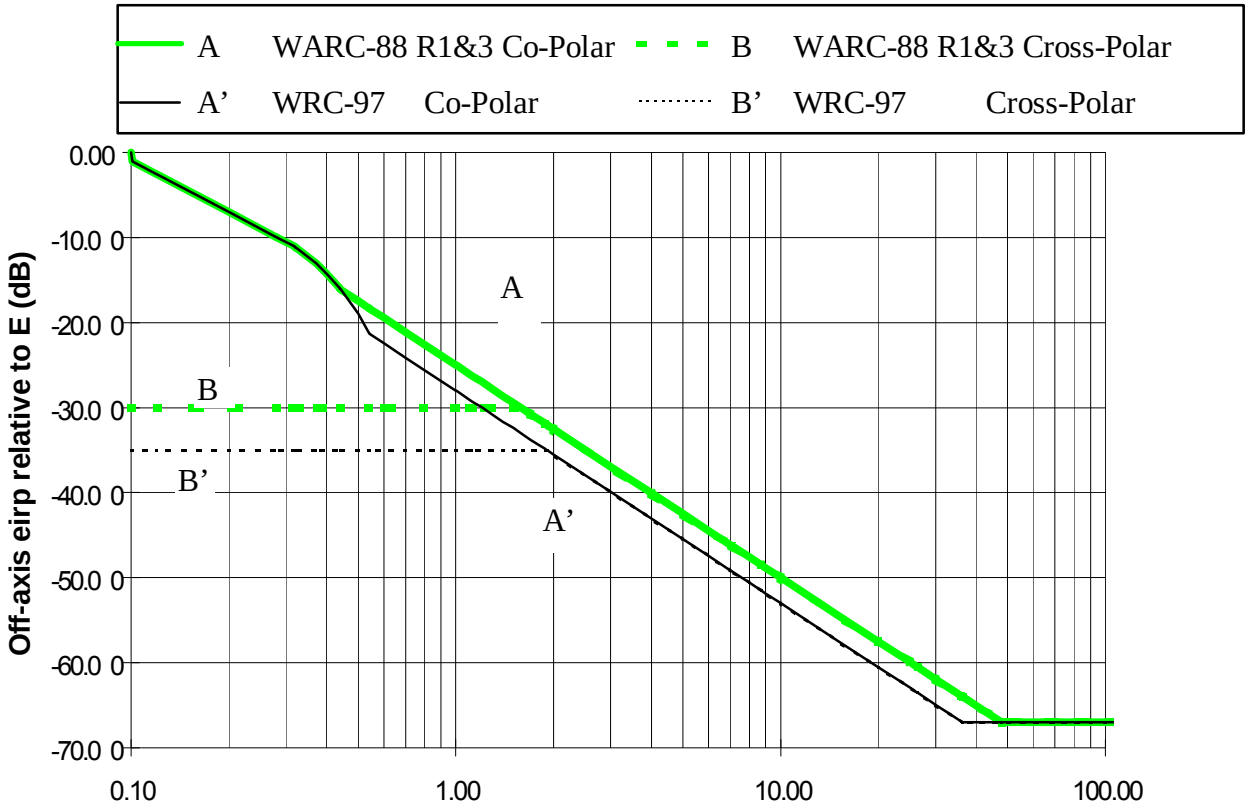

FIGURE A
Earth station e.i.r.p. at angles off antenna axis

Co-polar component in dBW:

Curve A (WARC-88)							**Curve A' (WRC-97)**						
E	for	0^o	$\leq$	θ	$\leq$	0.1^o	E	for	$0°$	$\leq$	θ	$\leq$	$0.1°$
E - 21 - 20 Log θ	for	0.1^o	$<$	θ	$\leq$	0.32^o	E - 21 - 20 Log θ	for	0.1^o	$<$	θ	$\leq$	0.32^o
E - 5.7 - 53.2 θ^2	for	0.32^o	$<$	θ	$\leq$	0.44^o	E - 5.7 - 53.2 θ^2	for	0.32^o	$<$	θ	$\leq$	0.54^o
E - 25 - 25 Log θ	for	0.44^o	$<$	θ	$\leq$	48^o	E - 28 - 25 Log θ	for	0.54^o	$<$	θ	$\leq$	36.31^o
E - 67	for	48^o	$<$	θ			E - 67	for	36.31^o	$<$	θ		

Cross-polar component in dBW:

Curve B (WARC-88)							**Curve B' (WRC-97)**						
E - 30	for	0^o	$\leq$	θ	$\leq$	1.6^o	E - 35	for	0^o	$\leq$	θ	$\leq$	1.91
E - 25 - 25 Log θ	for	1.6^o	$<$	θ	$\leq$	48^o	E - 28 - 25 Log θ	for	1.91^o	$<$	θ	$\leq$	36.31^o
E - 67	for	48^o	$<$	θ			E - 67	for	36.31^o	$<$	θ		

where

E is the earth station e.i.r.p. on the antenna axis (dBW);

θ is the off-axis angle referred to the main lobe axis (degrees).

For planning purpose at WRC-97, an antenna diameter of 5 metres for the band 17.3 - 18.1 GHz and 6 metres for the band 14.5 - 14.8 GHz were assumed.

The on-axis gain for the 5 metres antenna at 17.3 - 18.1 GHz and for the 6 metres antenna at 14.5 to 14.8 GHz is taken as 57 dBi.

If the cross-section of the receiving antenna beam is elliptical, the effective beamwidth ϕ_0 is a function of the angle of rotation q between the plane containing the satellite and the major axis of the beam cross-section and the plane in which the beamwidth is required.

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression:

$$G_m = 27\,843/ab$$

where:

a and b are the angles (in degrees) subtended at the satellite by the major and minor axes of the elliptical cross-section of the beam. An antenna efficiency of 55% is assumed.

NOC

3.7.2 Minimum beamwidth

A minimum value of 0.6° for the half-power beamwidth of the receiving antenna has been used for planning.

(MOD)

3.7.3 Reference patterns

The reference patterns for the co-polar and cross-polar components of the satellite receiving antenna used for planning at WARC-88 are given by curve A and B respectively in Figure B.[1]

The corresponding curves used for replanning at WRC-97 are given by curves A' and B' in Figure B, as specified in Recommendation ITU-R BO.1296.

In some cases, to reduce co-polar interference, the pattern shown in Figure C is used; this use is indicated in the Plan by note 1. This pattern is derived from an antenna producing an elliptical beam with fast roll-off in the main lobe assuming a "beamlet" beamwidth of 0.6°. Three curves for different values of φ_0 are shown as examples.

Regions 1 and 3 Plan.]

(MOD)

3.7.4 Pointing accuracy

The deviation of the receiving antenna beam from its nominal pointing direction must not exceed 0.1° in any direction. Moreover, the angular rotation of the receiving beam about its axis must not exceed ±1°; this limit is not necessary for beams of circular cross-section using circular polarization.

(MOD)

3.8 System noise temperature

The satellite system noise temperature values generally used in the Plan at WARC ORB-88 are 1800 K for 17 GHz and 1500 K for 14 GHz[1]. For revising the Regions 1 and 3 Plan at WRC-97 these values are 900 K for 17 GHz and 750 K for 14 GHz.

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[1] This antenna pattern is used in the revision of the Regions 1 and 3 Plan for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 Octobe 1997.

[1] These system temperature values are still used for the assignments notified, which are in conformity with this Appendix, brought into use, and for which the date of bringing into use has been confirmed to the Bureau before 27 October 1997.

(MOD)

3.9 Polarization

In Regions 1 and 3, circular polarization was normally used for the purpose of planning the feeder links.

For the definitions of the terms "direct and indirect polarization", see Section 3.2.3 of Annex 5 to Appendix **30 (S30)**.

For the planning of the broadcasting-satellite service, circular polarization is generally used. However for implementation of assignments in the Regions 1 and 3 Plan, linear polarization may also be used subject to the successful application of the modification procedure of Article 4. Linear polarization is defined in Recommendation ITU-R BO.1212. This Recommendation should be used when analysing linearly polarized signal.

NOC

3.10 Automatic gain control

The down-link Plan was based on constantsatellite output power. However, the feeder-link Plan does not take account of the effect of automatic gain control on board satellites. Up to 15 dB of automatic gain control is permitted, subject to no increase in interference to other satellite systems.

NOC

3.11 Power control

In Regions 1 and 3, a permitted increase which may be used to overcome rain fading for each assignment is included in the Plan.

In the calculation, in cases where satellites do not use common or adjacent channels cross-polarized to each other, the maximum permissible e.i.r.p. increase, which must not exceed 10 dB, corresponds to the amount of rain attenuation which occurs on the interfering feeder link.

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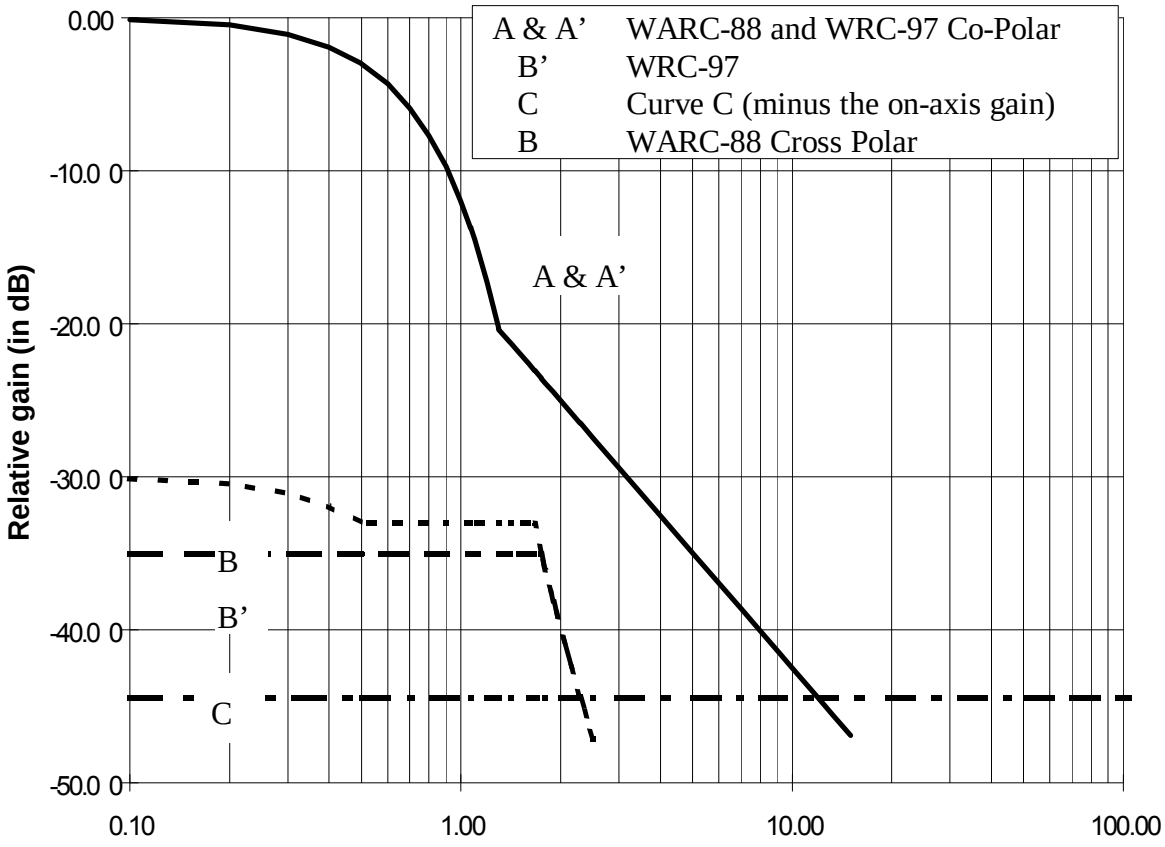

FIGURE B

Receiving space station circularly polarized antenna co-polar and cross-polar reference patterns for elliptical beams for planning in Regions 1 and 3

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Formulas for the curves of Figure B

Co-polar relative gain (dB):
Curve A (WARC-88) and Curve A' (WRC-97)

$G = -12\ (\varphi/\varphi_o)^2$ for $0 \leq (\varphi/\varphi_o) < 1.3$

$G = -17.5 - 25\ \text{Log}\ (\varphi/\varphi_o)$ for $1.3 \leq (\varphi/\varphi_o)$

After intersection with Curve C, as Curve C

Cross-polar relative gain (dB):

Curve B (WARC-88)

$G = -30 - 12\ (\varphi/\varphi_o)^2$ for $0 \leq \varphi/\varphi_o \leq 0.5$

$G = -33$ for $0.5 < \varphi/\varphi_o \leq 1.67$

$G = 40 - 40\ \text{Log}\ (\varphi/\varphi_o - 1)$ for $1.67 < \varphi/\varphi_o$

After intersection with Curve C, as Curve C

Curve B' (WRC-97)

$G = -35$ for $0 \leq (\varphi/\varphi_o) < 1.75$

$G = -40 - 40\ \text{Log}\ ((\varphi/\varphi_o)-1)$ for $1.75 \leq (\varphi/\varphi_o)$

After intersection with Curve C, as Curve C

Curve C: Minus the on-axis gain (Curve C in the above figure illustrates the particular case of an antenna with an on-axis gain of 44.44 dBi)

where: φ = off-axis angle (degrees)

φ_0 = cross-sectional half-power beamwidth in the direction of interest (degrees).

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression in section 3.7.1 above.

PINK PAGES

NOC

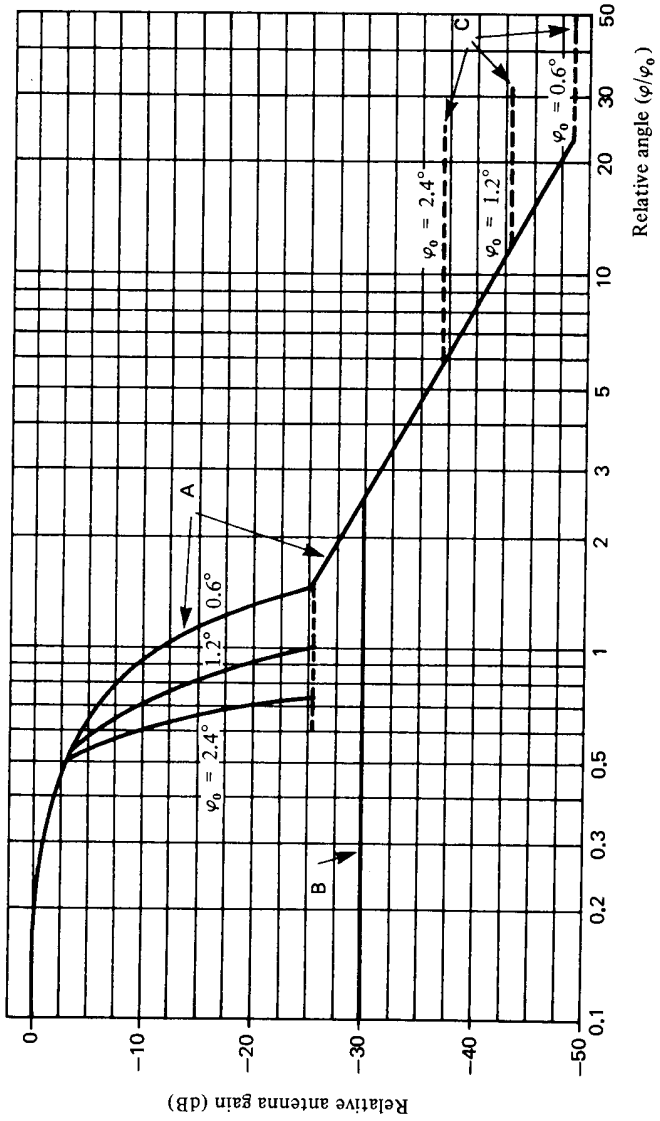

FIGURE C

Reference patterns for co-polar and cross-polar components for satellite receiving antennas with fast roll-off in the main beam for Regions 1 and 3

PINK PAGES

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\varphi/\varphi_0)^2$	for $0 \le \varphi/\varphi_0 \le 0.5$
$-33.33\ \varphi_0^2\ (\varphi/\varphi_0 - x)^2$	for $0.5 < \varphi/\varphi_0 \le \frac{0.87}{\varphi_0} + x$
-25.23	for $\frac{0.87}{\varphi_0} + x < \varphi/\varphi_0 \le 1.45$
$-(22 + 20 \log (\varphi/\varphi_0))$	for $\varphi/\varphi_0 > 1.45$

After intersection with Curve C: as Curve C.

Curve B: Cross-polar component (dB relative to main beam gain)

-30	for $0 \le \varphi/\varphi_0 < 2.51$

After intersection with curve A: as curve A.

Curve C: Minus the on-axis gain (Curves A and C represent examples for three antennas having different values of φ_0 as labelled in Figure C. The on-axis gains of these antennas are 37, 43 and 49 dBi, respectively).

where:

φ = off-axis angle (degrees);

φ_0 = dimension of the minimum ellipse fitted around the feeder-link service area in the direction of interest (degrees);

$x = 0.5\left(1 - \frac{0.6}{\varphi_0}\right)$

(MOD)

3.11.1 Method for determination of the increase in e.i.r.p. during rain attenuation for an assignment over the Plan value

Condition to be observed

The increase in e.i.r.p. of the assignment studied must not entail an impairment of more than 0.5 dB of the feeder-link equivalent protection margin of any other assignment to any other administration.

PINK PAGES

Calculation method

(MOD)

Step.1 Compile a list of all assignments of other administrations (A, B, C, . . .) in the same orbital position and the positions within 6° (or further if no station is found within 6° arc) liable to suffer interference from the assignment studied.

MOD

Step.2 Calculate the feeder-link equivalent protection margin of assignment A in free space conditions, taking account of all interference sources affecting A at the worst test points, namely:

– for assignment A: the point corresponding to the minimum *C/N* ratio;

– for each interference source affecting A: the point corresponding to the maximum interference power affecting A.

Step.3 Introduce for the assignment studied the rain attenuation for 0.1% of the worst month and the corresponding rain depolarization value.

Step.4 Recalculate the feeder-link equivalent protection margin of assignment A at the worst test points, namely:

– for assignment A: the test point used in Step 2 above;

– for the assignment studied: the test point corresponding to the maximum interference power affecting A.

At this stage, the e.i.r.p. of the assignment studied is that contained in the Plan.

Step.5 Increase the e.i.r.p. of the assignment studied by 0.1 dB and recalculate the equivalent up-link margin of A as in Step 4 above.

Step.6 Repeat the operation of Step 5above until the equivalent up-link margin of assignment A is impaired by more than 0.5 dB in relation to the value found under Step 2 above, or until the e.i.r.p. increase exceeds 10 dB or the rain attenuation (see Step 3). Adopt the e.i.r.p. increase in the preceding iteration step.

Step.7 Repeat the operations in Step 2 to Step 6 above, considering the assignments B, C, . . .

Step.8 Adopt the smallest of the increases in e.i.r.p. found under Step 6 above for the various assignments A, B, C, . . .

NOC

3.11.2 Propagation model

For the calculation of rain attenuation for 0.1% of the worst month, the model described in Section 2.2 of this Annex should be used. It shall be assumed that the 0.1% value is 3.3 times the 1% value in dB.

Rain depolarization shall be calculated on the basis of attenuation, using the method described in Section 2.4 of this Annex.

NOC

3.11.3 Variation of power with rain attenuation

The instantaneous increase in power to overcome rain attenuation must not exceed the bounds given by the characteristics shown in Figure 5.

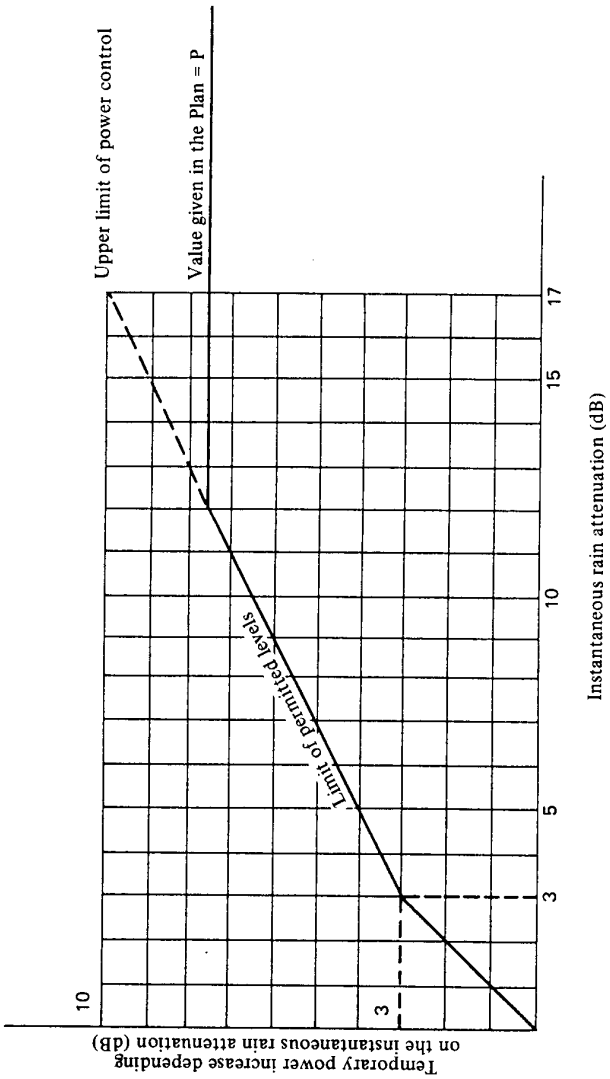

FIGURE 5

Characteristic for up-link power control

P: The value of permitted increase given in the Plan, or calculated by the IFRB, which varies for each assignment. The upper limit of this value is 10 dB.

MOD

3.11.4 Procedures

An administration wishing to introduce power control may use a value not exceeding that given inArticle 9A of this Appendix or it may request, where this is possible, the use of a higher value for a given earth station location. Inthis latter case, it shall request the Bureau to calculate the maximum permissible value for that site. The administration shall provide the Bureau with the coordinates of the station, the proposed antenna characteristics, including the off-axis co-polar and cross-polar characteristics, and the rain climatic zone.

The Bureau shall calculate the permissible increase in power using the method described in Section 3.11.1.

The Bureau shall communicate the results of the calculations to the requesting administrations as well as to those administrations whose feeder-link equivalent protection margin is reduced.

In any case, the permitted increase in e.i.r.p. above that given in the Plan shall not exceed 10 dB.

In the event of modifications to the Plan, the Bureau shall recalculate the valuefopower control for the assignment subject to the modification and insert the appropriate value for that assignment in of the Plan. A modification to the Plan shall not require the adjustment of the values of permissible power increase of other assignments in the Plan.

SUP

3.12 Site diversity

(MOD)

3.12 Depolarization compensation

The Plan is developed without the use of depolarization compensation. Depolarization compensation is permitted only to the extent that interference to other satellites does not increase by more than 0.5 dB[1] relative to that calculated in the feeder-link Plan.

NOC

3.13 Amplitude-modulation to phase-modulation conversion

The degradation caused by AM to PM conversion was taken into account when calculating the carrier-to-noise ratio of the feeder link. A value of 2.0 dB was allowed.

---

[1] This margin has to be shared between power control effects and depolarization compensation effects when both are involved (see Section 3.11).

(MOD)

3.14 Orbit positions

The Plan is generally based on the use of regular arrangements of 6°from 37° W to 29° E and from 38° E to 160° W. The orbital positions are thosegiven in the Plan plus the 116° E, 164° E, 176° E, 178° W, 172° W, 166° W, 33.5° W, 30° W, 34° E, 36° E, 79.8° E, 80.2° E positions.

The Regions 1 and 3 Plan is also based on the grouping of space stations in nominal orbital positions of ±0.2° from the centre of the cluster.

Generally, the space stations are shown in the Plan in the centre of the cluster. However, in some cases, the space stations are shown at the edge of the cluster. Administrations may locate satellites within a cluster at any orbital position within that cluster, provided they obtain the agreement of other administrations having assignments to space stations in the same cluster.

ADD

3.15 Satellite station keeping

Space stations in the broadcasting-satellite service must be maintained in position with an accuracy equal to or better than $\pm 0.1^{o}$ in the E-W direction. For such space stations, the maintenance of tolerance ±0.1° in the N-S direction is recommended but is not a requirement.

NOC

4 Basic technical characteristics for Region 2

PLENARY MEETING

NOTE BY THE CHAIRMAN OF COMMITTEE 4

RESOLUTION No. 506 (Rev.~~Orb-88~~ WRC-97)

Use by Space Stations in the Broadcasting-Satellite Service Operating in the 12 GHz Frequency Bands Allocated to the Broadcasting-Satellite Service of the Geostationary-Satellite Orbit and No Other

The World ~~Administrative~~ Radiocommunication Conference ~~on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Second Session – Geneva, 1988~~ 1997),

considering

a) that a Plan designating frequency assignments in the above-mentioned frequency bands and positions in the geostationary-satellite orbit has been adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, for Regions 1 and 3;

b) that a similar Plan for Region 2 has been adopted by the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2, Geneva, 1983;

c) that the Plans referred to in *considering a)* and *b)* above were consolidated in Appendix ~~**30 (Orb-85)**~~ **S30** to the Radio Regulations at the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985 (Orb-85);

d) that the Plans in Appendices S30 and S30A for Regions 1 and 3 were modified by this Conference,

e ~~*d*~~*)* that the operation of the broadcasting-satellite service ~~space radiocommunication services~~ in the frequency bands concerned in orbits other than the geostationary-satellite orbit might ~~would~~ be incompatible with the plans referred to in *a)* ~~and~~ *b)* and *d)* above;

resolves

that administrations shall ensure that their space stations in the broadcasting-satellite service in these frequency bands are operated in the geostationary-satellite orbit and no other.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 396-E
20 November 1997
Original: English

GENEVA, 27 OCTOBER - 21 NOVEMBER 1997

PLENARY MEETING

NOTE BY THE CHAIRMAN OF COMMITTEE 4

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resolves

that administrations shall ensure that their space stations in the broadcasting-satellite service in these frequency bands are operated in the geostationary-satellite orbit and no other.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 397-E
16 December 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

TWELFTH PLENARY MEETING

Thursday, 20 November 1997, at 1310 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Twelfth series of texts submitted by the Editorial Committee for first reading (B.12)	366
2	Texts submitted by the Editorial Committee for second reading	366
3	Thirteenth series of texts submitted by the Editorial Committee for first reading (B.13)	369
4	Texts submitted by the Editorial Committee for second reading	369
5	Fourteenth series of texts submitted by the Editorial Committee for first reading (B.14)	371
6	Texts submitted by the Editorial Committee for second reading	371
7	Fifteenth series of texts submitted by the Editorial Committee for first reading (B.15)	361; DT/147
8	Texts submitted by the Editorial Committee for second reading	361
9	Sixteenth series of texts submitted by the Editorial Committee (B.16)	359(Rev.1), 372
10	Texts submitted by the Editorial Committee for second reading	372
11	Consideration of Resolution 506 (Rev.Orb-88)	-

1 Twelfth series of texts submitted by the Editorial Committee for first reading (B.12) (Document 366)

1.1 The **Chairman** invited the meeting to consider the Working Group PLEN-1 text taken from Document 340.

Resolution 26 (Rev.WRC-97)

1.2 The **Chairman of Working Group PLEN-1** explained that, despite extensive debate in the Working Group, it had not been possible to reach agreement on the texts between square brackets in *further resolves* 1 b) and *further resolves* 3; it was hoped that a solution could be found in the Plenary. Responding to a request by the **delegate of Saudi Arabia** for clarification of the meaning of the words in square brackets in *further resolves* 1 b), he said that the purpose of the text was to specify that the frequency bands in respect of which the desired additions or modifications were being applied were those reflected in the decisions of the conference concerned. A difference of opinion had arisen in the Working Group in that connection, some delegations taking the view that the effect of such a provision would be to oblige administrations to await the decisions of the Conference before looking at the footnotes.

1.3 The **delegate of Syria** proposed that the text in square brackets in *further resolves* 1 b) be deleted, as its retention would indeed imply that footnotes could not be reviewed until after decisions had been taken.

1.4 The **delegate of Russia**, supported by the **delegates of Sweden** and the **Netherlands**, said that although several frequency bands might be reviewed by a conference, changes would not necessarily be made to all of them. The purpose of the text in *further resolves* 1 b) was to allow any country to propose an amendment to a footnote that referred to a frequency band for which the conditions of use had been modified at a conference; it did not mean that delegations had to wait until the end of the conference before putting forward amendments. If a conference decided to make no change to a given frequency band, it followed that the footnotes relating to that band would not be subject to change. He wondered whether a rewording which reflected that interpretation of the text would be acceptable to the delegate of Syria.

1.5 The **delegate of Germany** said that although he was satisfied with the text as it stood he could agree to the suggestion by the delegate of Russia.

1.6 The **Chairman** suggested replacing the text in square brackets in *further resolves* 1 b) by the words "and in respect of which a decision to change has been taken".

1.7 The **delegate of Syria** said he could accept that suggestion provided the words "has been taken" were replaced by "is expected", in order to allow delegations time to submit additions or modifications to footnotes in writing, as was the requirement, prior to a decision being taken on the related frequency band.

1.8 The **Chairman**, observing that the word "expected" might be difficult to interpret, appealed to the delegate of Syria to accept his suggestion.

1.9 The **delegate of Syria**, supported by the **delegate of Saudi Arabia**, said that, while he felt obliged to accede to the Chairman's request, he considered it to be the fundamental right of an administration to submit footnotes. Although neither the Constitution nor the Convention prevented administrations from exercising that right, that would be the effect if the proposed text were accepted. It would be regrettable if the Conference were to choose to pursue such a course of action.

1.10 The **delegate of Algeria** endorsed the views expressed by the **delegate of Syria**. The **delegate of Jordan** said that he would prefer the text in square brackets to be deleted: if that were not done he would be obliged to support the position taken by the **delegates of Syria** and **Saudi Arabia**.

1.11 Subject to the reservations entered by the delegations of Syria, Saudi Arabia, Algeria and Jordan, the text of *further resolves* 1 b), as amended, was **approved**.

1.12 Having been invited by the **Chairman** to comment on the text of *further resolves* 3, the **Legal Adviser** suggested that the deadline for the submission of footnotes should be four months, in line with the general rule for the submission of proposals to a conference set out in No. 316 of the Convention (Geneva, 1992). The suggestion was supported by the **delegates of Germany** and **the United States**.

1.13 The **delegate of Turkey** supported by the **delegate of Syria**, observed that in practice administrations found it difficult to adhere to the four-month deadline; indeed, many of them continued to submit proposals after the work of the conference had begun. He suggested that the text in square brackets be replaced by a phrase which referred to the submission of proposals before the closing date for the submission of documents.

1.14 The **delegate of Russia** observed that *further resolves* 3 related to only one of a number of options offered in the Resolution for the submission of proposals concerning footnotes. The standard procedures outlined in *further resolves* 1 and 2 had been in place for a number of years, whereas *further resolves* 3 had been developed in order to allow proposals for footnotes not covered by the agenda of the conference to be considered by it. His delegation, which originally had not been in favour of that approach, had accepted the text of *further resolves* 3 in a spirit of compromise and on the understanding that the proposals in question would be submitted in good time so that administrations could study them prior to the conference.

1.15 The **delegate of the Czech Republic** was in favour of retaining *further resolves* 3 in order to cover cases where it was deemed necessary to modify a footnote which did not relate to an item on the conference agenda, in the interests of harmonization and more efficient use of the radio-frequency spectrum.

1.16 The **delegate of the Netherlands** recalled that the text of *further resolves* 3 represented a carefully balanced compromise between the requirements of those delegations wishing to submit proposals for footnotes in the period between two conferences and those emphasizing the need for adequate time to study such proposals. He was in favour of retaining the text with the inclusion of the four-month deadline suggested by the Legal Adviser.

1.17 The **delegate of Algeria** said that his delegation reserved its position in respect of *resolves* 3 as it called in question the sovereignty of Member States and was thus counter to the spirit of the Union.

1.18 The **Chairman** suggested, in order to accommodate the various concerns expressed, that the text in square brackets in *further resolves* 3 should be amended to read "and which have been submitted to the ITU as stipulated in No. 316 of the Convention", and that the square brackets should be deleted.

1.19 It was so **agreed**.

1.20 Resolution 26 (Rev.WRC-97) as a whole, as amended, was **approved**.

1.21 The **Chairman** invited the meeting to consider the Committee 4 texts taken from Document 333.

Article S5 (MOD S5.134, SUP S5.135, SUP S5.148)

1.22 Responding to a query by **the delegate of Niger**, the **Chairman of Committee 4** explained that No. S5.134 had been modified by adding a single sentence referring to access to the bands concerned. That provision had been moved from No. S5.135, which it was therefore proposed to delete. The date of entry into force of the provision given in No. S5.136, namely 1 April 2007, remained unchanged.

1.23 The **delegate of Syria**, recalling that his delegation had entered a reservation in respect of the use of SSB emissions objected to MOD S5.134 as it still limited the use of the bands in question to such emissions.

1.24 MOD S5.134, SUP S5.135 and SUP S5.148 were **approved**.

SUP Article S12A, Resolution 517 (Rev.WRC-97) and Annex

1.25 Approved.

Resolution COM4-6 (WRC-97) and Annex and Descriptions 1 to 4

1.26 The **delegate of Cuba** requested that the Spanish-language version of the last operative paragraph be aligned on the English text.

1.27 The **delegate of Syria** proposed that the phrase "*requests the Director of the Telecommunication Development Bureau*" be replaced by "*requests the Secretary-General*", as requests to BDT did not come within the purview of the Conference.

1.28 It was so **agreed**.

1.29 Resolution COM4-6 (WRC-97), as amended and subject to the editorial changes requested by the delegate of Cuba, was **approved** together with its Annex and Descriptions 1 to 4.

1.30 The **Legal Adviser**, referring to No. 127 of the Convention (Geneva, 1992), which stated that the Conference could "include, in its decisions, instructions or requests, as appropriate, to the Secretary-General and the Sectors of the Union", said on behalf of the Secretary-General that he did not recommend addressing the last operative paragraph of the Resolution to the Secretary-General as the provision of the related financial resources would lie with BDT.

1.31 The **delegate of Syria** observed that the Legal Adviser should only take the floor when invited to do so and should not speak on behalf of the Secretary-General. The **delegate of Saudi Arabia**, supporting that view, said that the Legal Adviser should not give his opinion on essential issues of substance which were still the subject of discussion by administrations and which, as in the present case, might have budgetary implications.

1.32 The **Chairman**, after expressing the hope that the Legal Adviser would intervene occasionally to give advice, reminded the meeting that Resolution COM4-6 (WRC-97) had been approved with the Syrian amendment.

Resolution COM4-14 (WRC-97)

1.33 **Approved**, subject to a correction of typographical error in the English text of *considering* c).

Resolution COM4-15 (WRC-97)

1.34 Approved.

Resolution COM4-16 (WRC-97)

1.35 The **delegate of Niger**, observing that certain small delegations such as his own had been unable to participate fully in the work of Committee 4, expressed concern over the date after which the additional HF bands allocated by WARC-92 to the broadcasting service would no longer be protected. Although *considering* b) indicated that the fixed and mobile services in use in each of those bands would be protected until 1 April 2007, *instructs the Director of the Radiocommunication Bureau* 1 indicated that the bands in question would be shared. As his Administration encountered problems in respect of the band below 10 MHz, he was not in favour of bringing the date forward in any way. The **delegate of Burkina Faso** endorsed those comments. The **Chairman of Working Group PLEN-2** and the **delegate of South Africa** offered to discuss and clarify the Resolution informally with the delegate of Niger. The **delegate of Niger** accepted that offer.

1.36 The **delegate of Syria** proposed that "CPM-99" in both *instructs* paragraphs should be placed in square brackets pending the decision to be taken with regard to CPM.

1.37 The **delegate of Mexico** proposed that "*instructs the Director of the Radiocommunication Bureau*" should be amended to read "*resolves to instruct the Director of the Radiocommunication Bureau*".

1.38 Resolution COM4-16 (WRC-97), as amended by the delegates of Syria and Mexico, was **approved**.

Recommendation 503 (Rev.WRC-97), Recommendation 515 (Rev.WRC-97), Recommendation COM4-A (WRC-97)

1.39 Approved.

1.40 The twelfth series of texts submitted by the Editorial Committee (B.12) (Document 366), as a whole, as amended, was **approved** on first reading.

2 Texts submitted by the Editorial Committee for second reading (Document 366)

2.1 At the suggestion of the **Chairman of Committee 6**, the texts in Document 366 were submitted for second reading.

2.2 The **Chairman** drew attention to the amendments that had been approved during the first reading.

2.3 The texts submitted by the Editorial Committee in Document 366, as a whole, as amended during the first reading, were **approved** on second reading.

3 Thirteenth series of texts submitted by the Editorial Committee for first reading (B.13) (Document 369)

3.1 The **Chairman** invited the meeting to consider the Committee 4 texts taken from Document 351.

Annex 2 to Appendix 30, Annex 2 to Appendix 30A

3.2 The **Chairman of Committee 4** drew attention to Document 296(Add.1) which had already been approved on first reading and which contained a number of modifications, two of which affected Document 369: § 12 d) in Annex 2 to Appendix 30 and § 3.4 d) in Annex 2 to Appendix 30A should be deleted as they had already been approved in the content of Document 296(Add.1).

3.3 Annex 2 to Appendix 30 and Annex 2 to Appendix 30A, as thus amended, were **approved**.

4 Texts submitted by the Editorial Committee for second reading (Document 369)

4.1 At the suggestion of the **Chairman of Committee 6**, the texts in Document 369 were submitted for second reading.

4.2 The **Chairman** drew attention to the amendments that had been approved during the first reading.

4.3 The texts submitted by the Editorial Committee in Document 369, as a whole, as amended during the first reading, were **approved** on second reading.

5 Fourteenth series of texts submitted by the Editorial Committee for first reading (B.14) (Document 371)

5.1 The **Chairman** invited the meeting to consider the Committee 4 texts taken from Document 366.

5.2 The **representative of BR** said that in examining Document 371, the meeting should take into account Document 318 containing the results of compatibility studies for the draft revised Appendices 30/30A Plans for Regions 1 and 3 and the Region 2 Plan. He then drew attention to a number of typographical and editorial corrections to be made in Document 371.

Appendix S30 (Article 11)

Section 11.1

5.3 **Approved**.

Section 11.2

5.4 The **delegate of Russia**, referring to the last part of § 5 c), which concerned assignments that were in the process of coordination under No. 1060 of the Radio Regulations or § 7.2.1 of Appendix 30 prior to 27 October 1997, observed that coordination between the numerous FSS systems was very difficult, which meant that the planned assignments for new countries in the 12.2 to 12.5 GHz range might not even be feasible. The **delegates of Kazakstan**, **Belarus** and **Kyrgyzstan** endorsed those comments.

5.5 In reply to the **delegate of Slovenia**, who asked why Austria had not been included in the right-hand column of Table 2 against beam name SVN14800, the **representative of BR** said that Austria was not mentioned in that connection in Document 318 containing the results of compatibility studies, because it uses the same BSS channel in Austria and according to the principle of Article 7 and Annex 4 of Appendix 30 it will not be identified as affected.

5.6 The **Chairman of Committee 4**, referring to Table 3, suggested that, for further clarity, a footnote be inserted to the effect that the satellite systems of the administrations listed in the right-hand column could affect the beams of the administrations referred to in the left-hand column headed "Beam name".

5.7 It was so **agreed**.

5.8 The **delegate of Viet Nam** entered a reservation concerning beam VTN32500, which received interference from INTELSAT. The **representative of BR** drew the attention of Viet Nam to the content of Note 7 on page 4 of Volume II in which that Administration should only accept interference from INTELSAT if the latter's assignments are recorded in the Master Register.

5.9 Section 11.2, as amended, was **approved**.

Section 11.3

5.10 The **Chairman** invited the meeting to consider the table showing correspondence between channel numbers and assigned frequencies and the accompanying tables on pages 13 to 52 of the document.

5.11 The **delegate of Russia** read out a number of minor editorial corrections to the tables, which he would transmit to the Radiocommunication Bureau.

5.12 Subject to those corrections, Section 11.3 was **approved**.

Appendix S30A (Article 9A)

Section 9A.1

5.13 Approved.

Section 9A.2

5.14 The text for symbols in the "Remarks" column of the Plan and Table 1A were **approved**.

5.15 The **delegate of Germany**, referring to Table 1B, requested BR to explain the entry "USA/IT" in the right-hand column against beam D2-21600.

5.16 The **representative of BR** said that it seemed appropriate at the present juncture to provide additional clarification concerning the Plan. He referred to Document 318, which set out the basis for the calculations and the results of compatibility analyses for Appendices S30 and S30A. It had been agreed in Committee 4 that the interference burden would be shared between both sides, namely, the broadcasting-satellite service and other services.

5.17 The Plan was based on the principle of overall equivalent protection margin (OEPM) and information currently available to the Bureau, not all of which had yet been processed. After the Conference, therefore, BR would have to do the following: first, split the relevant file into two files for EPM feeder links and EPM downlinks; second, update the reference situation for both the uplink and the downlink; third, take into account several other networks that were exclusively uplink or downlink and had not been entered in the Plan on account of its OEPM basis. Once all superfluous beams had been eliminated, BR would examine the list of remaining beams and calculate coordination requirements. The results would be published in a circular-letter to the membership. However, the exact coordination requirements would only become clear once the replies to the circular-letter had been received within the stipulated deadline. On the basis of those replies, the

Bureau would draw up a table on the definitive coordination situation, for submission to WRC-99. The aim of the current Plan was to give an overall picture of the situation. It was therefore provisional only with respect to the definitive coordination requirements with other services involved.

5.18 The **delegate of Germany** said that since the status of the beam in question had been altered, his delegation needed more time to verify the situation. It therefore reserved its position with regard to the validity of Note 7 against the entries relating to beam D2-21600 in Appendix S30A, and requested the Bureau to clarify the situation.*

5.19 On that understanding, Table 1B was **approved**.

5.20 Tables 2A and 2B were **approved**.

5.21 The **delegate of the Republic of Korea**, referring to the table on page 61 of the document, sought clarification regarding the entry in the "Remarks" column for the beams KOR KO11201D and KOR KOR11201, which seemed to conflict with the entry in the "Status" column. The **representative of BR** replied that the apparent contradiction was a consequence of the Republic of Korea having changed one of its test points in the latter stages of planning. The problem could be resolved if the Republic of Korea either reverted to its original test point or changed the location of the relevant earth station.

5.22 The **delegate of Bulgaria** said she would welcome more information on the additional networks to be entered in the revised Plan; in particular, she wondered whether they might cause any unacceptable interference to the assignments already entered. The **representative of BR** explained that the networks concerned were RADIOSAT-6 and RADIOSAT-7. As they affected the uplink only, they had not been included in the OEPM-based Plan. However, in the light of the decisions of the Conference, they would now be examined by BR with respect to the feeder link EPM Plan. If they were in accordance with the revised Plan, they would be included in it. The BR's preliminary assessment was that they should not cause any particular problems. Nevertheless, the situation would be verified and administrations would be informed accordingly.

5.23 The **delegate of Syria** said that in the application of Article 4 modifications, certain networks had been given negative OEPM margins far lower than zero. The same negative values should be used in any future replanning exercise, and no improvement for additional protection should be sought. Furthermore, every conference was sovereign. Many of the decisions on which the Plan in Document 371 was based had not been adopted unanimously. He therefore wished to enter a reservation to the effect that, as far as future replanning was concerned, no decision taken by WRC-97 should be binding on any future conference, and that the debate on certain issues could be reopened.

5.24 The **delegate of the Lao People's Democratic Republic** recalled the reservation entered by his delegation in Committee 4 with respect to the beam assigned to Hong Kong.

5.25 The **delegate of Australia** considered that the remark made earlier by the representative of BR regarding the provisional nature of the Plan required some qualification. The Plan in Document 371 would need some editorial amendment and Members might have to provide the Bureau with information in that connection. Also, some adjustment of the BR's calculations would be necessary. That must be clearly understood before the document was submitted for second

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* The German delegation subsequently informed the secretariat that it withdrew its reservation.

reading. Furthermore, in the view of his delegation, the Plan was definitive rather than provisional until such time as it was reviewed by a future conference.

5.26 The **Chairman** said that if he heard no objection he would take it that the meeting could agree to approve Appendices S30 (Article 11) and S30A (Article 9A), as contained in Document 371, subject to the amendments made and reservations entered during the discussion as well as to any subsequent adjustments or editorial modifications that might be necessary.

5.27 On that understanding, the fourteenth series of texts submitted by the Editorial Committee (B.14) (Document 371), as a whole, as amended, was **approved** on first reading.

6 Texts submitted by the Editorial Committee for second reading (Document 371)

6.1 At the suggestion of the **Chairman of Committee 6**, the texts in Document 371 were submitted for second reading.

6.2 The **Chairman** drew attention to the amendments approved and reservations entered during the first reading.

6.3 The texts submitted by the Editorial Committee in Document 371, as a whole, as amended during the first reading, were **approved** on second reading.

6.4 The **delegate of Spain** said that the adoption of the Plan by the Conference was a milestone in the history of ITU. Great strides had been made since the adoption of Resolution 524 by WARC-92. In particular, he commended the BR's tireless efforts and the role played by ITU-R Joint Working Party 10-11S. Spain was proud to be a Member of the Union and intended to pursue its long-standing cooperation with the organization so as to uphold the fundamental right of every individual to have access to telecommunications.

6.5 The **delegate of the Lao People's Democratic Republic** conveyed his thanks to the BR staff for their excellent work in developing the revised Plan, the adoption of which represented the culmination of the very significant efforts deployed since 1996 by the Planning Exercise Team (PXT) Expert Group under its able chairman.

6.6 The **representative of BR** expressed his appreciation to the members of the PXT Expert Group for their work, as well as to the respective administrations and organizations and JWP 10-11S, its two Special Rapporteurs and, in particular, its Chairman Mr. R. Zeitoun for their support. Thanks were also due to the Administration of Japan and the European Broadcasting Union for providing the software needed for the planning exercises. In conclusion, he paid tribute to all ITU staff in particular Mr. Sakamoto, Mr. Vassiliev, Mr. Delahoy and Mrs. Hofmann who had contributed to preparing the revised Plan.

7 Fifteenth series of texts submitted by the Editorial Committee for first reading (B.15) (Documents 361; DT/147)

7.1 The **Chairman** invited the meeting to consider the Working Group PLEN-1 texts taken from Document DT/147.

7.2 The **Chairman of Working Group PLEN-1** said that Table 1, which listed proposed editorial amendments to the Resolutions and Recommendations in Document 361, had unfortunately been omitted from that document but could be found in Document DT/147.

7.3 Following comments by the **delegate of Canada** and **the United Kingdom** to the effect that Resolutions 208 and 522, which were listed in the Table, had been recommended for deletion, the **delegate of Syria** proposed that the Editorial Committee be requested to make the necessary editorial amendments once the decisions of the Conference in that regard were known.

7.4 On that understanding, Table 1 in Document DT/147 was **approved**.

Resolution 1

7.5 The **delegate of the United Kingdom** proposed that the last indent in *referring to* should cite new Article S12, with the title "Seasonal planning of the HF bands allocated to the broadcasting service between 5 900 kHz and 26 100 kHz" which had been approved by WRC-97, rather than Article S12A. In consequence, "World Administrative Radio Conference (Geneva, 1979)" in the preamble should be replaced by "World Radiocommunication Conference (Geneva, 1997)".

7.6 Resolution 1, as amended, was **approved**.

Resolution 2, Resolution 5, Resolution 7, Resolution 14, Resolution 15, Resolution 18 (Mob-83), Resolution 105 (Orb-88)

7.7 **Approved**.

Resolution 412 (WARC-92)

7.8 **Approved**, subject to a minor editorial amendment.

Resolution 522 (WARC-92)

7.9 **Approved**, pending consideration for deletion.

Resolution 703 (Rev.WARC-92), Recommendation 9, Recommendation 32 (Orb-88), Recommendation 63, Recommendation 71, Recommendation 604 (Rev.Mob-87), Recommendation 705, Recommendation 719 (WARC-92)

7.10 **Approved**.

7.11 The fifteenth series of texts submitted by the Editorial Committee (B.15) (Document 361) as a whole, as amended, was **approved** on first reading.

7.12 The **delegate of Pakistan** said that the review of WARC/WRC Resolutions and Recommendations had drawn attention to the importance of a number of those texts, some of which had been in force for many years. It might be a useful exercise, during the course of such reviews, to evaluate the impact of the decisions concerned and to add some form of comment accordingly.

8 Texts submitted by the Editorial Committee for second reading (Document 361)

8.1 At the suggestion of the **Chairman of Committee 6**, the texts in Document 361 were submitted for second reading.

8.2 The **Chairman** drew attention to the amendments that had been approved during the first reading.

8.3 The texts submitted by the Editorial Committee in Document 361, as a whole, as amended during the first reading, were **approved** on second reading.

9 Sixteenth series of texts submitted by the Editorial Committee for first reading (B.16) (Documents 359(Rev.1), 372)

9.1 The **Chairman** invited the meeting to consider the Committee 5 texts taken from Document 358 and set out in Document 372.

Article S5 (Table 450 - 460 MHz, MOD S5.286A)

9.2 **Approved**.

Article S5 (MOD S5.286B, MOD S5.286C)

9.3 **Approved**, subject to the addition of "operating in accordance with the table" at the end of both footnotes.

Article S5 (ADD S5.286D)

9.4 **Approved**.

Article S5 (ADD S5.286E)

9.5 The **Chairman of Committee 5** noted that Ghana and Mali had requested the deletion of their country names from ADD S5.286E.

9.6 The **delegate of Nepal** said that his country wished to add its name to the footnote. The **delegates of Indonesia** and **Pakistan** supported that request.

9.7 ADD S5.286E, as amended, was **approved**.

9.8 The **Chairman** invited the meeting to consider the Committee 5 texts taken from Document 356 and set out in Document 372.

Article S5 (MOD S5.441)

9.9 **Approved.**

Article S5 (ADD S5.441A)

9.10 **Approved**, on the understanding that reference would be made to the footnote in all the boxes of the Table in Article S5 relating to the frequency bands mentioned in that note.

9.11 The **delegate of the Islamic Republic of Iran** made the following statement:

"Mr. Chairman, you might have noticed during the course of discussions in the past four weeks that our concerns about non-GSO FSS were purely technical. We always welcome facilities that new technology provides for the better usage of limited resources of spectrum and orbital positions. However, our main concern, which was explicitly explained several times, was, and still is, the protection of the existing systems and planned requirements of the other services in this band. So, Mr. Chairman, if future studies by ITU-R prove to be satisfactory and protect the existing and planned services, we surely would welcome such technology. But until such time, we reserve our right to not accept it, and to protect our country's interests by any means."

9.12 The **delegate of Syria** drew attention to the proposal by Algeria, Saudi Arabia, Egypt, Jordan, Libya, Syria, Tunisia and Yemen to add a further footnote to Article S5, ADD S5.[XXX], referring to protection in those countries, as set out in Document 359(Rev.1). It was further proposed that a reference to the footnote should be inserted in all boxes of the Table in Article S5

relating to Region 1 and to the frequency bands mentioned in that note. In addition the words "geostationary fixed-satellite services or" should be inserted after "mobile services or" in the proposed text.

9.13 The **delegate of France** suggested that the sponsors of the proposal might wish to reconsider their position, since the concerns expressed in the proposed footnote were covered elsewhere in the provisions set out in Document 372.

9.14 The **delegate of the United Arab Emirates** said that his country wished to be added to the list of sponsors of the proposed footnote. However, if the concerns were clearly covered by other provisions, he would not press the point.

9.15 The **Chairman of Committee 5** said that the other provisions set out in Document 372 were technically complex and represented a compromise arrived at following extensive discussions over the previous four weeks. Although during those discussions Syria had expressed the wish for a footnote, the precise text had only just become available and had not been considered by Committee 5. She therefore proposed that further consideration of the matter be referred to an informal group.

9.16 In response to a comment by the **Chairman**, the **delegate of Syria** pointed out that he and the other sponsors had not opposed the compromise text submitted for consideration in Committee 5. Having noted, however, that limits were included in regulatory terms in Article S22.2, rather than as provisional limits to be re-examined at WRC-99, he had attempted to voice his concern but had not been given the opportunity to explain his proposal for an additional footnote, which at that stage had not been the subject of a document. The **delegate of Saudi Arabia** endorsed those comments, emphasizing that despite the late stage in the Conference it was important to clarify the issue and to deal adequately with an official proposal put forward by a number of countries.

9.17 The **Chairman of Committee 5** pointed out that wherever limits appeared in Article 22 there was a clear note stating that they were provisional and subject to revision by ITU-R and confirmation by WRC-99. Previous conferences had approved limits in that way, with similar explanatory notes, as for example in No. S21.16.7.

9.18 The **delegate of Algeria** expressed surprise at the reaction to the proposed footnote, given the fact that many similar footnotes had already been approved.

9.19 After a further exchange of views, during which the **delegates of France**, **Netherlands**, **South Africa**, **Germany**, **the United States** and **Belgium** requested the sponsors to withdraw their proposal, it was **agreed** to refer the matter to an informal group for further consideration.

9.20 Following the informal discussions, the **delegate of France** withdrew his objection to the footnote proposed in Document 359(Rev.1), observing that every administration had the right to protect its existing or planned services against harmful interference.

9.21 The **delegate of Canada**, while appreciating the French delegation's decision, appealed to the sponsors to reconsider their proposal since the inclusion of the additional footnote might prejudice the outcome of certain studies.

9.22 The **delegate of Saudi Arabia** thanked the French delegation for withdrawing its opposition to the proposed new footnote. The sponsors of the proposal were in favour of new technologies provided that they did not affect their systems and were in their interests. The **delegate of Syria** endorsed that view and announced that, in a spirit of cooperation, the countries listed in

Document 359(Rev.1) had decided to withdraw their proposal. However, they reserved the right to raise the matter at WRC-99.

9.23 The **delegate of Algeria** observed that the proposed footnote would in no way have affected the results of the Conference or prejudged the compatibility studies between different space systems.

9.24 The **delegate of South Africa** thanked the Arab countries concerned for their spirit of cooperation.

Article S5 (MOD Table 10.7 - 12.7 GHz, MOD S5.516, ADD S5.487A, MOD Table 18.6 - 20.2 GHz, MOD Table 27 - 29.9 GHz)

9.25 Approved.

Article S5 (MOD S5.523A)

9.26 The **delegate of China** entered a reservation with regard to MOD S5.523A.

9.27 MOD S5.523A was **approved**.

Article S22 (MOD S22.2, ADD S22.5A1, ADD S22.5B, ADD S22.5B.1, ADD Table S22-1, ADD S22.5C, ADD S22.5C.1, ADD Table S22-2, ADD S22.5D, ADD Parts (A) and (B) of Table S22-3, ADD 22.5E, ADD Parts (A) and (B) of Table S22-4, ADD S22.5F, MOD S22.26, ADD S22.27, ADD S22.28, ADD S22.29)

9.28 **Approved**, subject to editorial amendment of the French version only of MOD S22.2.

Resolution COM5-18 (WRC-97) and Annexes 1 and 2

9.29 The **delegate of India**, referring to *considering* g), said that until the number of non-GSO systems sharing the same spectrum and operating simultaneously was known, it would be impossible to ascertain whether a monopoly might arise in the future. The issue needed to be studied as a matter of priority with a view to ensuring equitable access to non-GSO technology. Furthermore, while he had no objection to the introduction of systems with provisional power flux-density (pfd) limits, final limits should be applied as soon as possible.

9.30 The **delegate of Russia** made the following statement:

"The Russian Federation comprehends that the restrictions referred to in Resolution COM5-18, *resolves* 6, imposed on non-GSO systems are only related to those non-GSO systems for which complete notification information would be received by the Radiocommunication Bureau after 22 November 1997. Therefore, the provisions of Resolution COM5-18, *resolves* 6, do not apply to the non-GSO systems notified before 22 November 1997, which is in line with current practice in ITU."

He went on to stress the importance of noting that the restrictions of *resolves* 6 applied only to non-GSO FSS systems.

9.31 The **Chairman of Committee 5** said that the matter to which Russia had referred was related to the interpretation of Article S22.2. It was her understanding that, although not explicitly so stated, Article S22.2 afforded no protection to non-GSO systems but dealt only with interference to GSO FSS systems from non-GSO systems. She invited the Russian Administration to continue its discussions with BR with a view to identifying other means of dealing with Russia's systems currently in operation in the bands concerned.

9.32 The **delegate of Syria** urged the Russian Administration and all others concerned to study how such systems in operation could be protected.

9.33 Resolution COM5-18 (WRC-97) was **approved**.

9.34 Annex 1 to Resolution COM5-18 (WRC-97) was **approved**, subject to minor editorial amendments to the equation in footnote 2 and to Table 2 (Parts A and B).

9.35 The **delegate of the United** Kingdom, speaking as Chairman of the group which had drawn up the list of studies set out in Annex 2 to the Resolution, proposed the addition of a new item 12) to read as follows: "Taking into account that the bands allocated to the FSS are used by the fixed radiolocation and space science services, study the sharing criteria between non-GSO FSS and GSO FSS and these services."

9.36 It was so **agreed**.

9.37 Annex 2 to Resolution COM5-18 (WRC-97), as amended, was **approved**.

Resolution COM5-19 (WRC-97) and Annex

9.38 The **delegate of France** considered that *resolves* g) should be amended to read "… with respect to assignments which appear in Article 11 of Appendix S30 or Article 9A of Appendix S30A with the symbol AE".

9.39 The **Chairman** said that the matter would be taken up editorially, in order to ensure that the text of *resolves* g) was in line with the revised Plan.

9.40 On that understanding, Resolution COM5-19 (WRC-97) was **approved**.

9.41 The Annex to Resolution COM5-19 (WRC-97) was **approved**, subject to a minor editorial amendment to Table 2 and the equation in footnote 2.

Resolution COM5-27 (WRC-97)

9.42 Approved.

9.43 The **Chairman of Committee 5** said that, in accordance with *considering* h) of Resolution COM5-27 (WRC-97), Resolution 118 (WRC-95) should be deleted.

9.44 It was so **agreed**.

9.45 The sixteenth series of texts submitted by the Editorial Committee (B.16) (Document 372), as a whole, as amended, was **approved** on first reading.

10 Texts submitted by the Editorial Committee for second reading (Document 372)

10.1 At the suggestion of the **Chairman of Committee 6**, the texts in Document 372 were submitted for second reading.

10.2 The **Chairman** drew attention to the amendments that had been approved during the first reading.

10.3 The texts submitted by the Editorial Committee in Document 372, as a whole, as amended during the first reading, were **approved** on second reading.

10.4 The **delegate of Japan**, referring to Resolutions COM5-18 and COM5-19 in particular, said that application of the "hard limit" concept should make it possible to avoid ambiguities in the

interpretation of Article S22.2. Japan recognized that some non-GSO FSS systems would be operating in certain portions of the Ku and Ka bands relatively soon and the existence of such limits would help to ensure greater success with regard to the future implementation of those systems. However, although the provisions adopted at the present Conference were indeed applicable to certain cases, steps should be taken in the two-year period before the next WRC to ensure that they could be applied universally. For its part, Japan would participate in the studies to be undertaken within ITU-R with that end in view.

11 Consideration of Resolution 506 (Rev.Orb-88)

11.1 The **delegate of France** observed that Resolution 506 (Rev.Orb-88) conflicted with Resolution COM5-19, which had just been approved.

11.2 The **Chairman of Committee 4** said that there appeared to be general agreement on the need to amend Resolution 506 in the light of the decisions taken at the present Conference. However, Committee 4 had been unable to consider the Resolution in detail. He read out a number of his own suggested amendments, which he had discussed with some administrations, but which did not necessarily represent the views of Committee 4.

11.3 The **delegate of the Islamic Republic of Iran** said that Resolution 506 had been intended to restrict the use of the 12 GHz band to GSO BSS systems. Since the 1977 Conference, the initial Plan had been degraded through excessive filing and the initial EPM had been drastically reduced. It was now being proposed to open up the band to non-GSO systems at a time when there were a number of uncertainties with regard to interference calculations and compatibility analyses for those systems. Furthermore, difficulties were encountered in applying RR 2674 to GSO systems, and the situation would be even more uncertain with regard to non-GSO BSS systems. His Administration would therefore categorically oppose the revision of Resolution 506 until the relevant ITU-R studies had been completed.

11.4 Following a comment by the **delegate of Algeria**, the **Chairman** suggested that the text of Resolution 506 (Rev.Orb-88), with the amendments suggested by the Chairman of Committee 4 should be produced in a document for consideration at a subsequent meeting.

11.5 It was so **agreed**.

The meeting rose at 1900 hours.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 398-E
16 December 1997
Original: French

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

THIRTEENTH PLENARY MEETING

Thursday, 20 November 1997, at 2015 hours

Chairman: Mr. R. SMITH (Australia)

	Subjects discussed	**Documents**
1	Fourth series of texts submitted by the Editorial Committee for second reading (R.4)	373
2	Fifth series of texts submitted by the Editorial Committee for second reading (R.5)	374
3	Seventeenth series of texts submitted by the Editorial Committee for first reading (B.17)	381
4	Sixth series of texts submitted by the Editorial Committee for second reading (R.6)	375
5	Final report of Committee 4 (continued)	327, 353, 378; DT/92(Rev.1), DT/142; DL/48
6	Sixth series of texts submitted by the Editorial Committee for second reading (R.6) (continued)	375
7	Seventh series of texts submitted by the Editorial Committee for second reading (R.7)	379
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1 Fourth series of texts submitted by the Editorial Committee for second reading (R.4) (Document 373)

1.1 The **Chairman** invited the meeting to consider Document 373.

Resolution 13 (Rev.WRC-97), Resolution 27 (Rev.WRC-97)

1.2 **Approved.**

Resolution 33 (Rev.WRC-97)

1.3 With regard to Resolution 33 (Rev.WRC-97), it was **agreed** to remove the square brackets around the date 1 January 1999 in *resolves* 1 and 2.

1.4 Resolution 33, as amended, was **approved**.

Resolution 121 (Rev.WRC-97)

1.5 **Approved.**

Resolution 214 (Rev.WRC-97)

1.6 Following an exchange of views between the **Chairman of Committee 4**, the **Chairman of Committee 5** and the **delegate of Algeria**, it was **agreed** to leave the square brackets around the references to the 1999/a future competent conference in *resolves* 2 and 4 and *invites ITU-R* 4 and 5, as that decision was related to consideration of the report of Working Group PLEN-1.

1.7 On the understanding that the sections in square brackets would be amended subsequently, Resolution 214 (Rev.WRC-97) was **approved**.

Resolution PLEN-1 (WRC-97)

1.8 **Approved.**

Resolution PLEN-4 (WRC-97)

1.9 The **Chairman of Committee 4** proposed that the sentence "the orbital position at 31° W shall no longer be considered as an orbital position in the Plan", in the third bullet in *resolves* 2, should be put in a footnote. The **delegate of Australia** proposed, with regard to the same bullet, that the words "in accordance with "Alternative step 1" [see Table 7 of Document WRC97/56]" should be deleted, as they added nothing substantive. He was supported by the **representative of BR** and the **delegate of Russia**.

1.10 It was so **agreed**.

1.11 The **Chairman of Committee 4** said that, in *resolves* 4, the text in parentheses "see Resolution [COM4-YYY]" should be replaced by "see Resolution COM4-20". In *resolves* 5, the square brackets around the last sentence in the second and third bullets should be deleted, as had been agreed on first reading.

1.12 The **representative of BR** said that, to his recollection, it had been agreed to add the words "equivalent protection" to qualify "degradation of the margins" in the third bullet of *resolves* 6. The **Chairman** confirmed that understanding.

1.13 Resolution PLEN-4 (WRC-97), as amended, was **approved**.

Resolution GTPLEN1-2 (WRC-97)

1.14 Approved.

Resolution GTPLEN2-1 (WRC-97)

1.15 The **Chairman of ad hoc Group 1 of the Plenary** said that the square brackets should be deleted in *resolves* 1, around "22 November 1997" and "S9.2B"; in *resolves* 2, the square brackets around "RR 1042/S9.2B", the reference to "/S9.2B"; and the square brackets around "(4.3.5)", "(4.2.5 and 4.2.6)" and "(6.57)" should be deleted; and in *further resolves*, the square brackets should be deleted around "S9 or S11". In § 1 of Annex 1 to the Resolution, the square brackets should be deleted, along with the references to Article 11 and to Resolution 118, and further thought should be given to whether or not to retain the reference to Resolution 120. In § 4 of Annex 1, "not" should be deleted in the second part of the sentence, and the square brackets around "S9.1" should be removed. In § 12, the square brackets around "S11.44" should be deleted, as should the reference to RR 1550. Lastly, in Annex 2 to the Resolution, the square brackets in items d) and e) in Part A should be removed.

1.16 The **Chairman of Committee 5** suggested that Resolution 120 should be left in square brackets in § 1 in Annex 1, since, in a document that would be taken up subsequently, Committee 5 proposed that the Plenary should delete that Resolution. The **Chairman** said that he would leave it up to the Editorial Committee to remove or leave the reference to Resolution 120 depending on the decision taken subsequently.

1.17 The **delegate of Malaysia** said that the words "and an addition" should be added after "requesting a modification" in § 5 of Annex 1. The **Chairman of ad hoc Group 1 of the Plenary** explained that, according to the Radio Regulations, the term "modification" covered additions.

1.18 The **delegate of Spain** stressed that, under the Resolution under consideration, BR would often receive confidential information. He sought assurance that BR would take every precaution necessary to ensure that such information was used only for the purposes covered by the Resolution. The **Director of BR** observed that the information received would be published and BR would perform its tasks as laid down in the Resolution.

1.19 The **Chairman of Committee 6** having drawn attention to a discrepancy between the English and French versions of § 5 of Annex 1, the **Chairman of ad hoc Group 1 of the Plenary** said that the French version should be aligned on the English, as it had been agreed not to refer to the eight-year period.

1.20 Resolution GTPLEN2-1 (WRC-97) and Annexes 1 and 2 thereto, as amended, were **approved**.

Resolution COM4-17 (WRC-97)

1.21 Approved.

Resolution COM4-18 (WRC-97)

1.22 The **Chairman of ad hoc Group 1 of the Plenary** proposed that the text in square brackets at the end of *resolves* 3 should be replaced by "(see also Resolution GTPLEN2-1)".

1.23 It was so **agreed**.

1.24 Resolution COM4-18 (WRC-97), as amended, was **approved**.

Resolution COM4-19 (WRC-97)

1.25 Approved.

Resolution COM4-20 (WRC-97)

1.26 The **representative of BR** proposed that "(column 9)" in *recognizing* b) should be deleted. In *resolves* 1, "[10 to 14]" and "[7 to 9]" should be replaced, respectively, by "(3 to 7)" and "(5 to 7)"; "(column 9)" should be deleted in *resolves* 2, and the square brackets around the figure 60 should be removed in *resolves* 3.

1.27 It was so **agreed**.

1.28 Resolution COM4-20 (WRC-97), as amended, was **approved**.

Resolution COM5-10 (WRC-97)

1.29 The **Chairman of Committee 4** said that, in *considering* b), "[733E]" and the square brackets around "No. 2904" could be deleted.

1.30 Resolution COM5-10 (WRC-97), as amended, was **approved**.

Resolution COM5-11 (WRC-97), Resolution COM5-12 (WRC-97)

1.31 Approved.

Resolution COM5-15 (WRC-97)

1.32 The **Chairman** said that the square brackets in *resolves* 4 should be retained pending consideration of the report of Working Group PLEN-1.

1.33 On the understanding that that issue would be decided subsequently, Resolution COM5-15 (WRC-97) was **approved**.

Resolution COM5-16 (WRC-97)

1.34 The **Chairman** said that the meeting should also await the outcome of discussion on the report of Working Group PLEN-1 before taking a decision with regard to the square brackets in *invites ITU-R* 3.

1.35 Subject to that outstanding item, Resolution COM5-16 (WRC-97) was **approved**.

Resolution COM5-17 (WRC-97)

1.36 Approved.

Resolution COM5-23 (WRC-97)

1.37 The **delegate of the United States** said that, since Resolution 118 (WRC-95) had been deleted, in *noting* a) it would be better to say "former Resolution 118" rather than simply "Resolution 118".

1.38 The **delegate of France** said that in Notes 1), 2) and 5) below the table in Annex 1, reference to Resolution COM5-23 should be deleted, as the annex in fact formed part of Resolution COM5-23.

1.39 Resolution COM5-23 (WRC-97), as amended, was **approved**.

Resolution COM5-24 (WRC-97)

1.40 The **delegate of the United Kingdom** pointed out that *requests ITU-R* 3 should be amended to reflect the decision taken with regard to the blue document, i.e. the words "in *resolves* 1 and 2" should be replaced by "in *invites ITU-R* 1 and 2". The **Chairman** endorsed that observation.

1.41 Resolution COM5-24 (WRC-97), as amended, was **approved**.

Resolution COM5-25 (WRC-97), Resolution COM5-28 (WRC-97), Resolution COM5-29 (WRC-97)

1.42 **Approved**, subject to a number of editorial amendments.

Recommendation GTPLEN2-A (WRC-97)

1.43 The **Chairman of Committee 4** said that, in *invites administrations* 3, the square brackets around Articles S21 and S22 should be removed.

1.44 Recommendation GTPLEN2-A (WRC-97), as amended, was **approved**.

SUP Resolution 48 (WRC-95), NOC Resolution 70 (WARC-92), SUP Resolution 115 (WRC-95), SUP Resolution 119 (WRC-95), SUP Resolution 211 (WARC-92), SUP Resolution 643 (WRC-95), SUP Resolution 710 (WARC-92), SUP Resolution 711 (WARC-92)

1.45 Approved.

SUP Resolution 712 (Rev.WRC-95)

1.46 The **delegate of the United States** proposed that SUP Resolution 712 be placed in square brackets pending adoption of the draft agenda of the next WRC.

1.47 It was so **agreed**.

NOC Recommendation 706 (WARC-79)

1.48 Approved.

1.49 With the exception of those texts left pending, the fourth series of texts submitted by the Editorial Committee (R.4) (Document 373), as a whole, as amended, was **approved** on second reading.

2 Fifth series of texts submitted by the Editorial Committee for second reading (R.5) (Document 374)

2.1 The Chairman invited the meeting to consider Document 374.

Article S8 (NOC S8.1, MOD S8.1.1, MOD S8.3, MOD S8.4, NOC S8.4.1 - S8.5)

2.2 **Approved**.

Article S9 (MOD title, MOD A.S9.1, MOD A.S9.3, ADD A.S9.4)

2.3 The **Chairman of Committee 4** proposed that a note 5) referring to Resolution COM4-18 should be added to the title and that the note by Committee 4 should be deleted. The **delegate of France** said that the new note should also refer to Resolutions COM5-18 and COM5-19, which related to application of Article S9 in particular in the case of non-GSO FSS systems in certain frequency bands. In addition, MOD A.S9.3 should be amended to begin "See also …".

2.4 It was **agreed** to add a note ADD A.S9.5, to read: "See also Resolutions COM4-18, COM5-18 and COM5-19", and to begin MOD A.S9.3 by: "3 See also Appendices …".

2.5 MOD title, MOD A.S9.1, MOD A.S9.3 as amended, ADD A.S9.4 and new ADD A.S9.5 were **approved**.

Article S9 (MOD Section I title, MOD S9.1, NOC S9.1.1, MOD S9.2, NOC S9.2A, NOC S9.2B, ADD Sub-Section IA title, MOD S9.3, SUP S9.3.1, MOD S9.4, NOC S9.5, MOD S9.5A, ADD Sub-Section IB title, ADD S9.5B, ADD S9.5B1, ADD S9.5C, ADD S9.5D, MOD Section II title, MOD S9.6, MOD S9.6.1, ADD S9.6.2, MOD S9.7, NOC S9.8, NOC S9.9, MOD[4], MOD S9.11, NOC S9.11A, MOD S9.12, MOD S9.13, NOC S9.15, NOC S9.17, MOD[5], MOD S9.17A, MOD S9.18, MOD S9.19, SUP[6], NOC S9.32, NOC S9.41, MOD S9.43, MOD S9.50, MOD S9.51, MOD S9.51A, MOD S9.52, NOC S9.52C, MOD S9.60)

2.6 Approved.

Article S11 (MOD A.S11.1)

2.7 The **delegate of France** having proposed that reference be made to Resolutions COM5-18 and COM5-19 in MOD A.S11.1, the **Chairman of Committee 4** proposed that the following note be added to the title "See also Resolutions COM4-18, COM5-18 and COM5-19".

2.8 The **delegate of France** said that, in MOD A.S11.1 b) and d), the words "in the same Region or in another Region" should be added after "are allocated".

2.9 The **delegate of the United Kingdom** proposed that, after "Appendices S30 and S30A" at the beginning of the provision, the word "respectively" should be replaced by "as appropriate".

2.10 Subject to the above amendments, MOD A.S11.1 was **approved**.

Article S11 (ADD A.S11.2)

2.11 The **Chairman of Committee 4** said that the note by Committee 4 which appeared after ADD A.S11.2 should be deleted.

2.12 With that amendment, ADD A.S11.2 was **approved**.

Article S11 (MOD S11.14, MOD S11.18, MOD S11.21, ADD S11.21A, MOD S11.22, ADD S11.22.1, (MOD) S11.23, (MOD) S11.20.1 to S11.23.1, MOD S11.24, MOD S11.25, ADD S11.26, MOD S11.27, MOD S11.31.3, NOC S11.32A, NOC S11.32A.1, NOC S11.33, MOD S11.36, (MOD) S11.37, ADD S11.37.1, ADD S11.37.2, NOC S11.38, MOD S11.39, NOC S11.39A, (MOD) S11.39B, NOC S11.39C, (MOD) S11.39D, ADD S11.39E, S11.40, NOC S11.41, NOC S11.42, MOD S11.43, MOD S11.43A, MOD S11.44, ADD S11.44A to ADD S11.44I, NOC S11.45, NOC S11.46, MOD S11.47, MOD S11.48, NOC S11.49)

2.13 Approved.

Article S13 (MOD S13.1, SUP S13.2, SUP S13.3, SUP S13.4)

2.14 Approved.

Article S13 (ADD S13.12A)

2.15 The **Chairman of Committee 4** recalled that, after a long debate, agreement had been reached to delete "within three months of the dispatch of a reminder" and to replace it by "after the dispatch of two consecutive reminders, each within a three-month period", and to add, at the end of the paragraph: "A decision of the Radiocommunication Bureau to cancel the entry in the event of non-response shall be confirmed by the Radio Regulations Board".

2.16 The **Chairman** confirmed that those amendments had been agreed to, but too late for the Editorial Committee to incorporate them.

2.17 ADD S13.12A, as amended, was **approved**.

Article S13 (SUP S13.13, (MOD) S13.14, (MOD) S13.15, (MOD) S13.16, (MOD) S13.17A, SUP S13.20, ADD Section IV title, ADD S13.23A to ADD S13.23C)

2.18 Approved.

Article S14 (MOD S14.2, MOD S14.4, SUP S14.8, S14.9)

2.19 Approved.

Article S19 (MOD S19.35, MOD S19.99)

2.20 Approved.

Article S59 (MOD S59.1, MOD S59.2)

2.21 Approved.

Article S59 (ADD S59.3, ADD S59.4)

2.22 With regard to ADD S59.3 and ADD S59.4, the **delegate of France** called for particular care with regard to the dates and resolutions in the square brackets. The **Chairman** said that they would be carefully checked. It was **agreed** that the Secretariat would be left to insert, in place of the square brackets in ADD S59.4, the numbers of the Resolutions approved.

2.23 Subject to those amendments, ADD S59.3 and S59.4 were **approved**.

Appendix S4 (Annex 1A, Annex 1B, Annex 2A, Annex 2B), Appendix S5, Table S5-1

2.24 The relevant provisions, along with the modifications, additions and deletions given in Document 374, were **approved**.

2.25 Subject to the amendments agreed to and editorial amendments that had been noted, the fifth series of texts submitted by the Editorial Committee (R.5) (Document 374) was **approved**, as a whole, on second reading.

3 Seventeenth series of texts submitted by the Editorial Committee for first reading (B.17) (Document 381)

3.1 The **Chairman** invited the meeting to consider the Committee 5 texts taken from Document 281 and the Committee 6 texts taken from Document 265 (B.3).

3.2 The **Chairman of Committee 5** recalled that the Plenary Meeting's previous consideration of blue Document 265 had shown that there was some confusion with regard to types of footnote, and three categories of footnote had been established, namely: footnotes in which it was proposed to delete a country name, which came under item 1.1 of the Conference agenda; footnotes for which, exceptionally, proposals to add country names had been received prior to 6 November 1997; and lastly, footnotes to which amendments were proposed in conformity with specific items on the agenda of the Conference. Document 381 presented the three categories of footnote which had been approved by Committee 5. After that decision had been taken, Committee 5 had received several proposals to add country names to footnotes which were not covered by the Conference agenda, and the Committee had decided not to accept them. An exception had been made in the case of the proposals put forward by Georgia in Document 313, to delete the name of that country from several footnotes; as those proposals had been submitted once Committee 5 had concluded its consideration of the subject, she had verified, in consultation with the Vice-Chairman and Secretary of the Committee, that the proposals did fall within the framework of item 1.1 of the Conference agenda. The proposals put forward by Georgia could therefore be approved and should be reflected in the next revision of Document 381.

3.3 The above comments were **noted**.

3.4 The **delegate of Israel** expressed surprise that Document 381 contained no mention of ADD S5.536B, in which, when Document 265 had been considered, his delegation had asked for Israel's name to be added. The **Chairman**, having checked, confirmed that the proposal in question had indeed been approved with the addition of Israel. When considering Document 265 the Plenary had taken decisions on all the proposals relating to Article S5 up to MOD S5.210, and all the proposals that had been approved at that time, with or without modification, would be recapitulated in the relevant pink document. As to the other proposed footnotes put forward in Document 265, only three, namely MOD S5.221, MOD S5.464 and MOD S5.549, identified by an asterisk in Document 381, were before the Plenary for approval under an item other than item 1.1 of the Conference agenda.

3.5 The above explanations were **noted**.

3.6 The **delegate of Sweden** having queried to which category proposal ADD S5.87A might belong, as it appeared to be a new footnote, the **Chairman of Committee 5** said that the proposal in question, put forward by Uzbekistan, fell in the second category, namely exceptional proposed additions submitted prior to 6 November 1997, and it had been approved by Committee 5 in the absence of any objection.

3.7 The **Chairman** invited the Plenary to approve the proposals put forward by Georgia in Document 313. The proposals having been supported by the **delegates of Turkey** and **Moldova**, and there being no objection, they were **approved**.

Article S5 (ADD S5.87A, MOD S5.99, MOD S5.164, MOD S5.221, MOD S5.237, SUP S5.244, MOD S5.259, MOD S5.271, MOD S5.275, MOD S5.276, MOD S5.277, MOD S5.290, MOD S5.296, SUP S5.310, MOD S5.312, SUP S5.313, MOD S5.314, MOD S5.316, MOD S5.322)

3.8 Approved.

Article S5 (MOD S5.323)

3.9 At the proposal of the **delegates of Sweden** and **Germany**, it was **agreed** to delete the reference to Article 14, retaining only the reference to No. S9.21.

3.10 MOD S5.323, as amended, was **approved**.

Article S5 (MOD S5.330, MOD S5.338, MOD S5.347, MOD S5.349, MOD S5.350, MOD S5.355)

3.11 Approved.

Article S5 (MOD S5.369)

3.12 At the request of the **delegate of China**, and after verification, the **Chairman of Committee 5** proposed that the names of China and Côte d'Ivoire be added in MOD S5.369.

3.13 It was so **agreed**.

3.14 No. S5.369, as amended, was **approved**.

3.15 The **delegate of Nigeria** having recalled that, in Committee, his delegation had asked for his country to be added in MOD S5.349, MOD S5.495 and MOD S5.505, the **Chairman** said that those requests did not fall within any of the three categories referred to by the Chairman of Committee 5 and therefore could not be taken into consideration.

Article S5 (MOD S5.381, MOD S5.382, MOD S5.384, MOD S5.387, MOD S5.393, MOD S5.400, MOD S5.412, MOD S5.422, MOD S5.428, MOD S5.429, MOD S5.430, MOD S5.432, SUP S5.434, MOD S5.437, MOD S5.439, MOD S5.448, MOD S5.450, MOD S5.453, MOD 5.454)

3.16 Approved.

Article S5 (MOD S5.464)

3.17 At the proposal of the **delegate of the Islamic Republic of Iran**, supported by the **delegates of France, Sweden, India** and **Egypt**, MOD S5.464 was deleted, since the allocation to the earth exploration-satellite service (space-to-Earth) was now primary, without restriction in the three Regions.

Article S5 (MOD S5.466, MOD S5.468, MOD S5.477, MOD S5.478, MOD S5.480, MOD S5.483, MOD S5.494, MOD S5.495, MOD S5.496, MOD S5.500, MOD S5.501, MOD S5.505, MOD S5.508, MOD S5.511, MOD S5.512, MOD S5.514, MOD S5.521, MOD S5.524, MOD S5.542, MOD S5.545, MOD S5.549, MOD S5.550, MOD S5.557, MOD S5.564)

3.18 Approved.

3.19 Further to a query by the **Chairman of Committee 6**, the **Chairman of Committee 5** said that she would check the lower limit of the band given in MOD S5.557 with the Japanese delegation.

3.20 Subject to the amendments agreed to, and to possible modification of the lower limit of the band given in MOD S5.557, the seventeenth series of texts submitted by the Editorial Committee (B.7) (Document 381) was **approved**, as a whole, on second reading.

4 Sixth series of texts submitted by the Editorial Committee for second reading (R.6) (Document 375)

4.1 The **Chairman** invited the meeting to consider Document 375, containing the Committee 6 texts taken from Document DT/156.

4.2 The **Chairman of Committee 4** said that the text of Annex 2 to Appendix S30 (WRC-97) should not appear in the document under consideration, as it had already been approved by the Plenary. Also, reference to Annex 3 and its title should be deleted from the document, as that annex was covered by Document DT/5(Rev.1) and Corrigendum 1 thereto, and would be published in a separate document.

4.3 Those corrections were **noted**.

Appendix S30 (WRC-97) (Article 3)

4.4 Article 3 was **approved**.

Appendix S30 (WRC-97) (Article 4)

4.5 At the proposal of the **delegate of Moldova**, it was **agreed** to remove the square brackets in the reference to No. S9.7 of the Radio Regulations in (MOD) 4.3.1.4 and 4.3.3.4 in Article 4.

4.6 The **delegate of the Islamic Republic of Iran** having recalled that his delegation had proposed to amend 4.1.1 in Article 4 in accordance with CPM's recommendation, the **Chairman of Committee 4** suggested that the provision be left pending since Document DT/92(Rev.1), which would be considered subsequently, dealt precisely with the issue raised and put forward a proposed amendment to the provision in question. The **Chairman** proposed therefore that no decision be taken for the time being on that provision of Article 4, and that Article 4 be left pending.

4.7 It was so **agreed**.

Appendix S30 (WRC-97) (Articles 5 to 7, 13 and 14, Annexes 1 and 6)

4.8 Approved.

Appendix S30A (WRC-97) (Article 3)

4.9 Approved.

Appendix S30A (WRC-97) (Article 4)

4.10 The **Chairman of Committee 4** having observed that the square brackets around No. S9.7 in (MOD) 4.2.3.2 should be deleted, the **delegate of France** pointed out that the provision in question would enter into force only on 1 January 1999, and wondered whether it might also be

appropriate to include a reference to No. 1060 of the Radio Regulations. The **Chairman of Committee 4** said that revised Appendices S30 and S30A would enter into force at the same time as all the other amended provisions on 1 January 1999 and it was sufficient to mention only No. S9.7.

4.11 The **delegate of France** nevertheless pointed out that, according to Resolution PLEN-4, the new parameters would be applicable as of the end of the Conference, i.e. as of 22 November 1997. The **Chairman of Committee 4** while acknowledging that the technical criteria would be applicable provisionally as of 22 November 1997, stressed that all other provisions were to come into effect on 1 January 1999.

4.12 Article 4 of Appendix S30A (WRC-97) was **approved**.

Appendix S30A (Articles 5 and 10)

4.13 Approved.

4.14 There being no further comment, the sixth series of texts submitted by the Editorial Committee (R.6) (Document 375), as a whole, as amended, and subject to the subsequent consideration of 4.1.1 of Article 4, was **approved** on second reading.

4.15 The **delegate of France** made a statement on a general problem posed by the decisions taken by the Conference with regard to Appendix 30. As of 22 November 1997, the new parameters approved would be applied, but the difficulty lay in the fact that the Plan applicable in Regions 1 and 3 would not be protected vis-à-vis GSO FSS systems operating in Region 2. The Plan was protected by the Annex 4 parameters, which had not been modified. The resulting situation was awkward. Under those circumstances, he considered that footnotes S5.487 and S5.488, which had been confirmed by the Conference unchanged, would apply in order to ensure protection of the Plan and of future modifications made to the Plan following successful completion of the Article 4 procedure. If there was any objection to his interpretation, he would like the Plenary to debate the subject.

4.16 There being no objection, the above statement was **noted**.

5 Final report of Committee 4 (continued) (Documents 327, 353, 378; DT/92(Rev.1), DT/142; DL/48)

5.1 The **Chairman** invited the meeting to continue its consideration of those matters which Committee 4 had not had time to deal with, as indicated in Document 353.

Recommendations and resolutions of WARCs/WRCs relating to agenda item 1.10 (Document 327)

5.2 The **Chairman of Committee 4** said with regard to Document 327 that the decision relating to Recommendation 521 (WRC-95) was no longer "pending" but "NOC", and Working Group 4D had decided to delete Resolutions 106 (Orb-88) and 109 (Orb-88), and not to modify Resolution 531 (WRC-95). Resolution 506 (Rev.Orb-88) was no longer pending, as it had been amended and was covered by Document 396.

5.3 With those amendments, Document 327 was **approved**.

Beam grouping (Documents DT/142 and DL/48)

5.4 The **Chairman of Committee 4** said that the working group entrusted with the beam grouping concept had been unable to consolidate the proposals in Documents DT/142 and DL/48, and he therefore proposed that the Plenary note the documents.

5.5 Documents DT/142 and DL/48 were **noted**.

Proposals relating to modification of provisions contained in Appendices S30 and S30A (Document DT/92(Rev.1))

5.6 The **Chairman of Committee 4**, having introduced Document DT/92(Rev.1), which contained a list of proposals relating to modification of provisions contained in Appendices S30 and S30A, drew attention to the proposals concerning 4.1.1 in Article 4 of Appendices S30 and S30A put forward by the United States (USA/30/178) and by the Islamic Republic of Iran (IRN/44/32) and invited participants to address them.

5.7 The **delegate of the United States** said that his delegation's proposal was to delete "Region 2" so as to make the provision applicable in all Regions.

5.8 The **delegate of the Islamic Republic of Iran** said that his delegation's proposal repeated the text of § T.4.7 of the CPM Report; at CPM, it had been agreed to delete both "Region 2" and the last sentence of the original 4.1.1. That factor had been decisive when replanning had been addressed. He was supported by the **delegates of France, Malaysia** and **Australia**.

5.9 Proposal IRN/44/32, relating to 4.1.1 of Appendices S30 and S30A, was **approved**.

5.10 The **Chairman of Committee 4** added that in proposal IRN/44/32, and with regard both to Appendices S30 and S30A, "T.4.5" should be replaced by "4.1 b)".

5.11 With those amendments, 4.1.1 was **approved**.

5.12 The **Chairman of Committee 4** invited the meeting to address the proposal by the Islamic Republic of Iran concerning 4.3.12 in Appendix S30 and 4.2.13 in Appendix S30A (IRN/44/24).

5.13 The **delegate of the Islamic Republic of Iran** said that the intention of his delegation's proposal was for explicit agreement or disagreement to be obtained from affected administrations. Hitherto, the Appendix S30 and S30A procedures had not demanded an explicit reply, but set a deadline beyond which failure to reply was taken to imply acceptance, unlike in the Article 11 procedure, where an explicit reply was required. The proposal was therefore to align the Appendix S30 and S30A procedures with those of Article 11.

5.14 It was **agreed** to leave 4.1.12 in Appendix S30 and 4.1.13 in Appendix S30A unchanged.

Draft Resolution on implementation of Annex 5 to Appendix S30 (Rev.WRC-97) and Annex 3 to Appendix S30A (Rev.WRC-97) (Document 378)

5.15 The **Chairman** invited the meeting to consider Document 378 on first reading.

5.16 The **Chairman of Committee 4**, having introduced draft Resolution [PLEN-X] on the implementation of Annex 5 to Appendix S30 (Rev.WRC-97) and Annex 3 to Appendix S30A (Rev.WRC-97), said that the text would enable BR to apply the technical criteria set out in the Annexes to requests submitted under Articles 4 and 5 of Appendices S30 and S30A.

5.17 Draft Resolution [PLEN-X], as contained in Document 378, was **approved** on first reading.

5.18 The **Chairman** invited the meeting to consider Document 378 on second reading.

5.19 Document 378 was **approved** on second reading.

6 Sixth series of texts submitted by the Editorial Committee for second reading (R.6) (continued) (Document 375)

6.1 The **Chairman of Committee 4** said that, in the light of the approval of the Islamic Republic of Iran's proposal on 4.1.1 of Article 4, the text of that provision in Appendices S30 (WRC-97) and S30A (WRC-97), as contained in Document 375, should be replaced by the text just approved.

6.2 It was so **agreed**.

7 Seventh series of texts submitted by the Editorial Committee for second reading (R.7) (Document 379)

7.1 The **Chairman** invited the meeting to consider Document 379.

Annex 2 to Appendix 30 (S30), Annex 2 to Appendix 30A (S30A)

7.2 The (NOC) (MOD) and (ADD) proposals were **approved**.

Resolution PLEN-3 (WRC-97)

7.3 The body of Resolution PLEN-3 (WRC-97) and Annex 1 thereto were **approved**.

7.4 With regard to the first part of Annex 2, the **Chairman of Committee 4**, supported by the **delegate of Saudi Arabia**, said that "Member States" should be inserted before "Sector Members" in the second bullet.

7.5 The **delegate of Spain** recalled that it had previously been agreed that the bullet in question should not be amended. He thought it unnecessary to add "Member States", and pointed out that at present the term "Member States" did not appear in the Union's basic texts; the only body with the power to alter the term "Members of the Union" was the Plenipotentiary Conference.

7.6 The **Chairman** observed that it would be more accurate to insert the suggested words, as they appeared in the preceding bullet.

7.7 The **Legal Adviser** pointed out that administrations and other entities authorized to participate in the activities of a Sector constituted the membership of the Sector in question as a whole. For practical reasons, however, the Council had decided to use the terms "Member State" and "Sector Member": Member States were *ipso facto* Sector Members, whereas Sector Members in fact meant the entities and organizations listed in Article 19 of the Convention.

7.8 It was **agreed** to insert "Member States" before "Sector Members" in the second bullet in Annex 2.

7.9 Annex 2, as amended, was **approved**.

7.10 Resolution PLEN-3 (WRC-97), including Annexes 1 and 2 thereto, as amended, was **approved**.

Resolution GTPLEN1-3 (WRC-97), Resolution GTPLEN1-4 (WRC-97)

7.11 At the proposal of the **Chairman**, it was **agreed** that Resolution GTPLEN1-3 (WRC-97) and Resolution GTPLEN1-4 (WRC-97) would be considered at a later stage.

Resolution COM5-14 (WRC-97)

7.12 **Approved**.

SUP Resolution 720 (WRC-95)

7.13 **Approved**.

7.14 With the exception of the draft Resolutions left pending, the seventh series of texts submitted by the Editorial Committee (R.7) (Document 379), as a whole, as amended, was **approved** on second reading.

8 Consideration of Resolution 506 (Rev.WRC-97) (continued) (Document 396)

8.1 The **Chairman** invited the meeting to consider Document 396 on first reading.

8.2 The **Chairman of Committee 4**, introducing Document 396, said that, in *considering* c), "Appendix S30" should be replaced by "Appendix 30 (Orb-85)".

8.3 It was so **agreed**.

8.4 The **delegate of Russia** said that Resolution 506 as set out in Document 396 prevented the frequency bands in question from being used by low-orbit satellites and by the services which had operated in those bands previously. Given that the Conference had gone to great lengths to find extra capacity to increase the number of channels, it was regrettable that the Resolution deprived LEO satellites of the possibility of using the bands. Furthermore, as it had been decided to introduce non-GSO systems in those bands, it would be more logical to eliminate the restrictions, or indeed to eliminate Resolution 506 altogether.

8.5 Further to a request for clarification by the **delegate of Australia** with regard to *considering* e), the **Chairman of Committee 4** said that, as previously worded, former *considering* d), which had spoken of space radiocommunication services, had been in contradiction with the decision taken by the Conference with regard to the non-GSO fixed-satellite service (operation of non-GSO fixed-satellite service systems was thenceforth authorized in the bands allocated to the broadcasting-satellite service). Resolution 506 had been amended in order to avoid that contradiction. While recognizing that the Resolution might still contain some ambiguities, it would be inappropriate to delete it.

8.6 Resolution 506 (Rev.WRC-97), as contained in Document 396, was **approved** on first reading.

8.7 The **Chairman** invited the meeting to consider Resolution 506 (Rev.WRC-97) on second reading.

8.8 Resolution 506 (Rev.WRC-97) was **approved** on second reading.

9 Report of Working Group PLEN-1 (Documents 347, 367 and Corr.1, 382)

9.1 The **Chairman of Working Group PLEN-1**, introducing Document 367 and Corrigendum 1 thereto, stressed that numerous delegations had worked in a spirit of compromise and conciliation to develop draft Resolution [GTPLEN1-3] relating to the agenda of WRC-99, and all financial constraints known to date had been taken into account.

9.2 The **Chairman** invited the meeting to consider draft Resolution [GTPLEN1-3] on first reading.

9.3 The **delegate of Germany**, supported by the **delegates of Canada** and **Japan**, confirmed that the draft Resolution was a well-balanced text which representatives from all three Regions had helped to develop after long discussions. He would very much regret reopening debate on it.

9.4 The **delegate of the Netherlands** considered that *further resolves* 8.1 to 8.8 were all priorities. If the Council nevertheless failed to provide enough resources to include those items on the WRC-99 agenda, however, they should definitely be carried over to the WRC-01 agenda.

9.5 The **delegate of Syria**, while not contesting the fact that the text under consideration was the result of considerable collaboration, wished that in future proposals from developing countries be treated in the same way as those from developed countries.

9.6 The **delegate of Nigeria** recalled that, in Document 108, his delegation had proposed to delete Resolution 717 (WRC-95). That deletion had been approved on first reading in connection with Document 277, and subsequently on second reading in connection with Document 342. The content of item 1.6.1, as set out in Corrigendum 1 to Document 367, seemed nevertheless to contradict the decision taken to delete Resolution 717. It should therefore be amended to take account of the approved deletion.

9.7 The **delegates of Turkey, the Islamic Republic of Iran, Cuba, Senegal, Niger** and **South Africa** supported that proposal.

9.8 The **delegate of the United States**, supported by the **delegates of Syria, Germany, Sweden** and **the United Kingdom**, was opposed to amending item 1.6.1.

9.9 The **delegate of Mexico** said that the original wording of item 1.6.1 (Document 367) should be maintained.

9.10 The **Chairman** proposed that items 1.6 and 1.6.1, as contained in Corrigendum 1 to Document 367, should be approved and that, given the late hour, Nigeria's proposal should not be adopted.

9.11 It was so **agreed**.

9.12 The **delegate of Russia** proposed that, in item 1.11, the words "and related feeder links" should be inserted after "for the non-GSO/MSS below 1 GHz", and "[COM5-15]" should be inserted after "[COM5-25]".

9.13 The **delegate of the United Kingdom** advocated that the text should remain unchanged.

9.14 The **delegate of Germany** said that he was opposed to revising the text in the manner proposed by the Russian delegation, especially if no account was to be taken of the financial implications of the preparations required for WRC-99 to consider the item, or the other items which might have to be moved as a result. Furthermore, the Conference had not yet considered Document 382, which proposed a new agenda item for the next WRC.

9.15 The **Chairman of Working Group PLEN-1** pointed out that the Conference would also have to come back to *resolves* 1.9 when it had completed its consideration of Document 370.

9.16 The **delegate of the United States** considered that the Russian proposal to study feeder links and links for services at the same time was perfectly logical and should not be rejected out of hand. The **Chairman** said the Russian delegation had explained the reasons for its proposal quite clearly, but it was obvious that the majority view of the Conference was to leave the text unchanged.

9.17 After an exchange of views between the **delegates of France** and **the United States** with regard to the need to specify what sharing situations were covered by item 1.13.2, it was **agreed** to leave that item unchanged.

9.18 The **delegate of Senegal** observed that item 1.19 contained two ideas, also reflected in Resolution [COM4-22]: first, that the inter-conference representative group would carry out a study, and second, that the study would be used as a basis to determine whether it was possible to undertake replanning. He therefore proposed that "in accordance with Resolution [COM4-22]" be inserted after "replanning", and that " whether to initiate" should be replaced by "whether it is possible to undertake".

9.19 It was so **agreed**.

9.20 The **Chairman of Working Group PLEN-1** said that, in the first footnote, the square brackets around "GTPLEN1-2" should be removed.

9.21 The **delegate of the United States** said that several delegations had asked him to make a proposal to clarify item 1.8 by replacing "of the maritime mobile-satellite service" by "located on board ships". The **delegate of Norway** having observed that the term "ship" was too restrictive and did not cover, for example, oil platforms, he proposed "located on board vessels" instead of "located on board ships".

9.22 The proposed amendment to item 1.8 was **approved**.

9.23 The **Chairman of Working Group PLEN-1** drew attention to a new agenda item proposed for WRC-99, in Document 382.

9.24 The new agenda item proposed in Document 382 was **approved** as agenda item 1.20, with former item 1.20 renumbered as 1.21.

9.25 The **Chairman of Working Group PLEN-1** said that neither Committee 4 nor Working Group PLEN-1 had been able to consider agenda item 3.33 in proposal ARS/…/76/29 (Document DT/70). The **delegate of Syria** explained that the item was extremely urgent for the countries in the Arab region, who were increasingly convinced that the difference between direct-to-home transmission services and broadcasting services would ultimately disappear. The subject might therefore be included on the agenda of WRC-01 or referred directly to the replanning conference, for consideration of the implications. The **delegate of Australia** having suggested that the subject might not in itself constitute an actual item for a conference agenda, it was **agreed** to refer the matter to the inter-conference representative group.

9.26 The **Chairman of Working Group PLEN-1** said that the last item referred to the Plenary by the Working Group related to a French proposal concerning radio altimeter services in the 5.3 GHz band. The **delegate of France** explained that the purpose of his proposal was to complete

the work already undertaken on sharing between radio altimeters and other services, either by including the subject on the agenda of WRC-99 or WRC-01, or by maintaining Resolution 712 (Rev.WRC-97). The **Chairman** proposed that Resolution 712 be maintained.

9.27 It was so **agreed**.

9.28 Draft Resolution [GTPLEN1-3] was **approved**, subject to the amendments agreed to for items 1.6.1, 1.8 and 1.19, and the incorporation of a new § 1.20.

9.29 The **delegate of the United Kingdom** considered that the scope of the agenda proposed for WRC-99 would make it particularly difficult to prepare the Conference properly, and he therefore proposed that WRC-99 be put back six months and held in April or May 2000. The **delegates of Lebanon, Italy** and **Spain** supported that proposal.

9.30 The **delegate of Canada**, supported by the **delegate of the United States**, said that, while the reasons put forward by the United Kingdom were well-founded, it might be wiser to let the ITU Council decide on the precise dates of WRC-99, given the implications that changing the dates would have on the budget, the financial plan and the meeting schedule of the Union and study groups. The **delegate of Saudi Arabia** agreed, and suggested that the *resolves* part of the Resolution under consideration should perhaps include a reference to Resolution GTPLEN1-2, concerning the interval between conferences. The **delegate of Mali** wondered how the scheduled replanning might be affected if WRC-99 was put off as suggested.

9.31 The **Chairman** proposed that the matter be referred to the Council, which should be informed that numerous delegations had expressed the concern that the two-year period was insufficient for preparing WRC-99 properly. The **delegate of the United Kingdom** pointed out that CPM was to meet immediately after the Conference, and should be given solid dates with which to prepare the next conference. The **Legal Adviser** said that WRC-97 documents contained numerous references to WRC-99, which should perhaps be replaced by "the next Conference, on the dates decided by the Council". The **delegate of Syria** said that the Council should also be made aware of the debates that had taken place on the replanning conference. The **Chairman** said that CPM would have to allow for the fact that a decision on the dates of WRC-99 would be taken at the next Council session. According to tradition, conferences were held every two years, therefore references to WRC-99 did not prejudge any decision that the Council would take. The Council would be informed of the debates that had taken place on the replanning work required for BSS.

9.32 Draft Resolution [GTPLEN1-3] was **approved** on first reading, along with the deletion of Resolution 720 (WRC-95).

9.33 The **Chairman** invited the Conference to consider draft Resolution [GTPLEN1-4], as contained in Document 367, on first reading.

9.34 The **delegate of Niger** explained that countries in the tropical zone used the frequencies in the tropical band extensively for the broadcasting service, and were therefore concerned at the inclusion of item 2.13 on the agenda of WRC-01. The **delegates of Mali** and **Senegal** supported the previous speaker, and requested clarification on the tropical band's use for other purposes.

9.35 The **Chairman** recalled that Resolutions COM4-14 and COM4-16 had called for the inclusion of item 2.13 on the agenda of WRC-01. The **Chairman of Working Group PLEN-2** explained that agenda item 2.13 had its origins in debates at WARC-92, which had make it clear that insufficient frequencies were allocated to HF broadcasting below 9 MHz. The view at WRC-95 had been that a future conference should consider the issue, and the sole purpose of agenda item 2.13 was to ensure that HF broadcasting requirements were considered without in any way

prejudging WRC-01's decision. Furthermore, as WRC-97 had not been able to settle the issue of the availability of the WARC-92 bands prior to 2007, studies had been deemed necessary so that a future conference could consider that availability, whence Resolutions COM4-14 and COM4-16.

9.36 The **delegate of Mali** having requested confirmation that 2007 had been maintained as the date for making the bands in question available, and that the study envisaged would in no way prejudge operation of the bands in question outside existing regulations, the **Chairman of Working Group PLEN-2** said that consideration of the WARC-92 bands would in no way affect the tropical bands since the former bands were at 5.9 MHz and above, and the latter below that mark. The **delegate of Mali** having pointed out that agenda item 2.13 covered the frequencies between 4 and 10 MHz, and thus affected the tropical band, the **Chairman of Working Group PLEN-2** said that, in his view, the purpose of agenda item 2.13 was to identify what bands were required for HF broadcasting between 4 and 10 MHz, but there was no intention for frequencies to be allocated below 5 MHz, since that would be up to another WRC or a replanning conference. In Region 1, for example, broadcasting shared some portions of the spectrum in the 3.9 MHz band with the fixed service, but the tropical band was not involved. It was a question of identifying a well-defined block of frequencies of that kind.

9.37 Draft Resolution [GTPLEN1-4] was **approved** on first reading.

9.38 The **Chairman** invited the meeting to consider the draft on second reading (as contained in Document 379).

9.39 Draft Resolution [GTPLEN1-4] was **approved** on second reading.

9.40 The **delegate of Niger**, expressing a specific reservation with regard to agenda item 2.13, made the following statement: "As the Conference has not foreseen sufficient flexibility when including, on the preliminary agenda of WRC-01, item 2.13 as contained in Resolution GTPLEN1-4 (WRC-97), relating to examination of the adequacy of the frequency allocations for HF broadcasting from 4 MHz to 10 MHz, the delegation of the Niger considers that the Conference has not taken account of the concerns of the countries in the tropical zone. The purpose of the item is therefore unclear to us, bearing in mind that: 1) the countries located in tropical regions use the frequencies in the aforementioned bands extensively for broadcasting; 2) such use is of great benefit to those countries and meets their specific requirements in accordance with the decisions taken by WARC-92 (Malaga-Torremolinos, 1992); and 3) the countries in question are concerned at the inclusion of the item in the agenda of WRC-01. Niger therefore expresses its reservation in this respect."

9.41 The **delegate of Syria** observed that CPM was mentioned in numerous documents, but its continuation had not yet been confirmed.

9.42 It was **agreed** to activate CPM.

9.43 The **Chairman** invited the meeting to consider draft Resolution [IND/MLI/MEX/SYR/G-1], as contained in Document 347, relating to preparatory work at regional level for world radiocommunication conferences.

9.44 The **delegate of the Netherlands** observed that the draft Resolution in Document 347 contained no *resolves* section, and its financial implications had not been considered. The **delegate of Syria** proposed that "*instructs the Director of the Radiocommunication Bureau, and requests the Director of the Telecommunication Development Bureau*" should be replaced by "*resolves to instruct ... and to request ...*". The cost of implementing such a resolution should not be very high.

The **delegate of Saudi Arabia** supported the Syrian proposal and proposed that reference to the Director of the Telecommunication Development Bureau be deleted. The **Legal Adviser** pointed out that the Conference should not "request" but should "invite" the Plenipotentiary Conference.

9.45 The amendments proposed by the delegations of Syria and Saudi Arabia and the Legal Adviser were **approved**.

9.46 The **delegate of the Islamic Republic of Iran** considered that in so far as possible the measures foreseen in the draft Resolution should be extended to include regional and international broadcasting organizations, which could make considerable contributions to WRC preparations.

9.47 The **Chairman** proposed that the draft Resolution be approved on first reading.

9.48 Draft Resolution [IND/MLI/MEX/SYR/G-1] was **approved** on first reading.

9.49 The **Chairman** proposed that the draft Resolution be approved on second reading.

9.50 Draft Resolution [IND/MLI/MEX/SYR/G-1] was **approved** on second reading.

10 Studies to consider the feasibility of use of a portion of the band 1 559 - 1 610 MHz by the mobile-satellite service (space-to-Earth) (Documents 262, 349, 370)

10.1 The **Chairman of Committee 5** said that allocation of frequencies to BSS in the 1.5 GHz band had been debated at length by Committee 5, on the basis of Document 262, and the results of the Committee's work were presented in Document 349. Informal discussions held subsequently had resulted in Document 370. The Plenary was therefore required to consider only the last document, which contained a draft Resolution relating to the band 1 559 - 1 610 MHz and which indicated that no measures were required for the time being with regard to the 1 675 MHz band, an issue which should be deferred to a subsequent competent conference. Lastly, in *further resolves* 3 of the draft Resolution, IALA should be added after ICAO and IMO.

10.2 The **delegate of the Islamic Republic of Iran** having enquired what ICAO's position was on the proposed text, the **Chairman** recalled that ICAO only had observer status at the Conference. The **delegate of Syria** endorsed the draft Resolution, which he saw as an elegant solution to the problem raised. The **delegate of Canada** said that the solution proposed was exactly the same as the one proposed by his country in Document 35. The **delegate of South Africa** proposed that *further resolves* should refer specifically to WRC-99 instead of "[WRC-00]". The **delegate of Mali** said that he shared the concerns expressed by ICAO with regard to the draft Resolution and its scope. He also suggested that *further resolves* 3 should indicate that the results of the studies should be made available as soon as possible.

10.3 The **Chairman** said that such a proposal was superfluous if the *further resolves* section indicated that the results of the studies were to be submitted to WRC-99.

10.4 The draft Resolution in the annex to Document 370 was **approved**, subject to the inclusion of reference to IALA and replacement of "[WRC-00]" by "WRC-99".

10.5 The **Chairman** invited the meeting to consider the draft Resolution on first reading.

10.6 Draft Resolution [COM5-30] (WRC-97), as contained in the annex to Document 370, was **approved** on first reading.

10.7 The **Chairman** invited the meeting to consider the draft Resolution on second reading.

10.8 Draft Resolution [COM5-30] (WRC-97), as contained in the annex to Document 370, was **approved** on second reading.

11 Seventh series of texts submitted by the Editorial Committee for second reading (R.7) (Document 379) (continued)

11.1 The **Chairman** said that, as the Conference had now dealt with Document 370, it was in a position to complete its consideration of draft Resolution [GTPLEN1-3] by settling item 1.9, which had been left in square brackets, with a view to adopting the Resolution on second reading.

11.2 The **delegate of Germany** said that the second footnote, relating to item 1.6.2, should be deleted. Further to comments by the **delegates of the United States** and **the United Kingdom**, the **Chairman of Committee 5** said that the reference to Resolution [COM5-22] was no longer necessary in item 1.9, which would be aligned with Resolution COM5-31, and contain a reference to Resolution 213.

11.3 Draft Resolution [GTPLEN1-3] (WRC-97), as amended on first reading and taking into account the amendments put forward by the Chairman of Committee 5, was **approved** on second reading, along with deletion of Resolution 720 (WRC-95).

12 Implementation of Resolution 46 (Rev.WRC-97) (Document 368)

12.1 The **Chairman of Committee 5** explained that the draft Resolution in Document 368 served a dual purpose: first, to ensure that Resolution 46 as amended by WRC-97 came into force on the day after the end of the Conference (22 November 1997) and, second, to delete Resolution 120 (WRC-95). The **delegate of Saudi Arabia** said that, in *considering* a), "(WRC-95)" should be inserted after "Resolution 46".

12.2 The draft Resolution in Document 368, as amended, was **approved**.

12.3 The **Chairman** invited the Conference to consider the draft Resolution on first reading.

12.4 Draft Resolution [COM5-30] (WRC-97) was **approved** on first reading.

12.5 The **Chairman** invited the Conference to consider the draft Resolution on second reading.

12.6 Draft Resolution [COM5-30] (WRC-97) was **approved** on second reading.

12.7 The deletion of Resolution 120 (WRC-95) was **approved**.

13 Eighth series of texts submitted by the Editorial Committee for second reading (R.8) (Document 393)

13.1 The **Chairman** invited the meeting to consider Document 393.

Articles S1, S4, S5, S21, S30, S31, S32, S33, S47, S48, S51 and S52; Appendix S15

13.2 The modifications, additions and deletions proposed in Document 393 for the above provisions were **approved** on second reading.

Resolution 212 (Rev.WRC-97)

13.3 **Approved** on second reading.

Resolution COM4-23 (WRC-97)

13.4 The **Chairman** pointed out that the square brackets around the word "should" in the *resolves* section of the Resolution had been removed when it had been considered on first reading.

13.5 Draft Resolution COM4-23 (WRC-97) was **approved** on second reading.

13.6 The **delegate of the United Kingdom** stated that, having regard to the provisions of the Treaty establishing the European Union, and the Council of Europe Convention on Transfrontier Television, his Administration would not be able to put into effect the procedures referred to in that Resolution. The **delegates of Germany, the Netherlands, Sweden, Denmark, Italy, Ireland, Finland, Spain, France, Luxembourg, Cyprus, Portugal, Norway, Belgium** and **Greece** said that their Administrations associated themselves with the statement by the United Kingdom.

13.7 The eighth series of texts submitted by the Editorial Committee (R.8) (Document 393) was **approved**, as a whole, on second reading.

14 Ninth series of texts submitted by the Editorial Committee for second reading (R.9) (Document 394)

14.1 The **Chairman** invited the Conference to consider, on second reading, the modifications, additions and deletions proposed in Document 394 with regard to the tables and footnotes of Article S5.

14.2 The **delegate of the United Kingdom** said that, in Table MOD 315 - 495 kHz, the square brackets around the reference to footnote S5.73 should be removed.

14.3 It was so **agreed**.

14.4 The **delegate of Moldova** said that the modifications approved in connection with Document 381 should be incorporated in Table MOD 495 - 1 606.5 kHz, which meant that footnote S5.87A, in which Uzbekistan was included, should appear under Region 1 in the 526.5 - 1 606.5 kHz part of the table.

14.5 It was so **agreed**.

14.6 The **Chairman of Committee 5** said that in footnotes MOD S5.286B and MOD S5.286C, "operating in accordance with the Table of Frequency Allocations" should be inserted after "fixed or mobile services", and in footnote MOD S5.286E, Nepal should be added to the list of countries and Mali and Ghana deleted.

14.7 It was so **agreed**.

14.8 Further to comments by the **delegates of France** and **the United Kingdom** in respect of Table MOD 10.7 - 12.7 GHz, the **Chairman** proposed that the table be modified as follows: footnote S5.492 should appear under Region 1 and in the 11.7 - 12.2 GHz section under Region 3; and a 12.5 - 12.75 GHz section should be added under Region 3, to include footnotes S5.492 and S5.493. The texts of footnotes S5.492 and S5.493 should also be added below the table.

14.9 It was so **agreed**.

14.10 The modifications, additions and deletions in Document 394 relating to Article S5, along with those agreed to during the meeting, were **approved** on second reading.

15 Principle of due diligence (continued) (Document 203(Rev.1))

15.1 The **Chairman** recalled that, at the end of its consideration of Document 203, the Plenary has asked Colombia, in consultation with other interested delegations and a representative of RRB, to revise its original document in the light of the comments made.

15.2 The **delegate of Colombia** said that draft Resolution [CLM/CTR/EQA-1], as contained in Document 203(Rev.1), constituted the output of a small group comprising representatives of the United States, United Kingdom, Syria, Colombia and RRB. The group had endeavoured to take account of all concerns expressed with regard to Document 203 and therefore proposed, first, to delete all measures to be taken immediately; second, to apply the new procedures as of the next conference; and third, to set 1 August 1998 as the date on which the Board was to send the draft Rules of Procedure to administrations and 1 January 1999, at the latest, as the date on which administrations were to submit their comments to the Board.

15.3 The **delegate of Luxembourg** considered that the two dates proposed in *resolves* 2 did not leave the Board and administrations enough time, given the considerable complexity of the principles set forth in No. S0.3 of the Radio Regulations.

15.4 The **representative of RRB** suggested that, as the task entrusted to the Board was considerable, the dates in question might be put back to, respectively, 1 January 1999 and 1 June 1999. The **delegate of Sweden**, who shared the concerns expressed by the delegate of Luxembourg, supported that suggestion.

15.5 The **delegate of Syria** said that the objective was to submit a final draft to WRC-99, and logically the dates should be set with that deadline in mind. The **delegate of Saudi Arabia** added that the end of *resolves* 1, the words "… from the next world radiocommunication conference" were rather vague.

15.6 The **Chairman**, supporting the previous two speakers, proposed that the end of *resolves* 1 be amended to read: "these Rules of Procedure shall be applied as from a date decided by the next world radiocommunication conference".

15.7 It was so **agreed**.

15.8 The **delegate of Australia** expressed concern at the first and second subparagraphs of *resolves* 3, which he said presented a serious problem: what would happen to networks already well into the coordination procedure? Those provisions should be looked into further, and called for studies on the inevitable impact of their application on the resources available to the Bureau for the huge task before it.

15.9 The **delegate of the Netherlands** said that, despite the good intentions behind the draft Resolution, it might well raise more problems than it solved. The matter should be looked into further with a view to submission of a proposal to the next WRC, and in the meantime he suggested that no instructions be given to BR.

15.10 The **Legal Adviser** pointed out that in *resolves* 1, the phrase "provisions set out in" should be replaced by "principles reflected in", as No. S0.3 simply repeated No. 196 of the ITU Constitution (Geneva, 1992). Adding to the comments by the delegate of the Netherlands, he said that he did not understand *resolves* 3, which contradicted *resolves* 2.

15.11 The **Chairman**, recalling that when considering Document 203 the Plenary had supported the principle of the text under consideration, observed that the problem appeared to be related to the wording of the draft Resolution, but it was too late to embark upon a long redrafting exercise at that stage.

15.12 The **delegate of Algeria** pointed out that, in *resolves* 1 and 4, respectively, "the next world radiocommunication conference" and "WRC" should be replaced by "WRC-99". He supported the document in principle and suggested that its authors and representatives of RRB should immediately conduct informal consultations in an attempt to resolve the difficulties.

15.13 The **delegate of Sweden**, supporting the delegate of the Netherlands, said that the matter under consideration was too important for a hasty decision to be taken immediately.

15.14 The **delegate of Turkey** suggested that the Plenary should break briefly to allow an informal group to prepare a new draft.

15.15 The **delegate of Syria** then proposed simply to delete *resolves* 3 completely, to renumber *resolves* 4 accordingly, and to amend *resolves* 2 by replacing 1 August 1998 and 1 January 1999 by, respectively, 31 October 1998 and 1 March 1999. The **delegates of the United States, Colombia, the Netherlands, India** and **Italy** supported that proposal, whereas the **delegate of Malaysia** said that he could not do so.

15.16 The **Director of BR**, having for clarity summarized the amendments put forward, suggested that in new *resolves* 3 the phrase "through the Council" should be deleted.

15.17 Draft Resolution [CLM/CTR/EQA-1], as contained in Document 203(Rev.1), and as amended, was **approved** on second reading.

15.18 The **Legal Adviser** suggested that the Conference should fill a gap which might be left between 1 January 1999 and the date which the next conference set for the Rules of Procedure to enter into force. In that interval, RRB might have to develop Rules for BR; if so, could it do so without endorsement by WRC-99?

15.19 The **delegate of Syria** said that such a situation had no bearing on the normal application of the Rules of Procedure, which in fact it would be up to the next WRC to address. The **representative of RRB** fully endorsed those comments.

16 Annex 1 to Appendix S5 (Document 277)

16.1 The **Chairman of Committee 5** said that the pink document which was to be submitted to the Plenary might not be available in time to be examined in a meeting of the Conference. She therefore proposed that the Plenary should instead address on second reading the relevant text as contained in blue Document 277, which had been approved on first reading, subject to the amendments agreed to on first reading and with the addition of the following note: "These changes to the various sections of Appendix S5 should also be reproduced as part of the updating of the annexes to Resolution 46, since Resolution 46 will come into effect on 22 November 1997 and Appendix S5 will come into effect on 1 January 1999".

16.2 It was so **agreed**.

16.3 There being no further comment, Annex 1 to Appendix S5 (Rev.WRC-97), as contained in Document 277 and as modified by the Plenary at its seventh meeting, was **approved** on second reading.

17 Proposed modification of ADD S5.87A (Document 381)

17.1 The **Chairman of Committee 5** recalled that when the Plenary Meeting had considered Document 381, the Swedish delegation had raised a query with regard to the category of proposal of ADD S5.87A, and she had pointed out that the proposed addition had been approved unanimously by Committee 5. In the meantime, the Swedish delegation had consulted the delegation of Uzbekistan, and it was now proposed to add the following text to the end of ADD S5.87A: "Such use is subject to agreement obtained under Article 14/No. S9.21 with administrations concerned and limited to ground-based radiobeacons in operation on 27 October 1997 until the end of their lifetime", and to include that proposal in square brackets in the pink document for second reading.

17.2 The **Chairman** said that Document 381 had already been approved by the Plenary on second reading as a pink document, and therefore unfortunately the proposal could not be taken into consideration.

18 Tenth series of texts submitted by the Editorial Committee for second reading (R.10) (Document 395)

18.1 The **Chairman** invited the meeting to consider Document 395, which contained texts developed by Committee 6 on the basis of Document DT/5.

18.2 The blue version of the document under consideration had been approved by the Plenary on first reading with no difficulty, as only editorial modifications had been put forward then.

18.3 The **delegate of the United States**, supported by the **delegates of Russia** and **Turkey**, proposed that the document be submitted as a whole to the Plenary Meeting for approval.

18.4 It was so **agreed**.

18.5 There being no comment, Document 395 was **approved**, as a whole, on second reading.

18.6 In reply to a query by the **delegate of Moldova**, the **representative of BR** said that the table on rainfall indices given under NOC 2.2.2 concerned only Region 2; the indices relating to Regions 1 and 3 were given for information purposes only and were not used in the corresponding Plans.

The meeting rose at 0530 hours on Friday, 21 November 1997.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 399-E
16 December 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

FOURTEENTH PLENARY MEETING

Friday, 21 November 1997, at 1550 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Noting of declarations and reservations	400
2	Tribute to the Legal Adviser and closing remarks	-

1 Noting of declarations and reservations (Document 400)

1.1 The declarations and reservations in Document 400 were **noted**.

2 Tribute to the Legal Adviser and closing remarks

2.1 The **delegates of Sweden** and **Canada** paid a tribute to the Legal Adviser, Mr. Alfons Noll, for whom WRC-97 was the last conference prior to retirement. They applauded his professionalism, loyalty to the Union, dedication, impartiality, and inimitable personal style, and stressed *inter alia* his invaluable contribution to preparations for the Additional Plenipotentiary Conference in 1992, when he had translated the proposed structural changes to the Union into legal provisions for the Constitution and Convention of the Union.

2.2 The **Legal Adviser** thanked the previous speakers for their kind words. After alluding to some of his most rewarding experiences in ITU, he sang "Auld Lang Syne" in farewell.

2.3 The **delegates of Mexico** and **Pakistan** paid a tribute to the Chairman for his able leadership and contribution to the successful outcome of WRC-97. They also commended the contribution and hard work of the Director of the Radiocommunication Bureau, the BR staff and all those in the ITU Secretariat whose unstinting efforts had expedited the proceedings.

The meeting rose at 1615 hours.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 400-E
21 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

DECLARATIONS

At the time of signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the undersigned delegates take note of the following statements made by signatory delegations:

1

Original: English

For Thailand:

The delegation of Thailand to the World Radiocommunication Conference (Geneva, 1997) reserves for its Government the right to take any action it deems necessary to safeguard its interests should any Member or Members of the International Telecommunication Union fail, in any way, to comply with the Final Acts of this Conference and the Annexes thereto or should any of the declarations by other Members jeopardize its telecommunication services or infringe its national sovereignty.

2

Original: English

For the Republic of Mauritius:

The delegation of the Republic of Mauritius reserves for its Administration the right to take any action it may consider necessary to safeguard its interests, should certain Members of the Union fail to observe the provisions of the current Radio Regulations or should reservations entered by other Members jeopardize the operation of its radiocommunication services.

3

Original: English

For the Commonwealth of the Bahamas:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Commonwealth of the Bahamas reserves for its Government the right to take any measure it might deem necessary to safeguard its interest if another country should in any way fail to respect the conditions specified in the Final Acts or if the reservation made by any country should be prejudicial to the operation of the radiocommunication services of the Commonwealth of the Bahamas.

The delegation of the Commonwealth of the Bahamas further reserves for its Government the right to make any statement or declaration when depositing its instrument of its consent to be bound by the revision of the Radio Regulations by the World Radiocommunication Conference (Geneva, 1997).

4

Original: English

For the Socialist People's Libyan Arab Jamahiriya:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Great Socialist People's Libyan Arab Jamahiriya reserves for its country the right to take any measures it considers necessary to safeguard its interests. This reservation concerns, in particular, such harmful interference as may be caused to its fixed and mobile services by other networks in the bands 4 - 10 GHz, and sub-bands 1 980 - 2 010 MHz and 2 170 - 2 200 MHz.

5

Original: English

For the Syrian Arab Republic:

The delegation of the Syrian Arab Republic reserves for its Administration the right to take any action it considers necessary to protect its interests if Members of the Union should fail in any way whatever to comply with the provisions of the Radio Regulations and in particular Resolution 24 (WRC-95), as regards its intention to adopt provisionally the revised Radio Regulations by a world radiocommunication conference or to be bound by such revisions, or if reservations made by other Members should jeopardize the efficient operation of its radiocommunication services.

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the Syrian delegation reserves for its government the right to take any action it considers necessary to protect its interests, in particular its sovereign right to protect the operation of its radiocommunication stations from harmful interference.

This reservation is justified among other things by its doubt regarding certain decisions adopted by this Conference as regards ensuring the rational, equitable, efficient and economic use of part of the radio-frequency spectrum by radiocommunication services including those using the geostationary-satellite orbit, in particular those relevant to the planning of Appendices 30 and 30A.

The Syrian delegation also states that:

In the bands 10.7 - 11.7 GHz, 11.7 - 12.5 GHz, 12.5 - 12.75 GHz, 12.75 - 13.25 GHz, 13.75 - 14.5 GHz, 17.3 - 18.1 GHz and 17.8 - 18.6 GHz, stations of the non-geostationary fixed-satellite service shall not cause harmful interference to or claim protection from existing or planned stations of the fixed and mobile services or geostationary fixed-satellite services, or existing and planned stations of the broadcasting-satellite service, in accordance with the provisions of Appendices 30, 30A and 30B. In addition, emissions from the non-geostationary fixed-satellite service shall not cover its national territories without its agreement.

6

Original: English

For the Kingdom of Saudi Arabia, the State of Bahrain, the United Arab Emirates, the State of Kuwait, the Sultanate of Oman and the State of Qatar:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegations of the Administrations of the Cooperation Council for the Arab States of the Gulf (GCC) to this Conference, on behalf of their Governments, reserve the right to take any action they deem necessary to safeguard their interests should they be affected or should any Member fail to comply with the provisions of the Convention or its Annexes, or should reservations by any other country jeopardize their telecommunication services.

7

Original: French

For the Gabonese Republic:

The delegation of the Gabonese Republic reserves for its Government the right to take such action as it may deem necessary to safeguard its interests should other Members fail to comply with the provisions of the Final Acts of the World Radiocommunication Conference (Geneva, 1997), or should reservations entered by other countries jeopardize the efficient operation of its telecommunication services.

8

Original: English

For Malaysia:

The delegation of Malaysia to the World Radiocommunication Conference (Geneva, 1997):

1 reserves the right of its Government to take any action and preservation measures it deems necessary to safeguard its national interests should the Final Acts drawn up in the World Radiocommunication Conference (Geneva, 1997) directly or indirectly affect its sovereignty or be in contravention with the Constitution, Laws and Regulations of Malaysia as well as with the rights of Malaysia which exist and may result from any principles of international law or should reservations by any Member of the Union jeopardize Malaysia's telecommunication and radiocommunication services or lean to an increase in its contributory share towards defraying the expenses of the Union;

2 further reserves the rights of its Government to make such reservations as may be necessary up to and including the time of ratification of the Final Acts of the World Radiocommunication Conferences (Geneva, 1995 and 1997).

9

Original: English

For the People's Republic of Bangladesh:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the Bangladesh delegation reserves for its Government the right to take such measures as necessary to safeguard its interests if any other country should in any way fail to respect the conditions specified in the Final Acts, or if the reservations made by any other country become prejudicial or detrimental to radiocommunication services in Bangladesh.

In addition, Bangladesh reserves the right to make appropriate specific reservations prior to ratification of the Final Acts.

10

Original: English

For the People's Democratic Republic of Algeria, the Kingdom of Saudi Arabia, the State of Bahrain, the United Arab Emirates, the Islamic Republic of Iran, the State of Kuwait, Lebanon, the Socialist People's Libyan Arab Jamahiriya, the Islamic Republic of Pakistan, the Syrian Arab Republic and the Republic of Yemen:

The above-mentioned delegations to the World Radiocommunication Conference (Geneva, 1997), declare that the signature and possible ratification by their respective Governments of the Final Acts of this Conference, should not be valid for the ITU Member under the name "Israel", and in no way whatsoever imply its recognition by these Governments.

11

Original: French

For the Republic of Cameroon:

The delegation of the Republic of Cameroon to the World Radiocommunication Conference (Geneva, 1997), reserves for its Government the right to take any action it considers necessary to protect its interests should a Member of the Union fail to comply with the provisions of these Final Acts or should declarations and reservations made by others jeopardize the efficient operation of its radiocommunication services.

The delegation of the Republic of Cameroon further reserves for its Government the right, as and when necessary, to make additional reservations to these Final Acts.

12

Original: French

For the Republic of Senegal:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Senegal reserves for its Government the right:

1) to take such action as it may deem necessary to safeguard the interests of Senegal and to protect the operation of telecommunication services in Senegal in the event that the present or future efficient operation of those services might be jeopardized by:
   - decisions of this Conference (WRC-97);
   - reservations entered by other delegations in the Final Acts of this Conference (WRC-97);
2) to take any action in conformity with the Constitution and the laws of the Republic of Senegal.

13

Original: French

For the Togolese Republic:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Togolese Republic reserves for its Government the right to take any action it considers necessary for safeguarding its interests should decisions taken at this Conference, reservations expressed by other Members of the Union with regard to these Final Acts or non-compliance with the provisions of the revised Radio Regulations jeopardize the efficient operation of its telecommunication services.

14

Original: English

For the Republic of Indonesia:

The delegation of the Republic of Indonesia to the World Radiocommunication Conference (Geneva, 1997):

1 reserves the right of its Government to take any action and preservation measures it deems necessary to safeguard its national interest should the Final Acts drawn up in the World Radiocommunication Conference (Geneva, 1997) directly or indirectly affect its sovereignty or be in contravention with the Constitution, Laws and Regulations of the Republic of Indonesia as well as with the rights of the Republic of Indonesia which exist and may result from any principles of international law. In this regard, the Government of the Republic of Indonesia will recognize the legitimate interests of other countries with a view to improving the use of the geostationary and/or non-geostationary-satellite orbit, broadcasting-satellite and HF broadcasting services and other radiocommunication services for the benefit of mankind;

2 further reserves the right of its Government to take any action and preservation measures it deems necessary to safeguard its national interests should any administration in any way fail to comply with the provision and requirements in the Final Acts of the World Radiocommunication Conference (Geneva, 1997) or should the consequences of reservations by any administration jeopardize the rights of the Republic of Indonesia under the Final Acts.

15

Original: English

For the Republic of Suriname:

The delegation of the Republic of Suriname declares that its Government reserves the right to take such action as it may consider necessary to protect its interests, should a Member fail in any way to observe the provisions of the Constitution and Convention of the International Telecommunication Union (Geneva, 1992), or should the reservations made by such Member jeopardize its telecommunication services or lead to an increase in Suriname's share in defraying the expenses of the Union.

16

Original: English

For Ghana:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Ghana reserves for its Government the right to take any action it considers appropriate to safeguard its legitimate interests, should these interests be deemed to be in jeopardy through the failure of any Member State of the International Telecommunication Union to comply with the provisions of these Final Acts. The Government of Ghana further reserves the right to express reservations on any provisions of the Final Acts deemed to be incompatible with the Constitution, laws and regulations of the country.

17

Original: French

For Tunisia:

In signing the Final Acts, the Tunisian delegation expresses reservations should the texts adopted by this Conference within a very limited time give rise to interpretations which are not in conformity with the fundamental principles of ITU guaranteeing equitable treatment for all Members of the Union. By this Declaration, the Tunisian delegation reserves for its Government the right to take any action it considers necessary to safeguard its interests and protect its radiocommunication services.

18

Original: English

For the Republic of Albania:

The delegation of Albania to the World Radiocommunication Conference (Geneva, 1997) reserves for its Government the right to take any action it deems necessary to safeguard its interest should any Member or Members of the International Telecommunication Union fail in any way to comply with or apply the provisions of these Final Acts of this Conference and the Annexes thereto, or should any acts of other entities or third parties affects its national sovereignty.

19

Original: French/ English/ Spanish

For the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Italy, Luxembourg, the Kingdom of the Netherlands, Portugal, the United Kingdom of Great Britain and Northern Ireland and Sweden:

The delegations of the Member States of the European Union declare that the Member States of the European Union will apply the revision of the Radio Regulations adopted at this Conference in accordance with their obligations under the Treaty establishing the European Economic Community.

20

Original: Spanish

For Spain:

The Spanish delegation reserves for the Kingdom of Spain the right, in accordance with the Vienna Convention on the Law of Treaties of 23 May 1969, to express reservations to the Final Acts adopted by this Conference until such time as, in accordance with the provisions of Article 54 of the Constitution of the International Telecommunication Union, it consents to be bound by the revision to the Radio Regulations contained in those Final Acts.

21

Original: English

For the Republic of Moldova:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the Republic of Moldova delegation reserves for its Government the right to take such measures as it might deem necessary to safeguard its interests if any other country should in any way fail to respect the conditions specified in the Final Acts or if the reservations made by any country should be prejudicial or detrimental to radiocommunication services in the Republic of Moldova.

22

Original: French

For the Republic of the Niger:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997) the delegation of Niger reserves for its Government the right to take any action it considers necessary to safeguard its interests should any Members fail to comply with the provisions of the Final Acts adopted by the Conference or should reservations entered by other Members of the Union give rise to harmful interference to its radiocommunication services.

23

Original: English

For the Republic of South Africa:

The delegation of the Republic of South Africa declares that it reserves for its Government the right to take any action which it may deem necessary to safeguard its interests should any Member State fail to comply with the provisions of the Constitution and Convention of the International Telecommunication Union (Geneva, 1992), its Annexes and the Protocols attached thereto and the Radio Regulations. The same reservation is made for the Government in regards to the Final Acts of the World Radiocommunication Conferences (Geneva, 1995 and 1997), and in regards to any reservations or actions by other Member States which jeopardize its telecommunication services.

Furthermore, the delegation of South Africa reserves for its Government the right to make any statements or reservations when depositing its instruments of ratification of the Final Acts of the World Radiocommunication Conference (Geneva, 1997).

24

Original: English

For the Republic of Hungary:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Hungary reserves the right for its Government to take such action as it may consider necessary to safeguard its interests should any Member States of the Union fail in any way to observe or comply with the provisions of these Final Acts or should reservations by other countries jeopardize the proper operation of its radiocommunication services.

25

Original: English

For the Republic of Slovenia:

The delegation of the Republic of Slovenia to the World Radiocommunication Conference (Geneva, 1997), declares the following reservation at signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997) and reserves the right for its Government to take such action as it may consider necessary to safeguard its interests should any Member State of the Union fail in any way to observe or comply with the provisions of these Final Acts or should reservations by other countries jeopardize the proper operation of its radiocommunication services.

26

Original: English

For Greece:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997) the delegation of Greece declares:

1 that it reserves for its Government the right:

a) to take any action consistent with its national and international law that it may consider or deem necessary or useful to protect and safeguard its sovereign and inalienable rights and legitimate interests, should any Member State of the International Telecommunication Union fail in any way to comply with or apply the provisions of these Final Acts, which include the Radio Regulations and the Resolutions of the Conference, or should the acts of other entities or third parties affect its national sovereignty;

b) to make, under the Vienna Convention on the Law of Treaties of 1969, reservations to the above-mentioned Final Acts at any time it considers proper between the date of signature and the date of their ratification or approval and not to be bound by any provision of these Final Acts or of the Constitution and the Convention of the International Telecommunication Union restricting its sovereign right to make reservations;

2 that the assignments contained in the Plans of Appendices 30 (S30) and 30A (S30A), as revised in these Final Acts and as reflected in the relevant documents of this Conference, compromise the previous assignments of the Administration of Greece and consequently, if the situation is not improved through the procedure foreseen after the Conference, so as to keep balance with other assignments, the Administration of Greece may consider itself not to be bound by the above-mentioned Plans and by those provisions of these Final Acts, and especially of the respective Appendices that it may deem necessary to protect and safeguard its rights and legitimate interests on this matter;

3 that it is fully established that the term "country", used in the provisions of these Final Acts and in any other instrument or act of the International Telecommunication Union with regard to its Members and their rights and obligations, is regarded as being synonymous in all respects with the term "sovereign State" as legally constituted and internationally recognized.

27

Original: English

For the Democratic People's Republic of Korea:

The delegation of the Democratic People's Republic of Korea to the World Radiocommunication Conference (Geneva, 1997), in signing the Final Acts of the Conference, strongly insists that the broadcasting-satellite service to other countries should be conducted only with the consent of the country concerned.

The delegation also requests that the rainfall intensity put forward by the Democratic People's Republic of Korea be used, as it is in planning the broadcasting-satellite service.

The delegation declares that the Democratic People's Republic of Korea reserves the right to take any action it deems necessary to protect its interests if any other country does not observe relevant provisions of the Final Acts and if reservations made by other countries hinder proper operation of its broadcast and telecommunication service or jeopardize its sovereignty.

28

Original: Spanish

For Spain:

Spain has always opposed and will continue to oppose any attempt to change the status of Gibraltar, a dependent territory of the United Kingdom which is the State responsible for all aspects of its international relations. Spain cannot tolerate the use of technical arguments or reasons, or other means, to promote the recognition, whether explicit or implicit, of such supposed change of status, nor can it accept, in any way, the recognition of the Colony of Gibraltar as a separate entity independent from the metropolitan country in the international community.

The terminology used in the United Kingdom for Gibraltar is "Crown Colony" and "Dependent Territory". In compliance with Chapter XI of the Charter of the United Nations, the United Kingdom registered Gibraltar in 1946 as a "non-self-governing territory"; it is included in the list of territories to be decolonized and has been the subject of numerous resolutions. For the European Union it is a European territory whose external relations are assumed by the United Kingdom (Art. 227.4).

The presence of a representative of the local government of the Colony as International Frequency Coordinator in the World Radiocommunication Conference (WRC-97) is by no means a technical or administrative issue and is a political matter relating directly to the dispute between Spain and the United Kingdom concerning the Colony. The responsibility for the international coordination of frequencies for its Colony devolves exclusively on the international coordinating authority of the metropolitan country which alone is entitled to engage in such negotiations.

The United Kingdom, on the pretext of the internal organization of its services, has on several occasions attempted to introduce a representative of the local government of Gibraltar with an independent voice in the bilateral negotiations on telecommunications with Spain. That objective has always been rejected.

Although there is no objection to allowing the attendance at international meetings and conferences of the person or persons responsible locally in Gibraltar for telecommunication issues, such person or persons should on no account be permitted to be officially accredited as the representative of the "Government of Gibraltar" and still less be given functions which imply a capacity for international relations.

29

Original: English

For Malta:

The delegation of Malta reserves for its Government the right to take such action as it may consider necessary to safeguard its interests should any Member not share in defraying the expenses of the Union, or should any Member fail in any other way to comply with the requirements of the Constitution and the Convention of the International Telecommunication Union (Geneva, 1992), or the Annexes or Protocol attached thereto, or should reservations made by other countries jeopardize the operation of its telecommunication services or entail an increase in its contributory share in defraying the expenditure of the Union.

30

Original: French

For the People's Democratic Republic of Algeria:

In signing the Final Acts, the delegation of the People's Democratic Republic of Algeria expresses reservations should the number and complexity of the texts considered and adopted by this Conference within a very limited time give rise to interpretations which are not in conformity with the fundamental principles of the Union guaranteeing equitable treatment of the rights of the Members of the Union.

By this reservation, the delegation of the People's Democratic Republic of Algeria formally declares that it does not consider itself bound by all the provisions adopted under the conditions described above, and in particular by those that were the subject of declarations on its part during the Plenary Meetings.

31

Original: English

For New Zealand:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the New Zealand delegation reserves for its Government the right to take such measures as it might deem necessary to safeguard its interests if any other country should in any way fail to respect the conditions specified in the Final Acts or if the reservations made by any other country should be prejudicial or detrimental to radiocommunication services in New Zealand.

In addition, New Zealand reserves the right to make appropriate specific reservations and statements prior to ratification of the Final Acts.

32

Original: English

For the Republic of Yemen:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the Yemen Republic delegation declares on behalf of its Government that:

1 it reserves for its Government the right to take any action it may deem necessary consistent with its national law and with international law, to safeguard its national interests, should other Members fail to comply with the Constitution or the Convention of the International Telecommunication Union (Geneva, 1992), or should reservations by representations of other States jeopardize its telecommunications services or its full sovereign rights;

2 in view of the possibility of harmful interference from the operation of non-GSO MSS including their feeder links and non-GSO FSS in some frequency bands newly allocated to them by the Conference to the use of these bands, the Yemeni delegation reserves for its Government the right to continue to use the existing and planned services in these bands free from harmful interference.

33

Original: English

For Nepal:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Kingdom of Nepal reserves the right for its Government to take such action as it may consider necessary to safeguard its interests should any Member States of the ITU fail in any way to observe or comply with the provisions of these Final Acts, or should reservations by other countries jeopardize its telecommunication services.

34

Original: English

For the Republic of Namibia:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Namibia reserves for its Government the right to take such actions, as may be considered necessary, to safeguard its interests should any Resolutions and Recommendations adopted by the above-mentioned Conference jeopardize in any way the radiocommunication services of the Republic of Namibia.

35

Original: English

For the Kingdom of Tonga:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Kingdom of Tonga:

1 Declares that it reserves for its Government the right:

a) to take any measures it may deem necessary, in conformity with its domestic law and with international law, to safeguard its national interests should any other Member fail to comply with the provisions of the Radio Regulations or any other documents contained in the Final Acts of the Conference, or should the Acts or reservations by representatives of other States affect its national sovereignty or its national telecommunications;

b) to make, under the Vienna Convention on the Law of Treaties of 1969, reservations to the above-mentioned Final Acts at any time it considers proper between the date of signature and the date of their ratification or approval and not to be bound by any provision of these Final Acts or of the Constitution and the Convention of the International Telecommunication Union restricting its sovereign right to make reservations.

2 Declares that the Kingdom of Tonga considers itself bound by the Radio Regulations (Geneva, 1997), only in so far as it expressly and duly consents to be bound, and subject to the completion of the appropriate procedures established in its domestic law.

3 Declares that the eventual ratification by the Kingdom of Tonga of any provisions of the Final Acts of the Conference which are retrospective in their application is done so only on the basis that such ratification of retrospective provisions is made on an exceptional basis and in exceptional circumstances. The Kingdom of Tonga does not accept that the inclusion in the Final Acts of the Conference of provisions which have a retrospective application sets a precedent for a similar approval of retrospective provisions by future conferences.

36

Original: Spanish

For Mexico:

The Government of Mexico, in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), expresses the following reservations:

1 the sovereign right to take any action it considers appropriate to regulate its telecommunications;

2 that signature of this instrument does not imply acceptance, either now or in the future, of the payment of financial charges in addition to the contributions laid down in the basic instruments of the Union;

3 the right to safeguard its interests should other Members of the Union cease to comply with the provisions of these Acts;

4 the right to safeguard its interests should reservations by other Members of the Union affect the operation of its telecommunication services;

5 that signature of the Final Acts of the present Conference shall not prejudice its right to make additional reservations or declarations at any time prior to eventual ratification of those Final Acts.

37

Original: English

For the Islamic Republic of Iran:

IN THE NAME OF GOD

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Islamic Republic of Iran formally declares that:

1 In view of the possibility of occurrence of harmful interference from the operation of non-GSO FSS systems in the Ku band to its different services operating or planned in this band, the delegation of the Islamic Republic of Iran reserves for its Government the right to take any measures, if such interference occurs, for securing the continuation or commencement of the interference-free operation of its existing and planned services.

2 In view of the possible endangerment of the interests of its Government due to the application of the decisions of this Conference on the following subjects:

a) early coming into force of the decisions of WRC-95 and WRC-97;

b) matters related to RR 2674 (S23.13);

c) matters related to "non-standard parameters", "use of old parameters for a new generation of satellites", "grouping concept", "operation on non-interference basis" and "no reply meaning agreement" for the BSS service in the band 11.7 - 12.2 GHz,

the delegation of the Islamic Republic of Iran reserves for its Government the right to take any measures aimed at safeguarding its interests.

3 The delegation of the Islamic Republic of Iran reserves for its Government the right to take any action as it may consider necessary to safeguard its interests should they be affected by decisions taken at this Conference, or by failure on the part of any other country or administration in any way to comply with the provisions of the instruments amending the Constitution and Convention of the International Telecommunication Union as adopted by the Plenipotentiary Conference (Kyoto, 1994), or the Annexes or the Protocols and Regulations attached thereto, or these Final Acts, or should the reservations or declarations by other countries or administrations jeopardize the proper and efficient operation of its telecommunication services, or infringe the full exercise of the sovereign rights of the Islamic Republic of Iran.

4 The delegation of the Islamic Republic of Iran reserves for its Government the right to make additional reservations when ratifying the Final Acts of this Conference.

38

Original: English

For the Republic of Latvia and the Republic of Lithuania:

The delegations of the above-mentioned countries reserve for their Governments the right to take action they consider necessary to protect their interests should any Member of the Union fail to comply with the provision of the Final Acts of this Conference or should reservations made upon signing the Final Acts or other measures taken by any Member of the Union jeopardize the proper operation of those countries' telecommunication services.

39

Original: English

For Turkey:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Turkey reserves for its Government the right to take whatever action it deems necessary to safeguard its interests on the decisions taken by the Conference in modifying, amending, deleting and adding provisions, footnotes, tables, Resolutions and Recommendations in the Radio Regulations, should any Member fail to comply with the Final Acts, Annexes and the Radio Regulations thereto, in using its existing services and introducing new services for space, terrestrial and other applications or should any reservation entered by other countries jeopardize the proper operation of its telecommunication services.

40

Original: English

For the Republic of Zimbabwe:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Zimbabwe states that its Administration would comply with the provisions of the Final Acts of WRC-97 without prejudice to the Republic of Zimbabwe's sovereign right to take any measures that the Government of Zimbabwe deems necessary to safeguard and protect its telecommunication and other communication services in the event of harmful interference caused to the said services by any Member of the Union failing to comply with the provisions of the Radio Regulations as revised and adopted by this Conference.

41

Original: Spanish

For Ecuador:

In signing the Final Acts, the delegation of Ecuador reserves for its Government the right to take whatever measures it considers necessary should Ecuador's telecommunication services suffer interference from the radio stations of another country, or should its interests be jeopardized in any way by any action of another country, as a result of that country's failure to comply with the decisions of this Conference, or should reservations by other Members of the Union jeopardize its telecommunication services.

In particular, it reserves the right to adopt such measures as it considers appropriate in relation to emissions by commercial radiocommunication systems not authorized to provide services in the territory of Ecuador, and not to recognize as valid claims arising from any utilization of such unauthorized emissions.

42

Original: English

For the Lao People's Democratic Republic:

In signing the Final Acts of the World Radiocommunication Conference of the International Telecommunication Union (Geneva, 1997), the delegation of the Lao People's Democratic Republic reserves for its Government the right to take any steps which it may consider necessary to safeguard its interests should Members of the Union fail to comply with the provisions of these Final Acts, of the Constitution and the Convention of the International Telecommunication Union or the Annexes or Protocols attached thereto, or should the reservations made by other countries compromise the proper operation of its telecommunication services.

With respect to the new beam assigned to China in Step 2 of the Plan revision process at 122.0° E; the delegation has reserved its position on this matter in the Committee, Plenary and these Final Acts on the grounds that the compatibility of the assignments to this beam with the assignments to the LSTAR system may require coordination with the Administration of Lao P.D.R. The information on the LSTAR assignments was filed with the Radiocommunication Bureau before the commencement of WRC-95. That is, before the decisions of that Conference on the matter of Plan revision were known and in accordance with the regulatory regime in force at that time.

43

Original: English

For the People's Republic of China:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the Chinese delegation declares:

1 The Chinese delegation reserves for its Government the right to take such measures and actions it may deem necessary to safeguard its interests should other Members of the International Telecommunication Union in any way fail to comply with or execute the provisions of these Final Acts or the Radio Regulations, or should reservations or declarations made by other Members jeopardize the proper operation of the telecommunication services of China or affect the full exercise of its sovereign rights.

2 In view of the possibility of harmful interference from the operation of MSS and non-GSO FSS in some frequency bands newly allocated to them by the Conference to the use of those services already allocated in these bands, the Chinese delegation reserves for its Government the right to continue to use the existing and planned services in these bands free from harmful interference.

3 It also reserves the right for its Government to make any additional reservation which it considers necessary up to and at the time of its ratification of these Final Acts.

44

Original: English

For the Republic of Mozambique:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Mozambique reserves the right of its Government to take any action it deems necessary to safeguard its interests in the event of Members failing in any way to comply with the provisions of the Final Acts of the World Radiocommunication Conference (Geneva, 1997), or should reservations by other countries jeopardize its telecommunication services.

45

Original: English

For Canada:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Canada reserves for its Government the right to take any measures it might deem necessary to safeguard its interests if another Member State of the Union should in any way fail to respect the conditions specified in the Final Acts or if the reservations made by any Member State should be prejudicial to the operation of radiocommunication services in Canada.

The delegation of Canada further declares that it reserves for its Government the right to make any statements or reservations when depositing its instruments of ratification for the Final Acts of the World Radiocommunication Conference (Geneva, 1997).

46

Original: English

For the Republic of Cyprus:

The delegation of the Republic of Cyprus reserves for its Government the right not to be bound by those provisions adopted by the World Radiocommunication Conference (WRC-97), which are potentially retroactive in character and could prejudice the legal situation established under the auspices of the Radio Regulations in force on the date of signature of the present Final Acts.

47

Original: Spanish

For Cuba:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Cuba reserves for its Government the right to take such action as it deems necessary to safeguard its interests should any Member fail to comply with the provisions of these Final Acts or use its radiocommunication services for purposes contrary to those established in the Preamble to the Constitution of the International Telecommunication Union, or should reservations by any other Member jeopardize its telecommunication services.

The delegation of Cuba also reiterates and incorporates by reference in these Final Acts all its reservations and declarations made at previous world administrative radiocommunication conferences, as well as Declaration No. 40 in the Final Acts of the Plenipotentiary Conference (Kyoto, 1994).

The delegation of Cuba reserves for its Government the right to make any additional reservations which it deems necessary until ratification of the present Final Acts.

48

Original: English

For the Republic of Singapore:

The delegation of the Republic of Singapore reserves for its Government the right to take any action it considers necessary to safeguard its interests should any Member of the Union fail in any way to comply with the requirements of the Final Acts of the World Radiocommunication Conference (Geneva, 1997), or should reservations by any Member of the Union jeopardize the Republic of Singapore's telecommunication services, affect its sovereignty or lead to an increase in its contributory share towards defraying the expenses of the Union.

The delegation of the Republic of Singapore further reserves for its Government the right to make any additional reservations which it considers necessary up to and including the time of its ratification of the Final Acts of the World Radiocommunication Conference (Geneva, 1997).

49

Original: French

For the Republic of Mali:

In signing the Final Acts of this Conference, the delegation of Mali reserves for its Government the right to take any measures and action necessary to protect its national rights and interests should any Members of the Union fail in any way to comply with the provisions of the Final Acts and jeopardize directly or indirectly the interests of its telecommunication services or endanger security or national sovereignty.

50

Original: French

For France:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the French delegation expresses reservations against the possibility that the number and complexity of the texts adopted within a very limited time and the risks due to the speeding up of the process for the approval of documents might give rise to interpretations which were not in conformity with the final consensus of the Conference.

By this reservation, France again draws attention to the consequences of the inconsistency between the modified parameters adopted for the revision of the Appendix S30 Plan and the unchanged parameters in Annex 4 of Appendix S30, which is responsible for ensuring the protection of the Plan against the FSS in Regions 2 and 3. France accordingly reserves the right to apply any regulatory means that might prove necessary in order to ensure the protection to which its broadcasting-satellite networks are entitled under the Appendix S30 Plan.

More generally, the delegation of France reserves for its Government the right to take any measures it might deem necessary to protect its interests should any Member State of the Union fail to respect the provisions of these Final Acts or to comply with them or should reservations made by other countries jeopardize the efficient operation of its telecommunication services.

51

Original: English

For Portugal:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the Portuguese delegation expresses reservations, should the number and complexity of the texts adopted within a very limited period of time, together with the risks inherent in the acceleration of the approval procedure, give rise to interpretations which are not in conformity with the final consensus of the Conference.

By this reservation, Portugal draws attention to the consequences of inconsistency between those modified parameters considered for the revision of the Plan of Appendix S30, and those which remain unchanged in Annex 4 to Appendix S30 which is intended to ensure protection of the Plan from the FSS in Regions 2 and 3, and as such to the need for revision of this Annex.

In general terms, the Portuguese delegation reserves for its Government the right to take any measures it considers necessary to protect its interests if a Member State of the Union should fail in any way to comply with the provision of these Final Acts, or to conform to those Acts, or if reservations made by other Members should jeopardize proper operation of its telecommunication services.

52

Original: English

For the United States of America:

1 The United States of America refers to No. 445 and No. 446 of the International Telecommunication Union Convention (Geneva, 1992) and notes that in considering the Final Acts of this World Radiocommunication Conference (Geneva, 1997), the United States of America may find it necessary to make additional declarations or reservations. Accordingly, the United States of America reserves the right to make additional declarations or reservations, at the time of deposit of its notification to the International Telecommunication Union, of its consent to be bound by the revisions to the Radio Regulations adopted by this World Radiocommunication Conference.

2 The United States of America shall not be deemed to have consented to be bound by revisions of the Radio Regulations adopted at this Conference without specific notification to the International Telecommunication Union by the United States of America of its consent to be bound.

3 The United States of America reiterates and incorporates by reference all declarations and reservations made at prior world administrative radiocommunication conferences and world radiocommunication conferences.

The United States of America will make all reasonable efforts to comply with the administrative due diligence procedures contained in Resolution GTPLEN2-1, but reserves the right not to do so in cases involving satellite networks or satellite systems that transmit government telecommunications as defined under No. 1014 of the Annex to the International Telecommunication Constitution (Geneva, 1992).

The World Radiocommunication Conference (Geneva, 1997) has adopted provisional power limits regarding non-geostationary satellite systems providing fixed-satellite services. The United States of America is committed to protecting existing and planned geostationary satellite systems from unacceptable interference; therefore, the United States of America emphazises that these power limits are provisional, and are subject to detailed technical study and review by ITU-R and to confirmation by the next competent world radiocommunication conference. Any entity proceeding with a non-geostationary satellite system will be obliged to conform to the final regulations adopted at the next competent world radiocommunication conference. The United States of America is committed to participating fully in the ITU-R study of power limits that protect existing and planned geostationary-satellite and terrestrial services, while enabling new non-geostationary fixed-satellite technologies to develop.

The United States of America refers to Resolution COM4-23 and notes the United States of America's intent to enter into the type of agreements contemplated under No. S23.13 [RR 2674]. The United States of America further notes that it disagrees with aspects of the resolution that would encourage administrations originating satellite broadcasting services to other administrations to obtain further agreement of administrations before providing such service. It is the view of the United States of America that these additional agreements could be used to interfere with the free flow of information, which would conflict with Article 19 of the Universal Declaration of Human Rights, adopted by the United Nations General Assembly in 1948, and Recommendation 2 adopted at the Plenipotentiary Conference of the International Telecommunication Union (Kyoto, 1994).

53

Original: English

For the Federated States of Micronesia:

The United States of America, acting on behalf of the Government of the Federated States of Micronesia pursuant to No. 335 of the International Telecommunication Union Convention (Geneva, 1992), reserves for the Government of the Federated States of Micronesia the right to make declarations and reservations at the time of deposit of its notification to the International Telecommunication Union of the Government of the Federated States of Micronesia's consent to be bound by the revisions to the Radio Regulations adopted by this World Radiocommunication Conference.

54

Original: Spanish

For the Republic of Colombia:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Colombia:

1 Declares that it reserves for its Government the right:

a) To take any measures it may deem necessary, in conformity with its domestic law and with international law, to safeguard its national interests should any other Members fail to comply with the provisions of the Final Acts of the World Radiocommunication Conference (Geneva, 1997), or should reservations by representatives of other States jeopardize the radiocommunication services of the Republic of Colombia or its full sovereign rights.

b) To express reservations, under the Vienna Convention on the Law of Treaties of 1969, with regard to the Final Acts of the World Radiocommunication Conference (Geneva, 1997), at any time it sees fit between the date of the signature and the date of the possible ratification of the international instruments constituting those Final Acts.

2 Reaffirms, in their essence, reservations Nos. 40 and 79 made at the World Administrative Radio Conference (Geneva, 1979), especially with regard to the new provisions included in the documents of the Final Acts.

3 Declares that the Republic of Colombia considers itself bound by the instrument contained in the Final Acts only in so far as it expressly and duly consents to be bound by that international instrument, and subject to the completion of the appropriate constitutional procedures.

4 Declares that in conformity with its Constitution, its Government cannot give provisional effect to the international instruments which constitute the Final Acts of the World Radiocommunication Conference (Geneva, 1997).

55

Original: English

For the Republic of India:

In signing the Final Acts of the World Radiocommunication Conference, Geneva, 1997 (WRC-97), the delegation of the Republic of India reserves for its Government the right to take such actions, as may be considered necessary, to safeguard its interests should any Administration make reservations 4and/or not accept the provisions of the Final Acts or fail to comply with one or more provisions of the Final Acts, including those which form a part of the Radio Regulations.

56

Original: English

For the Islamic Republic of Pakistan:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), Pakistan's delegation declares that:

1 The delegation of the Islamic Republic of Pakistan reserves its Government's right of ratification of the decisions taken by the WRC-97 Conference, in accordance with the National Law, and further reserves the right of its Government to take effective steps to safeguard and protect its interest if any administration operates any satellite, broadcasting and other telecommunication services/systems in violation of the Radio Regulations in force or the decisions taken by the World Radiocommunication Conference (WRC-97) and ratified by the Government of the Islamic Republic of Pakistan. It also further reserves the right of its Government to take steps if reservations or declarations made by any other country or administration jeopardize the proper and efficient operation of its satellites, broadcasting, telecommunication and other electronic and radio systems/services.

2 The Government of the Islamic Republic of Pakistan cannot undertake to accept any transmission to or infringement of its territory by means of radio transmissions of any other administration and reserves its right to take such steps as necessary should this happen.

3 The decisions of the World Radiocommunication Conference (WRC-97) for dealing with frequency allocations in certain parts of the spectrum regarding areas falling within the territories of the disputed states of Jammu and Kashmir are without prejudice to the position recognized by the relevant resolutions of the United Nations on the question.

4 The delegation of the Islamic Republic of Pakistan reserves for its Government the right to make additional reservations when ratifying the Final Acts. It also reserves the right to amend the above listed reservations.

57

Original: English

For Brunei Darussalam:

The delegation of Brunei Darussalam reserves for its Government the right to take any action which it deems necessary to safeguard its interests should any Member of the Union fail in any way to comply with the Radio Regulations as amended by the Final Acts of the World Radiocommunication Conference (Geneva, 1997), or should any reservations by any Member of the Union jeopardize Brunei Darussalam's radiocommunication or telecommunication services, affect its sovereignty or lead to an increase in its contributory share towards defraying the expenses of the Union.

The delegation of Brunei Darussalam further reserves for its Government the right to make any additional reservations which it deems necessary up to and including the time of its ratification of the Final Acts of the World Radiocommunication Conference (Geneva, 1997).

58

Original: English

For the Federative Republic of Brazil:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Federative Republic of Brazil reserves for its Government the right to take any measures it may deem necessary to safeguard its interests if another Member State fails in any way to comply with the provisions of these Acts or if the reservations made by any other Member State should be prejudicial to efficient operation of radiocommunication services in Brazil.

In addition, Brazil reserves the right to make specific reservations prior to ratification of these Final Acts.

59

Original: English

For the Republic of Estonia:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Estonia reserves the right for its Government to take such actions as it may consider necessary to safeguard its interests if any Member State of the International Telecommunication Union fails in any way to observe or comply with the provisions of these Final Acts or should reservations by other countries jeopardize the proper operation of its radiocommunication services.

60

Original: English

For Luxembourg:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Luxembourg declares that, with respect to the entries in the BSS Plan for the satellite identified as EUROPESAT-1, and for which Note 8 in Appendix 30 and Note 9 in Appendix 30A indicate that these entries are "pending clarification of the bringing into use of this satellite network", Luxembourg does not consider that this network has been brought into service within the time period specified in Articles 4 of Appendix 30 and 30A and consequently will not take these assignments into consideration.

61

Original: English

For Papua New Guinea:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Papua New Guinea, in light of declarations and reservations deposited by other Member States of the ITU, is obliged to reserve for its Government the right to take such actions as it may consider necessary to safeguard its interests should any Member State of the ITU fail to observe the provisions adopted by this Conference and in so doing cause harmful interference to, or, should reservations or actions by such Member States jeopardize the operation of radiocommunication and/or telecommunication systems and services which are under the jurisdiction of the Government of Papua New Guinea.

62

Original: English

For the Socialist Republic of Viet Nam:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997) the Vietnamese delegation on behalf of the Socialist Republic of Viet Nam declares that:

1 it maintains the reservations made at the Nairobi Plenipotentiary Conference (1982) and which were reaffirmed at Plenipotentiary Conferences of the International Telecommunication Union held in Nice, 1989, Geneva, 1992 and Kyoto, 1994;

2 it reserves for its Government the right to take any action as it may consider necessary to safeguard its interests should reservations or declarations by any Members of the Union jeopardize its telecommunication services or affect its national sovereignty.

63

Original: English

For the Slovak Republic:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Slovak Republic reserves for its Government the right to take any action as it deems necessary, to safeguard its interests should any Member of the ITU fail in any way to comply with the Final Acts and Annexes or should the reservations made by the representatives of other States jeopardize the proper operation of its telecommunication services.

64

Original: Russian

For the Republic of Armenia, the Republic of Belarus, Georgia, the Republic of Kazakstan, the Republic of Moldova, the Republic of Uzbekistan, the Kyrgyz Republic, the Russian Federation and Ukraine:

The delegations of the above-mentioned countries reserve for their Governments the right to take the action they consider necessary to protect their interests should any Member of the Union fail to comply with the provisions of the Final Acts of this Conference or should reservations made upon signing the Final Acts or other measures taken by any Member of the Union jeopardize the proper operation of those countries' telecommunication services.

65

Original: English

For the Republic of Korea:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Korea reserves the right for its Government to take such action as it may consider necessary to safeguard its interests should any Member of the Union make reservations or fail to comply with the provisions of the Final Acts of this Conference.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 401-E
21 November 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

ADDITIONAL DECLARATIONS

66

Original: English

For the Republic of the Sudan:

Taking note of declarations in Document 400, in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Sudan declares on behalf of its Government that the Government reserves the right to take any action it may deem necessary consistent with its national law and with international law, to safeguard its national interests, should other Members fail to comply with the Constitution or the Convention of ITU (Geneva, 1992) or should reservations by representatives of other States jeopardize its telecommunications services or its full sovereign rights.

67

Original: English

For the Hashemite Kingdom of Jordan:

Having studied the declarations contained in Document 400, the Hashemite Kingdom of Jordan, in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), reserves the right for its Government to take any measures it might deem necessary to safeguard its interests if another country should in any way fail to respect the conditions specified in the Final Acts or if the reservations made by another country should be prejudicial to the operation of radiocommunication services of the Hashemite Kingdom of Jordan.

In view of the possibility of harmful interference from the operation of non-GSO MSS, including their feeder links, and non-GSO FSS in some frequency bands newly allocated to them by the Conference (Geneva, 1997) to the use of these bands, the delegation of the Hashemite Kingdom of Jordan reserves for its Government the right to continue to use the existing and planned services in these bands free from harmful interference.

Furthermore, the delegation of Jordan declares that the Government of the Hashemite Kingdom of Jordan reserves the right to make any change when depositing its instruments of ratification for the Final Acts of the World Radiocommunication Conference (Geneva, 1997).

68

Original: English

For the Republic of the Philippines:

In taking note of Document 400 containing the reservations and in signing the Finals Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of the Philippines reserves for its Government the right to take any action it deems necessary and sufficient, consistent with its national law to safeguard its interests, should reservations made by representatives of other States jeopardize its telecommunication services or prejudice its rights as a sovereign country.

The Philippines delegation further reserves for its Government the right to make any declaration or reservations prior to the deposit of the instrument of ratification of the Final Acts of the World Radiocommunication Conference 1997, held in Geneva, from 27 October to 21 November 1997.

69

Original: English

For the Republic of Uganda:

Having taken note of the declarations in Document 400 of the World Radiocommunication Conference (Geneva, 1997), the delegation of Uganda in signing the Final Acts reserves for its Government the right to take such action as it may consider necessary to safeguard its interests should any Member fail in any way to comply with the requirements of the Finals Acts of the World Radiocommunication Conference (Geneva, 1997), or Annexes thereto, or should reservations by other countries jeopardize its interests.

70

Original: English

For the Republic of Kenya:

After having considered the declarations contained in Conference Document 400, the delegation of the Republic of Kenya to the World Radiocommunication Conference (Geneva, 1997) herewith declares on behalf of its Government and on behalf of the powers conferred on it:

1 that it reserves the right of its Government to take any action it may consider necessary to safeguard and protect its interests should any Member fail to comply as required with the provisions in the Final Acts and Annexes thereto adopted by this Conference;

2 that in addition, it reserves the right of its Government to take any action it may deem necessary to safeguard and protect its interests should the declarations and/or reservations entered by other delegations in any way affect the normal operation and promotion of telecommunication services in Kenya;

3 that it reserves the right to enter further reservations prior to the ratification of the Final Acts of WRC-97;

4 that in no way does the signing of the Final Acts of WRC-97 compromise any provisions of the Constitution and the Laws of the Republic of Kenya.

71

Original: English

For the Federal Democratic Republic of Ethiopia:

Having noted Document 400 and in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Government of the Federal Democratic Republic of Ethiopia reserves the right of its Government to take any step it may deem necessary to safeguard its interests should other Members fail to comply with these instruments or their reservations jeopardize its telecommunications services.

72

Original: French

For Burkina Faso:

After taking note of Document 400 and, in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Burkina Faso declares:

1 that it reserves for its Government the right to take any action it considers appropriate to safeguard and protect its interests should any Member fail to comply with the provisions contained in the Final Acts of this Conference;

2 that its Government accepts no responsibility for the consequences of reservations expressed by Members of the Union.

73

Original: English

For the Republic of India:

The delegation of the Republic of India notes with regret the reference to the States of Jammu and Kashmir, in paragraph 3 of Declaration 56 (Document 400) made by the delegation of the Islamic Republic of Pakistan. The delegation of India reiterates that the States of Jammu and Kashmir are an integral part of the sovereign Republic of India. The delegation of the Republic of India therefore reserves the right for its Government to take appropriate measures to safeguard its interests as a result of any action on the part of the Islamic Republic of Pakistan, as a result of Declaration 56.

74

Original: English

For the United Republic of Tanzania:

Having taken note of Document 400 of the World Radiocommunication Conference (Geneva, 1997), the delegation of the United Republic of Tanzania reserves for its Government the right:

1 to take such action as it may deem necessary to safeguard its interests should any Member fail to comply in any way whatever with the decisions taken by this Conference, or should reservations entered by other Members be such as to jeopardize the operation of its telecommunication services;

2 to accept or reject the consequences of decisions which might directly jeopardize its sovereignty, in particular any relating to the increased use of satellite services including but not limited to mobile, geostationary, fixed and broadcasting in the bands below 1 GHz, 1 GHz to 3 GHz and above 3 GHz.

75

Original: Spanish

For the Republic of Venezuela:

Having taken note of the declarations presented by many delegations, the delegation of the Republic of Venezuela to the World Radiocommunication Conference (Geneva, 1997), declares the following reservation at signing the Final Acts of the WRC-97 and reserves the right for its Government to take such action as it may consider necessary to safeguard its interests should any Member State of the Union fail in any way to observe or comply with the provisions of these Final Acts or should reservations by other countries jeopardize the proper operation of its radiocommunications services.

76

Original: English

For Mongolia:

Having taken note of Document 400 and in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the Mongolian delegation declares on behalf of its Government that:

1 in view of the possibility of harmful interference from future operation of mobile-satellite services in certain frequency bands in accordance with the decisions of the Conference may affect the use by Mongolia of existing services in these bands. Therefore, the Mongolian delegation reserves for its Government the right to continue to use the existing and planned services in these bands free from harmful interference;

2 given that some parts of the Final Acts were adopted in very limited time and in the case of legal confusion which might ensue as a consequence, the Mongolian delegation reserves for its Government the right to take any measures aimed at safeguarding its interests;

3 the Mongolian delegation reserves for its Government the right to take any action it may consider necessary to safeguard its interests should any of the reservations or declarations by other Members jeopardize its telecommunication services or threaten its national sovereignty.

77

Original: English

For the People's Republic of China:

With respect to Declaration 42, the People's Republic of China declares:

1 that the satellite system (LSTAR system) referred to by the Lao People's Democratic Republic has not successfully completed coordination before the cut-off date of 3 November 1997 and is therefore not a part of the revised Broadcasting-Satellite Service Plan adopted by the World Radiocommunication Conference (Geneva, 1997);

2 that the LSTAR system of the Lao People's Democratic Republic therefore has no priority over the assignments at 122.0° E for China in the revised Broadcasting-Satellite Service Plan adopted by the World Radiocommunication Conference (Geneva, 1997), and as such the LSTAR system is required to follow all the relevant provisions of the Radio Regulations.

78

Original: English

For the Arab Republic of Egypt:

Having taken note of Document 400, and in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Egypt reserves for its Government the right to take any action it considers appropriate to safeguard its interests should any Member or Members of the International Telecommunication Union fail in any way to comply with, or apply the provisions of these Final Acts of this Conference, or should any acts of other entities affect its national sovereignty.

79

Original: Spanish

For Costa Rica:

In the light of Document 400 and in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Costa Rica declares:

1 that it reserves for the Government of Costa Rica the right to take any action it considers necessary should Costa Rica's telecommunication services suffer interference from radiocommunication stations of another country and should its interests be jeopardized in any way by any other country as a result of failure to comply with the decisions adopted at the Conference;

2 Costa Rica also reserves the right to enter specific reservations prior to ratifying these Final Acts.

80

Original: English

For the Republic of the Gambia:

Having noted Document 400, in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of the Gambia reserves for its Government the right to take any action and preservation measures it deems necessary to safeguard its national interests should decisions taken at this Conference, reservations expressed by other Members of the Union with regard to the Final Acts or non-compliance with the provisions of the revised Radio Regulations, affect the efficient operation of its telecommunication services.

81

Original: English

For the United States of America:

The United States of America refers to declarations made by various Members reserving their rights to take any such actions as they may consider necessary to safeguard their interests in response to reservations by other countries which jeopardize their interests, application of provisions of the International Telecommunication Union Constitution and Convention (Geneva, 1992) which adversely affect their interests, and other Members not sharing in defraying the expenses of the Union. The United States of America reserves the right to take whatever measures it may consider necessary to safeguard United States interests in response to such actions.

82

Original: English

For the United States of America:

The United States of America, noting the Statement (No. 47) entered by the delegation of Cuba, recalls its rights to broadcast to Cuba on appropriate frequencies free of jamming or other wrongful interference and reserves its rights with respect to existing interference and any future interference by Cuba with United States broadcasting. Furthermore, the United States of America notes that its presence in Guantanamo is by virtue of an international agreement presently in force; the United States of America reserves the right to meet its radiocommunication requirements there as heretofore.

83

Original: English

For the State of Israel:

The State of Israel would like to add its support to the last part of Declaration 52 made by the United States of America with regard to Resolution COM4-23.

84

Original: English

For the State of Israel:

Declaration 10 to the Final Acts made by certain delegations is incompatible with the principles, objects and purpose of the Constitution and Convention of the International Telecommunication Union and is therefore devoid of all legal validity.

With regard to the substance of the matter, the Government of Israel will adopt towards the Member States whose delegations have made the above-mentioned Declaration, a position of complete reciprocity. In view of this Declaration, the Government of Israel reserves its right to take any action deemed necessary to protect its interests and to safeguard the operation of its telecommunication services.

85

Original: English

For the Republic of Bulgaria:

Having noted Document 400 and in signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of the Republic of Bulgaria reserves for its Government the right to take any measures it might deem necessary to safeguard its interests if another Member State of the Union should in any way fail to respect the conditions specified in the Final Acts or if the reservations made by any Member State should be prejudicial to the operation of radiocommunication services in Bulgaria.

86

Original: English

For The Former Yugoslav Republic of Macedonia:

Having taken note of the declarations presented by many Members of the Union, the delegation of the Republic of Macedonia to the World Radiocommunication Conference (Geneva, 1997):

1 declares that its Government reserves the right to take such actions as it may consider necessary to protect its interests in cases where a Member of the Union fails to comply with the provisions of the Radio Regulations as modified by the Final Acts of the World Radiocommunication Conference (Geneva, 1997), or make reservations that jeopardize the operation of its radiocommunication services;

2 further reserves the rights of its Government to make additional declarations or reservations as may be necessary when depositing its instruments of ratification of the Final Acts of the World Radiocommunication Conference (Geneva, 1997).

87

Original: Russian

For the Russian Federation:

Taking into account the declarations formulated in signing the Final Acts of the Conference, the delegation of the Russian Federation, in order to retain the same possibilities, also reserves for its Government the right not to apply the administrative procedure foreseen in Resolution GT/PLEN2-1 for Russian satellite networks and satellite systems used for government purposes.

88

Original: English

For the Federal Republic of Germany, Australia, the Republic of Cyprus, Denmark, the United States of America, France, the Republic of India, Ireland, Italy, Japan, the Principality of Liechtenstein, Luxembourg, Malta, Norway, the Kingdom of the Netherlands, Portugal, the Slovak Republic, the Czech Republic, Romania, the United Kingdom of Great Britain and Northern Ireland, the Republic of Slovenia, Sweden, the Confederation of Switzerland:

The delegations of the above-mentioned countries referring to the Declaration made by the Republic of Colombia (No. 54), inasmuch as this statement refers to the Bogota Declaration of 3 December 1976 by equatorial countries and to the claims of those countries to exercise sovereign rights over segments of the geostationary-satellite orbit, and any similar statements, consider the claims in question cannot be recognized by this Conference. Further, the above-mentioned delegations wish to affirm or reaffirm the declarations made on behalf of a number of the above-mentioned Administrations in this regard when signing the Final Acts of previous conferences of the International Telecommunication Union as if these declarations were here repeated in full.

The above-mentioned delegations also wish to state that reference in Article 44 of the Constitution to the "geographical situation of particular countries" does not imply a recognition of claim to any preferential rights to the geostationary-satellite orbit.

89

Original: English

For Malta:

In signing the Final Acts of the World Radiocommunication Conference (Geneva, 1997), the delegation of Malta, having regard to declarations made by Members of the Union, declares that it reserves for its Government the right to make specific reservations at any time it considers proper between the date of signature and the date of ratification of these Final Acts.

90

Original: English

For the United Kingdom of Great Britain and Northern Ireland:

With reference to the Declaration made by Spain (No. 28), the United Kingdom's position on Gibraltar is well-known and remains unchanged. British sovereignty over Gibraltar derives from the Treaty of Utrecht.

We do not agree that the composition of the United Kingdom delegation to this Conference is a political matter relating directly to the dispute between the United Kingdom and Spain concerning Gibraltar.

The composition of the United Kingdom delegation is solely a matter for the Government of the United Kingdom of Great Britain and Northern Ireland and is in line with existing practice in this and other United Nations fora. The United Kingdom believes that the ITU is a purely technical body and should remain so.

91

Original: English

For Greece:

The Greek delegation, referring to the Declaration of The Former Yugoslav Republic of Macedonia at the WRC-95 under No. 31 and Document 371 of the World Radiocommunication Conference (Geneva, 1997), wishes to recall that on the occasion of the admission of The Former Yugoslav Republic of Macedonia to the United Nations, the Security Council by its Resolution 817/93 recognizes that "a difference has arisen over the name of the State, which needs to be resolved in the interests of the maintenance of peaceful and good-neighbourly relations in the region" and establishes "The Former Yugoslav Republic of Macedonia" as the provisional name for this State. It should also be added that the statement by the then President of the Security Council, upon adoption of Resolution 817/93, calls on all sides "to avoid taking steps that would render a solution more difficult".

In this connection the Greek delegation declares that the denomination and code name used in the above-mentioned Declaration and in Document 371 of the present Conference, respectively, are not in conformity with the name under which that State has been admitted to the United Nations and the International Telecommunication Union, and therefore, this terminology cannot be accepted.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 402-E
8 January 1998
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

COMMITTEE 2

SUMMARY RECORD

OF THE

SECOND AND LAST MEETING OF COMMITTEE 2

(CREDENTIALS)

Monday, 17 November 1997, at 1125 hours

Chairman: Mr. A. MAPUNDA (Tanzania)

Subjects discussed		**Documents**
1	Approval of the summary record of the first meeting	146
2	Draft report to the Plenary Meeting	DT/129
3	Closure of the work of the Committee	-

1 Approval of the summary record of the first meeting (Document 146)

1.1 The summary record of the first meeting (Document 146) was **approved**.

2 Draft report to the Plenary Meeting (Document DT/129)

2.1 The **Secretary**, referring to § 3 of Document DT/129, said that 125 credentials had been deposited to date with the secretariat of the Committee. Turning to the annex to the document, he said that Argentina and Iceland were to be added to the list, in § 1, of countries having the right to vote whose credentials had been deposited and found to be in order; the names of those two countries should accordingly be deleted from the list in § 2. Referring to § 4 containing the list of delegations participating in the Conference which had not deposited credentials, he said that the secretariat had received provisional accreditation from Moldova, thus conferring on that delegation full rights of participation pending deposit of the original credentials. The original credentials of Hungary had been submitted that morning. Therefore, the names of Hungary and Moldova should be added to the list in § 1 and deleted from the list in § 4. The words " until the situation has been rectified" should be added at the end of the concluding sentence of § 4, and the reference in the footnote should be to Document 99(Rev.4).

2.2 Responding to a question by the **delegate of Trinidad and Tobago** concerning the list in § 1 of the annex, he said that a letter had been received giving the names of that country's delegates to the Conference without, however, indicating that the Government had conferred upon them full powers of representation; however, a fax message to that effect was expected from the Government at any moment. Pursuant to the provisions of the Constitution and Convention, the delegation could be deemed accredited with full powers pending receipt of the original credentials before the end of the Conference, as reflected in the footnote relating to the entry for Trinidad and Tobago.

2.3 The draft report in Document DT/129, as amended, was **approved** for submission to the Plenary Meeting.

3 Closure of the work of the Committee

3.1 The **Chairman** thanked the Vice-Chairman, secretariat and members of the Committee for their cooperation, and declared closed the work of Committee 2.

The meeting rose at 1140 hours.

The Secretary:
A. BOUSSAID

The Chairman:
A. MAPUNDA

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 403-E
16 December 1997
Original: English

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

PLENARY MEETING

MINUTES

OF THE

FIFTEENTH AND LAST PLENARY MEETING

Saturday, 22 November 1997, at 0910 hours

Chairman: Mr. R. SMITH (Australia)

Subjects discussed		**Documents**
1	Noting of additional declarations and reservations	401
2	Signature of the Final Acts	-
3	Closure of the Conference	-

1 Noting of additional declarations and reservations (Document 401)

1.1 The additional declarations and reservations in Document 401 were **noted**.

2 Signature of the Final Acts

2.1 The **Executive Secretary**, after explaining the procedure to be followed for the signing ceremony, called the roll of those delegations whose credentials had been found to be in order.

2.2 The Final Acts were signed by the 131 countries listed in Annex 1.

2.3 The **Chairman of Committee 4**, after commending Committee 6 for its outstanding work under great pressure, drew attention to some errors in the Final Acts which he wished to correct in order to prevent any misunderstanding. The **delegate of Greece** drew attention to an omission in the Final Acts.

2.4 The **delegate of the United Kingdom**, speaking as Vice-Chairman of Committee 6, referred to the explanatory note at the beginning of the Final Acts, which recalled that the Conference had authorized the Secretary-General to resolve any editorial problems arising in the preparation of the definitive Final Acts, with the assistance of the Chairman and Vice-Chairmen of the Editorial Committee and the relevant Committee Chairmen. Such editorial work would be based on the decisions taken by the Conference.

2.5 The **delegate of Spain**, speaking as Vice-Chairman of Committee 6, endorsed the comments by the previous speaker and said that he would identify some editorial amendments required in the Spanish-language version of the Final Acts. The ability to produce such voluminous Final Acts for signature just one day after the closure of substantive debate was surely unique to ITU.

2.6 The **Chairman** confirmed that the necessary corrections would be made to ensure that the definitive Final Acts reflected the clear decisions of the Conference.

3 Closure of the Conference

3.1 The **Director of BR** delivered the address reproduced in Annex 2.

3.2 The **Secretary-General** delivered the address reproduced in Annex 3. He presented the Chairmen of Committees 4 and 5 with the ITU silver medal and the Chairman with the ITU silver medal and a commemorative gavel.

3.3 The **Chairman** thanked the Secretary-General for his kind words and for the tokens of appreciation. He then delivered the address reproduced in Annex 4.

3.4 The **delegate of Mexico**, speaking on behalf of CITEL, endorsed the remarks by the Director of BR and the Secretary-General, especially highlighting the importance of regional contributions in helping to build consensus and to ensure that conferences reached successful results.

3.5 The **delegate of South Africa** congratulated the Director of BR on the excellent preparation which had contributed to the success of the Conference. He was happy to see that, while taking the interests of the industry into account, the Conference had also been able to meet the needs of developing countries with regard to satellite broadcasting.

3.6 The **delegate of the United Kingdom**, speaking on behalf of CEPT, delivered the address reproduced in Annex 5.

3.7 The **delegate of India**, speaking on behalf of the Asia-Pacific countries, paid tribute to the Chairman's leadership and dynamism in steering the Conference to a successful conclusion. Many historic decisions had been taken, paving the way for the communications era in the next century. The intraregional and interregional coordination that had been a feature of the present Conference should be continued in the future, as such processes reduced the cost and duration of conferences.

3.8 The **delegate of Syria** congratulated the Chairman on leading the Conference to excellent results in record time and thanked all those who had contributed to that success. He welcomed the fact that the Conference had enabled the Palestinian people to use the spectrum and geostationary orbit to broadcast by satellite to their territory, and had respected the right of States to receive broadcasting-satellite services on their territory. He also welcomed the encouragement of regional cooperation, which he called on the Directors of BR and BDT to promote. Speaking on behalf of some Arab administrations, he regretted the unprecedented attempt made during the Conference to obstruct sovereign states in the exercise of their right to protect telecommunications within the limits of their territories, in accordance with the Constitution and Convention. It was gratifying to note that the Conference had not countenanced that obstruction and had promised that it would not recur.

3.9 The **delegate of Mali** congratulated the Chairman as well as the Chairmen of all the Committees and groups for accomplishing the arduous task of bringing the divergent views together. The results achieved by the Conference would act as a catalyst for the development of telecommunications. He thanked the whole ITU-R Sector for contributing to those results.

3.10 The **delegate of the United States** praised the expert way in which the Conference had been conducted, mentioning in particular the work of the Radiocommunication Bureau, the regional groups (especially the role of the CEPT coordinator), the legal advice provided, and the wisdom of the Chairman.

3.11 The **delegate of Lebanon** said that the Conference had provided a solid basis for the development of global information infrastructure, technology and society. Welcoming the compromises that had made agreements possible, he drew attention to the important markets in developing countries and opportunities for cooperation in new technology projects, such as multimedia and information services. It was up to ITU, in particular through BR and BDT, to ensure that such activities were beneficial to all parties and that the developing countries were well prepared to reap the benefits of the impetus given to telecommunication development by the present Conference. In that respect, the forthcoming World Telecommunication Development Conference would certainly play an important role.

3.12 The **delegate of Japan** congratulated the Chairman for leading the Conference to agreement on such a large number of contentious agenda items, and thanked the Director and staff of the Bureau for their work on the Plan. He looked forward to a continuation of those collaborative efforts.

3.13 The **Chairman**, having thanked speakers for their kind words, declared the World Radiocommunication Conference closed.

The meeting rose at 1105 hours.

The Secretary:
Pekka TARJANNE

The Chairman:
R. SMITH

Annexes: 5

Original: English

ANNEX 1

List of Members having signed the Final Acts of the World Radiocommunication Conference (Geneva, 1997)

Albania (Republic of), Algeria (People's Democratic Republic of), Germany (Federal Republic of), Andorra (Principality of), Saudi Arabia (Kingdom of), Argentine Republic, Armenia (Republic of), Australia, Austria, Bahamas (Commonwealth of the), Bahrain (State of), Bangladesh (People's Republic of), Belarus (Republic of), Belgium, Benin (Republic of), Brazil (Federative Republic of), Brunei Darussalam, Bulgaria (Republic of), Burkina Faso, Burundi (Republic of), Cameroon (Republic of), Canada, Cape Verde (Republic of), Chile, China (People's Republic of), Cyprus (Republic of), Vatican City State, Colombia (Republic of), Korea (Republic of), Costa Rica, Côte d'Ivoire (Republic of), Croatia (Republic of), Cuba, Denmark, Egypt (Arab Republic of), El Salvador (Republic of), United Arab Emirates, Ecuador, Spain, Estonia (Republic of), United States of America, Finland, France, Gabonese Republic, Gambia (Republic of the), Ghana, Greece, Guinea (Republic of), Hungary (Republic of), India (Republic of), Indonesia (Republic of), Iran (Islamic Republic of), Ireland, Iceland, Israel (State of), Italy, Japan, Jordan (Hashemite Kingdom of), Kazakhstan (Republic of), Kenya (Republic of), Kuwait (State of), Lao People's Democratic Republic, Latvia (Republic of), The Former Yugoslav Republic of Macedonia, Lebanon, Libya (Socialist People's Libyan Arab Jamahiriya), Liechtenstein (Principality of), Lithuania (Republic of), Luxembourg, Malaysia, Malawi, Mali (Republic of), Malta, Morocco (Kingdom of), Mauritius (Republic of), Mauritania (Islamic Republic of), Mexico, Micronesia (Federated States of), Moldova (Republic of), Monaco (Principality of), Mongolia, Mozambique (Republic of), Namibia (Republic of), Nepal, Niger (Republic of the), Nigeria (Federal Republic of), Norway, New Zealand, Oman (Sultanate of), Uganda (Republic of), Uzbekistan (Republic of), Pakistan (Islamic Republic of), Panama (Republic of), Papua New Guinea, Paraguay (Republic of), Netherlands (Kingdom of the), Philippines (Republic of the), Poland (Republic of), Portugal, Qatar (State of), Syrian Arab Republic, Kyrgyz Republic, Democratic People's Republic of Korea, Slovak Republic, Czech Republic, Romania, United Kingdom of Great Britain and Northern Ireland, Russian Federation, San Marino (Republic of), Senegal (Republic of), Singapore (Republic of), Slovenia (Republic of), Sudan (Republic of the), Sri Lanka (Democratic Socialist Republic of), South Africa (Republic of), Sweden, Switzerland (Confederation of), Suriname (Republic of), Tanzania (United Republic of), Chad (Republic of), Thailand, Togolese Republic, Tonga (Kingdom of), Tunisia, Turkey, Ukraine, Venezuela (Republic of), Viet Nam (Socialist Republic of), Yemen (Republic of), Zambia (Republic of), Zimbabwe (Republic of).

Original: English

ANNEX 2

Address by the Director of the Radiocommunication Bureau

Mr. Chairman,
Distinguished delegates,
Dear colleagues and friends

In my remarks at the opening of this Conference, I observed that we were all like sections of a symphony orchestra under the capable leadership of our conductor, Roger Smith. We are fast approaching the end of our concert together and soon our conductor will be taking his final bows.

I believe we can look back over the past four weeks and confirm that your orchestra, Mr. Chairman, has indeed performed well and in close harmony. The pieces on our musical score were varied and complex but a good spirit of cooperation permeated this Conference centre. It was obvious too that the months of probably the most extensive and intensive preparations for any radio conference did, in fact, pay off. Without these, we would have been in serious trouble given what we faced on our programme over the past four weeks.

Mr. Chairman, I would like to thank all of the members of your orchestra for without them this Conference would not have been such a success. And this time, I would like to begin with those who are in the very back section of the orchestra. The interpreters not only played a vital and demanding role in getting ideas across in the six languages but also they went above and beyond the call of duty as they took, in stride, the extra demands at times placed upon them.

Moving to the front row of your orchestra, I would like to thank the members of the Radio Regulations Board who provided valuable advice throughout the Conference.

Also, I would like to commend the Secretary-General and his staff in the General Secretariat who kept this big orchestra constantly in tune. It is easy to overlook the long hours worked by so many in the General Secretariat in order that the meetings could run smoothly - the Plenary and committee secretaries, the minute-writers, the translators, the typists, the document production staff, the huissiers, the document control and distribution staff, and so on. These people are truly an ITU strength. We even discovered some of their hidden musical talents yesterday as your Plenary recognized the contribution to the ITU over the years of Mr. Noll for whom this is his last World Radiocommunication Conference. I too would like to wish him well.

Of course, I would like to recognize the staff of the Radiocommunication Bureau who have worked so hard to ensure good preparations for this Conference. And during the Conference, they too worked long hours to support the work. I think of those from the Bureau who served as secretaries to the various committees and working groups and those who were spokespersons for the Bureau in these committees and working groups. In addition, the support staff from the Bureau played an invaluable role. It is the behind-the-scenes work that enables the various sections of your orchestra to function harmoniously.

It is always dangerous to single out individuals or even groups of individuals but I would like to add my voice to those of the many speakers who have already paid such a well-earned tribute to Mr. Arasteh and his team here seated in the front row. The hard work and dedication that they displayed not just during this Conference but in the two-year period since WRC-95 placed a huge task upon the Bureau is most commendable. I would also like to single out some senior officials in the Radiocommunication Bureau since this is their last radiocommunication conference, at least as ITU staff members. First of all is Klaus Olms who is sitting beside me here and who heads the Informatics Department in the Bureau as well as being my trusted deputy. Klaus has played a leadership role both in organizing the preparations for the Conference and assisting me during it. Gabor Kovacs who heads the Space Services Department in the Bureau is our space services regulations guru. Gabor has worked tirelessly overseeing all of the space regulatory work going on in the Conference including the BSS planning team led by Mr. Arasteh from Mr. Kovacs' department. In addition, Guerorgui Korolev also from Mr. Kovacs' Space Services Department tried as secretary to ensure that GTPLEN-2 was indeed being diligent in its work. Unfortunately, under the staff rules, all three must retire before the next conference whether it is held in late 1999 or in early 2000.

And last but certainly not least, Mr. Chairman, I would like to thank you so much for conducting us so well. You truly are a maestro! Your warmth, wisdom and patience made for beautiful music. And to remind you of your leadership here at WRC-97, at this time, I would like to present you with something that hopefully you will enjoy listening to as you return to summer down under.

Original: English

ANNEX 3

Address by the Secretary-General

Mr. Chairman,
Distinguished Delegates,
Ladies and Gentlemen,
Dear Friends,

I would like to begin by making a prediction. When the history of the Global Information Infrastructure is written, some time in the twenty-first century, WRC-97 will deserve more than a footnote - even though, as this Conference has shown, footnotes are very important, and should be taken very seriously!

Ten or twenty years from now, future generations will look back on this Conference as a landmark event in the building of the communications and information edifice that will become the GII.

It has long been a goal of the ITU to provide universal access to basic telecommunication services. Thanks to the decisions you have taken over the past four weeks, I am convinced that not only basic communications, but the full range of multimedia communication and information services will become available to all people, everywhere in the world not too far into the next century.

Thanks to you, the Global Information Society will become a reality.

For this accomplishment, you certainly deserve the world's thanks.

Your achievement would not have been possible without outstanding leadership, Mr. Chairman, total dedication to the task at hand, and willingness to compromise in the best interests of all concerned. Fortunately, all of these qualities were abundantly present - more so, perhaps, than at any ITU conference I can remember.

Mr. Chairman,

It has often been said that in the ITU, we have a process of "consensus by exhaustion". I am afraid that after WRC-97, we will no longer be able to say this.

Because of the skill you have shown in directing the work of this Conference, we found ourselves facing a new problem - which I would call "exhaustion by consensus"! As we saw in the early morning hours of the closing sessions of the Conference, just before, for the first time in four weeks, a wonderful sunrise, the Secretariat was simply unable to process as quickly as we would have liked all of the agreements that you, the delegates, had reached!

I can only hope that all of you enjoyed the free evening that resulted from this unprecedented situation - the first free evening many of you will have had since the Conference began.

Those events have given us the possibility to come together fresh this morning in order to celebrate many things, among others the birthdays of BR Directors. I use the plural in order to congratulate not only Bob Jones but also Dick Kirby, who is celebrating his 75th birthday. Congratulations.

Mr. Chairman,

Of course, you personally deserve the lion's share of the credit for the results of WRC-97. However, I would be remiss if I did not first mention the work done by all the members of the Steering Committee. In particular, of course, we have witnessed an exciting competition concerning excellence and efficiency between the Chairs of Committees 4 and 5, Veena Rawat and Eberhard George, the dynamic duo. This competition resulted in a draw and both of them and their achievements will certainly be incorporated by reference in the future history of the GII!

I'd like to invite Veena and Eberhard up here to the podium, so that I can, under these exceptional circumstances, start this history by presenting them with the silver medals of the ITU.

Finally, dear friends, the cherry on top of our sweet conference.

Mr. Chairman, Roger, all the words praising your leadership have already been expressed. I can only personally say that there is only one disappointment I would like to mention. I did my best to prepare myself for this Conference. I read books about dispute settlement, I asked Henry Kissinger about diplomatic and not so diplomatic tricks to be used when mediating between quarrelling nations. And then what happened? You did it all yourself with your natural talent, with tremendous ease, first outside this room and then here! So I felt just like a useless decoration, but I am happy with the results.

So, in closing, Roger, Mr. Chairman, I would like to give you tangible and very symbolic expression of our thanks and appreciation by presenting you with not only the silver medal of the ITU but also your gavel.

So here we have, distinguished delegates, not only a dynamic duo but a little bit more, and I must say that the duo has dynamite but when you look at the trio it has more power flux-density than dynamite so one has to take trotyl and call them a trotylic trio.

Have a nice trip home, bon voyage, duly and diligently.

Original: English

ANNEX 4

Address by the Chairman of the World Radiocommunication Conference

Secretary-General,
Deputy Secretary-General,
Director of the Radiocommunication Bureau,
ITU Officials,
Ladies and Gentlemen,

This is a proud but also a very emotional moment for me to make closing remarks for the World Radiocommunication Conference 1997. I appreciate enormously the comments made by the Secretary-General and the Director. Most of you, the delegates, are friends and colleagues and we share the tasks of managing our administrations' interests in events such as this, so the role of Chairman has been a very special role for me.

I am proud also because of the outcome of the Conference.

You will all recall my opening remarks in which I referred to the main objective we should all have when working in these Conferences. That is to try to facilitate to the maximum extent full access to the radio-frequency spectrum for all who seek it. That is often a difficult and sometimes impossible task but we should, nevertheless, continue to maintain that objective.

I believe that most of you who leave this Conference should be able to say that we have achieved that objective. We had a huge agenda to deal with but I am very impressed by the extent to which all delegates were prepared to work extraordinarily long hours in formal sessions, informal groups and, of course, your own delegation meetings and negotiations with others.

The key results we have achieved include establishing a basis on which new non-GSO FSS systems and services can develop. The methodology we adopted is quite new and obviously will benefit from the further studies to be undertaken on sharing methodologies. I am particularly pleased also to see this Conference confirm the future for Ka band non-GSO systems following the decision at the last Conference.

There is also the achievement of establishing a BSS plan for Regions 1 and 3 to enable changes since 1977 to be recognized and adjustments made, especially to recognize the needs of new countries. The establishment of a framework for further work to be done in preparation for planning at a future conference is also a very positive step.

Maritime and aeronautical safety services, HF broadcasting, little LEOs, MSS and a wide range of other related services have been addressed and some solutions found, even if some of them are not immediate.

More "exotic" (if I can use that term) proposals were also agreed for space science services and, of course, the new concept of high altitude platforms. Not to mention the subject of HF broadcasting which seems to be a perennial topic for WRCs. Last but not least, we also finalized a position in response to Resolution 18 of the 1994 Plenipotentiary Conference.

Of course you are well aware of the work we have done in all of these areas but I must say that after the intense activity over the last 2 to 3 weeks I am not sure that my head is clear enough to remember very accurately the end result of all these items.

As you know we have been able to achieve these end results in a true spirit of consensus with outcomes that reflect a majority and, hopefully, unanimous acceptance. I would particularly like to acknowledge the willingness of the groups of countries such as in Europe and those in other parts of the world to join together and work through their differences to bring about these compromises.

Another feature of our preparations for the Conference and the proceedings throughout has been the real benefit of the regional groupings such as CITEL, CEPT, APT and Arab and African Groups. I mentioned this in my opening address to the Conference and am convinced that regional cooperation is now an absolutely essential part of conferences. They enable individual country differences to be worked through and to be resolved away from the conference floor. I would hope also that the informal consultation structure that many of us participated in since the 1995 Conference will be able to continue into the future as that I believe was also beneficial in preparations for this Conference.

I cannot close my remarks without offering my sincere thanks to very many key people who have made this Conference a success. Without doubt the work of Dr. Rawat and Mr. George, two key people in this Conference, in particular. They were of immense support to me from the very start and I have the utmost respect for their skills, good humour and the tolerance they had for my own lack of understanding of many of their issues.

This was truly a team effort involving also the Chairmen of GTPLEN-1, Mr. Railton, GTPLEN-2, Mr. Leive, Ms. Nebes, Committee 6 and Mr. Landsmann and Mr. Mapunda, Chairs of Committees 3 and 2, respectively. Most of all, however, I want to highly commend you, Secretary-General and Mr. Chasia and all of the Conference staff, Don MacLean, Bob Jones, Klaus Olms, Philippe Capitaine and all of the Secretariat who supported us. Pamela Type, my Secretary for the Conference, deserves a special medal for being able to cope with my idiosyncrasies, disorganized paper work and my atrocious handwriting. Also sincere thanks to Hanne Laugesen and all of the staff of the Conferences Department of the ITU. They deserve an absolute medal for the work they do. It is tremendous.

Lastly, but not least, the interpreters, précis-writers and document control staff who worked tirelessly for us all.

Mr. Jones, you previously made the musical analogy of an orchestra and conductor. Well you were right. It is a good analogy but it was certainly very hard to keep all of the players in tune, or even playing the same piece of music. I can recall one member of the orchestra in the closing minutes of the Conference who was playing an English tune from a Spanish score. Still, the symphony has been completed.

Let me also congratulate Bob on your birthday. Happy birthday Bob.

Ladies and Gentlemen, I wish you all a pleasant and safe journey home. I will miss not coming here tomorrow and next week in a somewhat perverse way, but it will certainly be great to get back to having at least a few hours sleep occasionally.

My sincere thanks to you all.

Original: English

ANNEX 5

Address by the CEPT Coordinator

Mr. Chairman, speaking for the last time as the Coordinator of the European countries, let me say first of all how much we have appreciated your chairmanship of this Conference.

I believe this Conference will be remembered as an historic WRC. We were faced with an extensive agenda, and only two years to prepare for it. Yet thanks to the tremendous effort made in the ITU-R preparatory groups, and the interregional coordination which led up to the Conference, it must surely be seen as one of the most successful conferences of all time. The Conference has recognized the importance of regional coordination with the adoption of the new Resolution of the same title. We look forward to the BR and the BDT taking a more active role in the consensus building process at interregional level in the future.

In the tradition of the ITU we have managed to reach agreement on extremely difficult and contentious issues by negotiation and consensus and we have avoided having to resort to divisive voting to settle major issues. I would like to acknowledge this spirit of compromise and the consensus building which is a feature of the ITU. We are very grateful to those countries which have had concerns about some of our proposals but which nevertheless accepted a compromise solution, and I believe that others equally recognize that we too have made our compromises.

This has been a unique Conference in many ways not least because of the extent and depth of the technical discussion. This is not desirable and the reason for this will have to be considered and the necessary changes in the preparatory procedure will have to be made to avoid in future unresolved technical arguments being brought for WRCs to resolve. We have heard a lot about pfds in this Conference. Probably many of us did not expect that we would be coming here for such lengthy discussion on pfds. Maybe this will be remembered as the pfd conference. But if it is, I hope the abbreviation will not be understood to mean power flux-density but rather politeness, fairness and democracy.

I believe we can all go home happy that we have achieved remarkable results in a short time, happy with the spirit of compromise that has prevailed throughout the Conference, and sure that we have given the opportunity for the development of exciting new projects which will benefit all mankind.

This achievement was not easily won. It could have all been very different without the positive contribution of a few key individuals. I would like to acknowledge the role of the other regional coordinators particularly Mr. Kisrawi for the Arab region, Mr. Agarwal for the Asia-Pacific region, Mrs. Jalife Villalon for the Americas and Mr. Samake for the African region. I also would like to express our appreciation for the cooperation of the United States delegation ably led by Ambassador John Bryant.

But most of all, Mr. Chairman, the success of this Conference rests with you and your team. You have been an object lesson to anyone with ambitions for an ITU chairmanship. You have been patient but not too patient, your decisions sometimes might have upset one or two but with each decision the Conference's confidence in you grew, and with it your authority. The work of the ITU

is changing; it is becoming of vital importance to an ever wider range of interests, not least commercial interests. Decisions have to be made and you took them. I hope that other ITU Chairmen will follow your example in the future. There has to be a limit to the endless discussion and debate.

Mr. Chairman, I wish you and all delegates a well-earned rest and a safe journey home.

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UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CMR-97 CONFÉRENCE MONDIALE DES RADIOCOMMUNICATIONS

Document 404-F/E/S
19 décembre 1997

GENÈVE, 27 OCTOBRE – 21 NOVEMBRE 1997

LISTE FINALE DES PARTICIPANTS
FINAL LIST OF PARTICIPANTS
LISTA FINAL DE PARTICIPANTES

Cette liste comprend les sections suivantes - *This list includes the following sections* -
Esta lista comprende las secciones siguientes

I. Administrations / *Administrations* / Administraciones

II.1 Nations Unies et ses institutions spécialisées / *United Nations and its Specialized Agencies* / Naciones Unidas y sus Organismos Especializados

II.2 Organisations régionales et autres organisations internationales / *Regional and other International Organizations* / Organizaciones Regionales y otras Organizaciones Internacionales

II.3 Organisations intergouvernementales exploitant des systèmes à satellites / *Intergovernmental Organizations Operating Satellite Systems* / Organizaciones Intergubernamentales que explotan Sistemas de Satélite

III. Autres / *Others* / Otros

IV. Membres du Comité du Règlement des radiocommunications / *Members of the Radio Regulations Board* / Miembros de la Junta del Reglamento de Radiocomunicaciones

V. Fonctionnaires élus / *Elected Officials* / Funcionarios de Elección

VI. Secrétariat de la Conférence / *Secretariat of the Conference* / Secretaría de la Conferencia

VII. Secrétariat général et Secteurs / *General Secretariat and Sectors* / Secretaría General y Sectores

VIII. Services de la Conférence / *Services of the Conference* / Servicios de la Conferencia

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Symboles utilisés - Symbols used - Símbolos utilizados

C	:	Chef de délégation - Head of Delegation - Jefe de delegación
CA	:	Chef adjoint - Deputy Head - Subjefe
D	:	Délégué - Delegate - Delegado
A	:	Conseiller - Adviser - Asesor
O	:	Observateur - Observer - Observador

LISTE FINALE - FINAL LIST - LISTA FINALE

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VII.5	**Département du personnel et de la protection sociale**	:	Chef de département: M. J.-P. Baré
VII.6	**Département des services informatiques**	:	Chef de département: M. L. Goelzer
VII.7	**Département des conférences**	:	Chef de département: Mme H. Laugesen
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VIII.4	**Service des salles**	:	Mlle C. Clin
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	b) Procès-verbalistes	:	Mme S. Rossington
	c) Interprétation	:	Mme J. Jouffroy (Coordonnatrice)
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VIII.7	**Reprographie**	:	M. G. Delaye
VIII.8	**Distribution des documents**	:	M. R. Gachet
VIII.9	**Service des messagers**	:	M. A. Brusson
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VIII.11	**Service de presse**	:	Mme F. Lambert
VIII.12	**Service informatique**	:	M. P. Prasad
VIII.13	**ITU Newsletter & WRC News**	:	Mme P. Lusweti

INTERNATIONAL TELECOMMUNICATION UNION

WRC-97 WORLD RADIOCOMMUNICATION CONFERENCE

Document 405-E
19 December 1997

GENEVA, 27 OCTOBER – 21 NOVEMBER 1997

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2+Add.1 +Cor.1	BR	Consolidated text of the Radio Regulations	PL
3	SG	Credentials	PL
4	CPM	The CPM Report to the 1997 World Radiocommunication Conference	PL
5 + Cor. 1-4	EUR	Proposals for the work of the Conference	PL
6 + Add.1,2	NGR	Proposals for the work of the Conference	PL
7	UZB	Proposals for the work of the Conference	PL
8+Add.1	BR	Report on Resolution 18 (Kyoto, 1994)	PL
9	SEN	Proposals for the work of the Conference	PL
10	E	Proposals for the work of the Conference	PL
11	LTU	Proposals for the work of the Conference	PL
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13	S	Proposals for the work of the Conference	PL
14 + Cor.1-3	ASP	Proposals for the work of the Conference	PL
15 + Add.1,2	RUS	Proposals for the work of the Conference	PL
16	BUL	Proposals for the work of the Conference	PL
17 + Add.1,2	KRE	Proposals for the work of the Conference	PL
18	HNG	Proposals for the work of the Conference	PL
19	TUR	Proposals for the work of the Conference	PL
20	POL	Proposals for the work of the Conference	PL
21	THA	Proposals for the work of the Conference	PL
22	ICAO	Information paper	PL
23	SVK	Proposals for the work of the Conference	PL

Doc.	Source	Title	Destination
24	EST,FIN, LVA, POR,S	Proposals for the work of the Conference	PL
25 + Add.1	HOL	Proposals for the work of the Conference	PL
26	AUS	Proposals for the work of the Conference	PL
27 + Add.1 + Cor.1	BR	Activities of the Radiocommunication Sector	PL
28 + Add.1,2	BR	Report of the BR on the simplified Radio Regulations and other matters related to the terrestrial services on issues which are addressed in the agenda of WRC-97	PL
29 + Cor.1	J	Proposals for the work of the Conference	PL
30 + Add.1-4	USA	Proposals for the work of the Conference	PL
31(Rev.1)	SG	Contribution of entities and organizations to the expenses of the Conference	PL
32	SG	Financial responsibilities of Conferences	PL
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35 + Add.1 + Add.1(Cor.1,2)	CAN	Proposals for the work of the Conference	PL
36	F	Proposals for the work of the Conference	PL
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45	BLR	Proposals for the work of the Conference	PL
46	CVA	Proposals for the work of the Conference	PL
47	KEN, TZA, UGA	Proposals for the work of the Conference	PL
48	ARM	Proposals for the work of the Conference	PL
49	B	Proposals for the work of the Conference	PL
50	SG	List of documents (1-50)	-
51	INTELSAT	Information document	C4, C5, WG PL2
52 + Cor.1-3	[1]	Proposals for the work of the Conference	C5
53	IMO	Information document	C4,C5, WG PL1
54	ISR	Proposals for the work of the Conference	C5
55	UGA	Proposals for the work of the Conference	C4, C5
56 + Corr.1-3 + Add.1-4	BR	Planning Exercises conducted in accordance with Resolution 531 (WRC-95)	C4
57	CLM	Proposals for the work of the Conference	C5
58	ISR	Proposals for the work of the Conference	C4
59	UZB	Proposals for the work of the Conference	C4,C5, WG PL1+2
60(Rev.1)	SG	Invitations	PL

[1] BHR, EGY, UAE, JOR, KWT, LBN, MTN, OMA, QAT, SYR, YEM.

Doc.	Source	Title	Destination
61	SG	Participation requests submitted by international organizations	PL
62 + Add.1-4	F	Proposals for the work of the Conference	C4, C5, WG PL2
63	ARS	Proposals for the work of the Conference	C5
64	TJK	Proposals for the work of the Conference	C4, C5, WG PL2
65	SG	Implementation of Resolution 36 (PP-94)	WG PL1
66	CUB	Proposals for the work of the Conference	C4, C5
67	PNR	Proposals for the work of the Conference	C5
68 + Add.1	MLA	Proposals for the work of the Conference	C4, WG PL1+2
69	D	Proposals for the work of the Conference	C5
70	KEN	Proposals for the work of the Conference	C4, C5
71(Rev.1) + Add.1(Rev.2) + Add.2	AFS	Proposals for the work of the Conference	C4, C5, WG PL1+2
72	F	Proposals for the work of the Conference	C5
73	G	Proposals for the work of the Conference	C4, C5
74 + Add.1-3	VTN	Proposals for the work of the Conference	C4
75	GUI	Proposals for the work of the Conference	C4, C5
76 + Cor.1	[2]	Proposals for the work of the Conference	C4, C5, WG PL1
77	CZE	Proposals for the work of the Conference	C5
78 + Cor.1(Rev.1)	[3]	Proposals for the work of the Conference	C4, C5, WG PL1+2

[2] ALG, ARS, BHR, EGY, UAE, JOR, KWT, MTN, MRC, OMA, QAT, SYR, TUN, YEM.

[3] ARM, AZE, BLR, BUL, GEO, HNG, KAZ, UZB, POL, KGZ, RUS, SVK, TJK, TKM, UKR.

Doc.	Source	Title	Destination
79	KOR	Proposals for the work of the Conference	C4, C5, WG PL2
80	TZA	Proposals for the work of the Conference	C4, C5
81(Rev.1)	MDA	Proposals for the work of the Conference	C4, C5
82	SNG	Proposals for the work of the Conference	C5
83	Inmarsat	Information document	C5
84 + Add.1 + Add.1(Cor.1)	INS	Proposals for the work of the Conference	C4, C5, WG PL2
85 + Cor.1[4]	IND	Proposals for the work of the Conference	C5
86	CAN	Information document	C5
87	PAK	Proposals for the work of the Conference	C4
88	MWI	Proposals for the work of the Conference	C5
89	PHL	Proposals for the work of the Conference	C5
90(Rev.1)	BR	Information concerning the requests for modifications/additions to Appendices 30 and 30A Plans received by the Radiocommunication Bureau	C4
91	ARG	Proposals for the work of the Conference	C4
92	EUR	Information document	-
93	ICAO	Information document	C5
94	CME	Proposals for the work of the Conference	C4, C5
95	E	Proposals for the work of the Conference	WG PL2
96	SG	Conference Rules of Procedures and the use of visual aids	PL
97	EGY	Proposals for the work of the Conference	C4
98	SG	Transfer of Powers - Federated States of Micronesia - United States of America	PL

[4] This Corrigendum concerns only the English text.

Doc.	Source	Title	Destination
99(Rev.5)	SG	Loss of the right to vote	PL
100	SG	List of documents (51-100)	-
101	SG	Chairmanship of the Conference	-
102	SG	Secretariat of the Conference	-
103	SG	Conference structure of the World Radiocommunication Conference (WRC-97)	-
104	MEX	Proposals for the work of the Conference	C5, WG PL2
105	BFA	Proposals for the work of the Conference	C4, C5
106	C4	Organization of the work of Committee 4	C4
107(Rev.1)	SG	General schedule of the work of the Conference	-
108 + Add.1,2	NIG	Proposals for the work of the Conference	C5
109	C5	Organization of the work of Committee 5	C5
110	SG	Situation of the accounts of the World Radiocommunication Conference (WRC-97) as at 24 October 1997	C3
111	C3	Note by the Chairman of Committee 3 to the Chairmen of Committees 4 and 5 and Working Group 1 of the Plenary	C4, C5, WG PL1
112	CAN	Proposals for the work of the Conference	PL
113	GRC	Proposals for the work of the Conference	C4
114 + Add.1,2	LBN	Proposals for the work of the Conference	C4, C5
115 + Cor.1	CTI	Proposals for the work of the Conference	C4, C5
116	NOR	Proposals for the work of the Conference	C5
117	APT	Information Document	PL
118 + Cor.1	PL	Minutes of the first Plenary Meeting	PL
119	C4	Summary record of the first meeting of Committee 4	C4
120	C5	Summary record of the first meeting of Committee 5	C5

Doc.	Source	Title	Destination
121	C6	Note by the Chairman of Committee 6	C6
122 + Cor.1,2	BR	Report from the ITU Radiocommunication Assembly	PL
123 + Add.1	KAZ	Proposals for the work of the Conference	C4, C5
124	TON	Proposals for the work of the Conference	WG PL2
125	ZMB	Proposals for the work of the Conference	C4, C5
126	SUI	Proposals for the work of the Conference	C5
127	BEL	Proposals for the work of the Conference	C5
128	Chairm. of the Conf.	Future WRC agendas	WG PL1
129	AUT, FIN,SUI	Proposals for the work of the Conference	C5
130	UKR	Proposals for the work of the Conference	C5
131	C4	Allocation of documents for Committee 4	C4
132	WG 4A	First report from Working Group 4A to Committee 4	C4
133 + Cor.1,2	BLR,GEO, UKR,KGZ	Proposals for the work of the Conference	C5
134	THA	Proposals for the work of the Conference	C5
135	ISR	Proposals for the work of the Conference	C4
136+Add.1,2*	SG	Circular-Letter CR/76	C4
137	WG 5A	First report from Working Group 5A to Committee 5	C5
138	WG 5A	Note from the Chairman of Working Group 5A to the Chairman of Committee 5	C5
139	C4	Summary record of the second meeting of Committee 4	C4
140	TUR	Proposals for the work of the Conference	C4, C5, WG PL2

* Distribution to the Heads of Delegation.

Doc.	Source	Title	Destination
141	E	Proposals for the work of the Conference	WG 4B
142	GRC	Proposals for the work of the Conference	C4
143	MNG	Proposals for the work of the Conference	C4, C5
144	IUCAF	Information Document	C5
145	C3	Summary record of the first meeting of Committee 3	C3
146	C2	Summary record of the first meeting of Committee 2	C2
147	C6	Summary record of the first meeting of Committee 6	C6
148	ISR	Proposals for the work of the Conference	C4
149	SG	Loss of the right to vote and matters concerning credentials	PL
150	SG	List of documents (101-150)	-
151	C4	Cut-off date for the receipt of information on successful coordination in accordance with Article 4 of Appendices 30 and 30A	C4
152	F	Proposals for the work of the Conference	C5
153	SG	Resolution 24 (WRC-95)	PL
154	WG 5B	First Report of Working Group 5B to Committee 5	C5
155	WG 5C	Note from the Chairman of Working Group 5C to the Chairperson of Committee 5	C5
156	WG 4B	First Report from Working Group 4B to Committee 4	C4
157	SG	ITU-R Recommendations and incorporation by reference	PL
158	ISR	A new category of space network	C4, C5
159(Rev.1)	PL	Minutes of the second Plenary Meeting	PL

Doc.	Source	Title	Destination
160 + Add.1, 2	WG 4D	Summary of conclusions reached by Working Group 4D	C4
161(Rev.1) + Cor.1	[5]	Proposals for the work of the Conference	PL
162	WG 4B	Second report from Working Group 4B to Committee 4	C4
163	LUX	Proposals for the work of the Conference	C5
164(Rev.2)	SWG 5C1	Report by the Chairman of Sub-Working Group 5C1	WG 5C
165	MLA	Proposals for the work of the Conference	-
166 + Add.1	SG	Assignments which have been received by the Bureau under paragraphs 4.3.14 and 4.2.15 of Appendices 30 and 30A between the commencement of WRC-97 and 2000 hours on 3 November 1997	C4
167(Rev.1)	UKR	Proposals for the work of the Conference	C4
168	C4	Summary record of the third meeting of Committee 4	C4
169	Drafting Group 2 of WG 4C	Report of Drafting Group 2 of Working Group 4C	WG 4C
170(Rev.1)	SG	Reference to ITU-R Recommendations in the Radio Regulations	PL
171(Rev.2)	5C1	Note by the Chairman of Drafting Group 5C1 - Spurious emissions	WG 5C
172	Drafting Group 5C1	Note by the Chairman of Drafting Group 5C1	WG 5C
173(Rev.1)	Drafting Group 5C1	Note by the Chairman of Drafting Group 5C1	WG 5C
174 + Cor.1	C5	Consideration of country footnotes	C5
175	C5	First series of texts submitted by Committee 5 to the Editorial Committee	C6

[5] B, BFA, CAN, FIN, LIE, POL, SEN, SUI, ZMB.

Doc.	Source	Title	Destination
176	C5	Note from the Chairman of Committee 5 to the Chairman of Working Group 1 of the Plenary	WG PL1
177	C4	First series of texts submitted by Committee 4 to the Editorial Committee	C6
178(Rev.1)	WG 5B	Note from the Chairman of Working Group 5B to the Chairman of Working Group 5C	WG 5C
179	CITEL	Information document	-
180(Rev.1)	MKD	Proposals for the work of the Conference	C5
181	C5	Summary record of the second meeting of Committee 5	C5
182	WG 5A	Second report of Working Group 5A to Committee 5	C5
183	WG 4A	Second report from Working Group 4A to Committee 4	C4
184	C6	**B.1** - First series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
185 + Add.1	WG 4B	Third report from Working Group 4B to Committee 4	C4
186	GRC	Proposals for the work of the Conference	PL, C5
187 + Add.1	C4	Summary of decisions by Committee 4 in relation to the planning parameters and related issues	C4
188	WG 5B	Second report of Working Group 5B to Committee 5	C5
189	PNG	Proposals for the work of the Conference	C5
190	C4	Summary record of the fourth meeting of Committee 4	C4
191	C5	Second series of texts submitted by Committee 5 to the Editorial Committee	C6
192 + Cor.1	AFR	African common proposals for the work of the Conference	C4, C5
193	SWG 5C3	Note by the Chairman of Sub-Working Group 5C3 on high altitude platform stations	WG 5C

Doc.	Source	Title	Destination
194 + Cor.1	WG 5A	Third report of Working Group 5A to Committee 5	C5
195	SYR	Proposals for the work of the Conference	C5
196	EST	Proposals for the work of the Conference	C5
197	WG 5B	Third report of Working Group 5B to Committee 5	C5
198	WG 4B	Fourth report from Working Group 4B to Committee 4	C4
199	WG 5C	Second report of Working Group 5C to Committee 5	C5
200	SG	List of documents (151-200)	-
201	SWG 5B2	Report of the Chairman of Sub-Working Group 5B-2 to the Chairman of Working Group 5B	WG 5B
202	WG 4B	Fifth report from Working Group 4B to Committee 4	C4
203(Rev.1)	CLM, CTR,EQA	Proposals for the work of the Conference	PL
204 + Cor.1	C5	Summary record of the third meeting of Committee 5	C5
205	WG 5A	Fourth report of Working Group 5A to Committee 5	C5
206	WG 5C	High altitude platform stations	C5
207	WG 5C	Note by the Chairman of Working Group 5C	C5
208 + Cor.1	C5	Date of entry into force of 2 GHz MSS allocations in Region 2	C5
209 + Cor.1	PL	Minutes of the third Plenary Meeting	PL
210	SWG 5B1	Report of the Chairman of Sub-Working Group 5B-1	WG 5B
211	WG 5B	Fourth report of Working Group 5B to Committee 5	C5
212	WG 5B	Note from the Chairman of Working Group 5B to the Chairman of Working Group 5C	WG 5C
213	WG PL2	Note to Working Group 4A	WG 4A
214 + Add.1	WG 5A	Fifth report of Working Group 5A to Committee 5	C5
215	C5	Third series of texts submitted by Committee 5 to the Editorial Committee	C6

Doc.	Source	Title	Destination
216	C5	Modification to Article S18	C4
217	C4	Agenda for WRC-99	PL WG 1
218	C4	Summary record of the fifth meeting of Committee 4	C4
219	WG 5A	Consideration of the 18.6 - 18.8 GHz frequency band	C5
220 + Add.1	WG 4B	Report of the Chairman of Working Group 4B concerning the recommended future WRC Agendas and the revision of Resolutions and Recommendations according to Resolution 94	C4
221	MNG	Proposals for the work of the Conference	C4
222	WG 4B	Sixth report from Working Group 4B to Committee 4	C4
223	F	Proposals for the work of the Conference	C4
224	C5	Summary record of the fourth meeting of Committee 5	C5
225 + Cor.1	WG 5C	Report of Working Group 5C to Committee 5	C5
226 + Cor.1	PL	Minutes of the fourth Plenary Meeting	PL
227	WG 5C	Final report of Working Group 5C to Committee 5	C5
228	C5	Data item to be included in Appendix S4	C4
229	C6	**B.2** - Second series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
230	C6	**R.1** - First series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
231	C5	Summary record of the fifth meeting of Committee 5	C5
232	C4	Summary record of the sixth meeting of Committee 4	C4
233	KEN,LBN, NMB, NGR	Proposals for the work of the Conference	C4, C5
234	MAU	Proposals for the work of the Conference	C5
235	WG PL1	Note by the Chairman of Working Group 1 of the Plenary to the Chairman of Joint Working Group COM3/PL1	COM3/ PL1

Doc.	Source	Title	Destination
236	C5	Information note by the Chairman of Committee 5	C5
237	NPL	Proposals for the work of the Conference	C5
238	C5	Note by the Chairman of Committee 5	C5
239	C5	Fourth series of texts submitted by Committee 5 to the Editorial Committee	C6
240	C5	Recommendation [COM5-A] - Use of frequency bands 2 025-2 110 MHz and 2 200-2 290 MHz by the Space Research, Space Operation, Earth Exploration-Satellite, Fixed and Mobile Services	C5
241 + Cor.1	C5	Fifth series of texts submitted by Committee 5 to the Editorial Committee	C6
242	SG	Information note to assist in the examination of the Draft Revised Appendices 30/30A Regions 1 and 3 Plan	WG 4D
243	C5	Sixth series of texts submitted by Committee 5 to the Editorial Committee	C6
244	C5	Seventh series of texts submitted by Committee 5 to the Editorial Committee	C6
245	C4	Second series of texts submitted by Committee 4 to the Editorial Committee	C6
246	C5	Eighth series of texts submitted by Committee 5 to the Editorial Committee	C6
247	C5	Draft Resolution [COM5-11] - Use of the frequency band 31.8-33.4 GHz for high density systems in the fixed service	C5
248(Rev.1)	WG 4A	Third report from Working Group 4A to Committee 4	C4
249 + Add.1	AUS,LUX, HOL, NOR,S	Proposals for the work of the Conference	PL
250	SG	List of documents (201-250)	-
251	C5	Proposal to modify footnote S5.546 of the Radio Regulations	C5

Doc.	Source	Title	Destination
252	WG PL1	Note by the Chairman of Working Group 1 of the Plenary to the Chairman of Committee 4	C4
253	GMB	Proposals for the work of the Conference	C5
254	SLV	Proposals for the work of the Conference	C5
255	WG PL1	First series of texts submitted by Working Group 1 of the Plenary to the Editorial Committee	C6
256	SWG 4D1	Final Report on the meetings of Sub-Working Group 4D1	WG 4D
257	C5	Proposals to WRC-97 concerning the identification of suitable frequency bands above 30 GHz for use by the fixed service for high density applications	C5
258	WG PL2	Report to the Plenary Meeting by Working Group 2 of the Plenary	PL
259	WG 4C	First report of Working Group 4C to Committee 4	C4
260	C5	Draft Resolution [COM5-12] - Frequency bands above 30 GHz available for use by the fixed service in high density applications	C5
261	WG 5B	Fifth Report of Working Group 5B to Committee 5	C5
262	WG 5B	Sixth Report of Working Group 5B to Committee 5	C5
263(Rev.1)	WG 5B	Seventh Report of Working Group 5B to Committee 5	C5
264	5 ad hoc 2	Report by the Chairman of 5 ad hoc 2	C5
265	C6	**B.3** - Third series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
266	C6	**B.4** - Fourth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
267	CPV	Proposals for the work of the Conference	C5
268	WG 4C	Second report of Working Group 4C to Committee 4	C4
269	WG 4D	Note by the Chairman of Working Group 4D	C4
270	WG 4C	Note from Working Group 4C	WG 4C

Doc.	Source	Title	Destination
271	EGY	Proposals for the work of the Conference	C5
272	EQA	Proposals for the work of the Conference	C5
273 + Cor.1,2	SG	Results of BSS-BSS compatibility studies for the draft revised Appendices 30/30A Regions 1 and 3 Plan	WG 4D
274	C5	Summary record of the sixth meeting of Committee 5	C5
275	C4	Summary record of the seventh meeting of Committee 4	C4
276	WG 4D	Report of Working Group 4D to Committee 4	C4
277	C6	**B.5** - Fifth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
278	C4	Note from the Chairman of Committee 4 to the Chairman of Working Group 1 of the Plenary	WG PL1
279	C4	Third series of texts submitted by Committee 4 to the Editorial Committee	C6
280	C5	Note from the Chairman of Committee 5 to the Chairman of Working Group 1 of the Plenary	WG PL1
281	C5	Ninth series of texts submitted by Committee 5 to the Editorial Committee	C6
282	C5	Tenth series of texts submitted by Committee 5 to the Editorial Committee	C6
283	MDA	Proposals for the work of the Conference	C5
284	4 ad hoc 2	Methodology for the treatment of procedural and regulatory questions related to Appendices 30 and 30A	C4
285	WG 4C	Third report of Working Group 4C to Committee 4	C4
286	COD	Proposals for the work of the Conference	C5
287	C6	**R.2** - Second series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
288	C6	**B.6** - Sixth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL

Doc.	Source	Title	Destination
289	C5	Summary record of the seventh meeting of Committee 5	C5
290 + Cor.1(Rev.1)	C5	Use of the bands 18.8-19. GHz and 28.6-29.1 GHz by networks operating in the fixed-satellite service	C5
291	C5	Note from the Chairman of Committee 5 to the Chairman of Working Group 1 of the Plenary	WG PL1
292 + Cor.1,2,3	[6]	Proposals for the work of the Conference	C5
293 + Cor.1[7]	BRU,KOR J, NPL PHL, SNG	Proposals for the work of the Conference	C5
294(Rev.2) + Cor.1	C5	Report to Committee 5 on the regulatory provisions relating to the operation of NGSO FSS and GSO systems in the 10.7 to 30 GHz bands	C5
295	WG 4A	Fourth report from Working Group 4A to Committee 4	C4
296 + Add.1	WG 4D	Report from Working Group 4D to Committee 4	C4
297	C4	Summary record of the eighth meeting of Committee 4	C4
298	C5	Summary record of the eighth meeting of Committee 5	C5
299 + Cor.1	PL	Minutes of the fifth Plenary Meeting	PL
300	SG	List of documents (251-300)	
301	WG 4C	Fourth report of Working Group 4C to Committee 4	C4
302	WG 4C	Fifth report of Working Group 4C to Committee 4	C4
303	WG 4C	Sixth and final report of Working Group 4C to Committee 4	C4
304	WG 4A	Fifth report of Working Group 4A to Committee 4	C4
305	WG 4D	Fifth report of Working Group 4D to Committee 4	C4

[6] CPV, GHA, INS, LBN, NIG, NPL, PNG.

[7] This Corrigendum concerns only the English text.

Doc.	Source	Title	Destination
306	WG 4 ad hoc 1	First report of ad hoc 1 of Committee 4	C4
307	C5	Modifications to Appendix S5	C4
308	WG PL1	Second series of texts submitted by Working Group 1 of the Plenary to the Editorial Committee	C6
309+Cor.1,2	C2	Report by Committee 2 to the Plenary Meeting	PL
310	C4	Summary Record of the ninth meeting of Committee 4	C4
311	WG 4A	Sixth report from Working Group 4A to Committee 4	C4
312	BUL	Proposals for the work of the Conference	C5
313	GEO	Proposals for the work of the Conference	C5
314	C3	Report of the Budget Control Committee to the Plenary Meeting	PL
315	NPL	Proposals for the work of the Conference	C4
316+Cor.1	C5	Eleventh series of texts submitted by Committee 5 to the Editorial Committee	C6
317	BHR,UAE, KWT,OMA, QAT	Proposals for the work of the Conference	C5
318	SG	Results of compatibility studies for the draft revised Appendices 30/30A Regions 1 and 3 Plan for other services and the Region 2 Plan	C4
319	WG 4A	Seventh and last report from Working Group 4A to Committee 4	C4
320	USA	Draft Resolution [COM4-X] - Provisional application of Article S11 (Nos. S11.24 and S11.26) of the Radio Regulations as adopted by WRC-97	C4
321	C5	Note from the Chairman of Committee 5 to the Chairman of Working Group 1 of the Plenary	WG PL1
322	WG PL1	Third series of texts submitted by Working Group 1 of the Plenary of the Editorial Committee	C6
323	C5	Summary Record of the ninth meeting of Committee 5	C5

Doc.	Source	Title	Destination
324	C4	Fourth series of texts from Committee 4 to the Editorial Committee	C6
325	C4	Resolution [COM4-20] - Updating the "remarks" columns of Article 9A of Appendix 30A and Article 11 of Appendix 30 and tables associated with these new "remarks" column Entries	C4
326	C4	Proposed provisions based on the principles adopted at Committee 4 (13 November 1997) on compatibility issues	C4
327	WG 4D	Recommendations and Resolutions of WARC/WRC included in the radio regulations allocated to working Group 4D	C4
328	WG 4D	Modifications to footnotes	C4
329	SG	Availability of BSS plan input data	C4
330	C4 ad hoc 1	Second and final report of ad hoc 1 of Committee 4	C4
331	WG PL1	Note from the Chairman of Committee 4 to the Chairman of Working Group 1 of the Plenary	WG PL1
332(Rev.2)	TRD	Proposals for the work of the Conference	C4
333	C4	Fifth series of texts submitted by Committee 4 to the Editorial Committee	C6
334	PL	Minutes of the sixth Plenary Meeting	PL
335	C4	Sixth series of texts from Committee 4 to the Editorial Committee	C6
336	C4	Format and text of Article 11 of Appendix 30 and Article 9A of Appendix 30A	C4
337 + Cor.1	C5	Twelfth series of texts submitted by Committee 5 to the Editorial Committee	C6
338	SG	Final days of the Conference	-
339	C4	Seventh series of texts submitted by Committee 4 to the Editorial Committee	C6
340	WG PL1	Fourth series of texts submitted by Working Group 1 of the Plenary to the Editorial Committee	C6

Doc.	Source	Title	Destination
341	C6	**B.7** - Seventh series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
342	C6	**R.3** - Third series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
343	C5	Fourteenth series of texts submitted by Committee 5 to the Editorial Committee	C6
344	WG ad hoc 1	Report to the Plenary Meeting by Working Group ad hoc 1	PL
345	C4	Eighth series of texts submitted by Committee 4 to the Editorial Committee	C6
346	C5	Thirteenth series of texts submitted by Committee 5 to the Editorial Committee	C6
347 + Cor.1	[8]	Proposals for the work of the Conference	PL
348	C5	Note from the Chairman of Committee 5 to the Chairman of Committee 6	C6
349	C5	Note from the Chairman of Committee 5 to the Chairman of the Plenary	PL
350	E	Proposals for the work of the Conference	PL
351	C4	Ninth series of texts submitted by Committee 4 to the Editorial Committee	C6
352	C5	Summary record of the tenth meeting of Committee 5	C5
353	C4	Final report from Committee 4 to the Plenary Meeting	PL
354	C6	**B.8** - Eighth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
355	C4	Tenth series of texts from Committee 4 to the Editorial Committee	C6
356	C5	Fifteenth series of texts submitted by Committee 5 to the Editorial Committee	C6

[8] IND, MLI, MEX, NIG, SYR, G.

Doc.	Source	Title	Destination
357	SG	Signing ceremony	-
358	C5	Sixteenth series of texts submitted by Committee 5 to the Editorial Committee	C6
359(Rev.1)	[9]	Proposals for the work of the Conference	PL
360	C6	**B.9** - Ninth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
361	C6	**B.15** - Fifteenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
362	C6	**B.10** - Tenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
363	C5	Note from the Chairman of Committee 5 to the Chairman of the Plenary	PL
364	C6	**B.11** - Eleventh series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
365	C5	Note from the Chairman of Committee 5 to the Chairman of the Plenary	PL
366	C6	**B.12** - Twelfth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
367 + Cor.1	WG PL1	Fifth series of texts submitted by Working Group 1 of the Plenary to the Editorial Committee	C6
368	C5	Note from the Chairman of Committee 5 to the Chairman of the Plenary	PL
369	C6	**B.13** - Thirteenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
370	C5	Note from the Chairman of Committee 5 to the Chairman of the Plenary	PL
371	C6	**B.14** - Fourteenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
372	C6	**B.16** - Sixteenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL

[9] ALG, ARS, EGY, JOR, LBY, SYR, TUN, YEM.

Doc.	Source	Title	Destination
373	C6	**R.4** - Fourth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
374	C6	**R.5** - Fifth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
375	C6	**R.6** - Sixth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
376	C5	Summary record of the eleventh meeting of Committee 5	C5
377	C5	Summary record of the twelfth meeting of Committee 5	C5
378	C4	Resolution [PLEN-X] - Implementation of Annex 5 to Appendix S30 (Rev.WRC-97) and Annex 3 to Appendix S30A (Rev.WRC-97)	PL
379	C6	**R.7** - Seventh series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
380	C4	Summary record of the tenth meeting of Committee 4	C4
381	C6	**B.17** - Seventeenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
382	C4	Additional agenda item for WRC-99	PL
383	C4	Summary Record of the eleventh meeting of Committee 4	C4
384	C4	Summary Record of the twelfth meeting of Committee 4	C4
385	C3	Summary Record of the second and last meeting of Committee 3	C3
386	C5	Summary Record of the thirteenth and last meeting of Committee 5	C5
387	PL	Minutes of the seventh Plenary Meeting	PL
388	PL	Minutes of the eighth Plenary Meeting	PL
389	PL	Minutes of the ninth Plenary Meeting	PL
390	C4	Summary Record of the thirteenth and last meeting of Committee 4	C4

Doc.	Source	Title	Destination
391	PL	Minutes of the tenth Plenary Meeting	PL
392	PL	Minutes of the eleventh Plenary Meeting	PL
393	C6	**R.8** - Eighth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
394	C6	**R.9** - Ninth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
395	C6	**R.10** - Tenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
396	C4	Resolution No. 506 (Rev. WRC-97)	PL
397	PL	Minutes of the twelfth Plenary Meeting	PL
398	PL	Minutes of the thirteenth Plenary Meeting	PL
399	PL	Minutes of the fourteenth Plenary Meeting	PL
400	-	Declarations	PL
401	-	Additional Declarations	PL
402	C2	Summary Record of the second and last meeting of Committee 2	C2
403	PL	Minutes of the fifteenth and last Plenary Meeting	PL
404	SG	Final list of participant	-
405	SG	Final list of documents	-