Documents of the World Radiocommunication Conference (WRC-2000) (Istanbul, 2000)

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 401-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Chairperson, Working Group 4A

FOURTH REPORT FROM WORKING GROUP 4A TO COMMITTEE 4

Please find attached proposed modifications to Articles S9, Appendix S30, Appendix S30A and Appendix 30B in square bracket which was drafted in reply to PP Resolution 85.

In considering these proposed modifications a variety of views were expressed, among which alternative ways to reinforce payment were suggested. Working Group 4A was unable to reach an agreement. These proposed modifications in square brackets are forwarded to Committee 4 for its consideration.

N. KISRAWI
Chairperson, Working Group 4A
Box 50

MOD

S9.2B On receipt of the complete information sent under Nos. **S9.1** and **S9.2**, the Bureau shall publish[6A] it in a Special Section of its ~~Weekly Circular~~International Frequency Information Circular (IFIC) 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 therefore.

ADD

6A **S9.2B.1** If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.

MOD

S9.38 *d)* publish[14A], as appropriate, the complete information in the ~~Weekly Circular~~International Frequency Information Circular (IFIC) within four 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 therefore.

ADD

14A **S9.38.1** If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.

Modification to Appendix S30

MOD

4.3.6 The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of § 4.3.1 or § 4.3.3. The Bureau shall include the names of those administrations with the information received under § 4.3.5.2 and shall publish[3A] the complete information in a special section of its ~~Weekly Circular~~International Frequency Information Circular (IFIC). The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the appropriate Regional Plan.

ADD

_____

3A If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.

Modification to Appendix S30A

MOD

4.2.7 The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of § 4.2.1 and 4.2.3. The Bureau shall include the names of those administrations with the information received under § 4.2.6.2 and shall publish[3A] the complete information in a special section of its ~~Weekly Circular~~International Frequency Information Circular (IFIC). The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the Plan.

ADD

_____

3A If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.

Modification to Appendix S30B

MOD

ARTICLE 6

Procedures for implementation of the Plan and regulation of the fixed-satellite service in the planned bands[1A]

ADD

1A If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in Nos. 6.26, 6.33, 6.49 or cancel the entry in the list under No. 6.44 as appropriate after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 402-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Report by the Chairperson of Working Group 4B

EIGHTH REPORT FROM WORKING GROUP 4B TO COMMITTEE 4

(AGENDA ITEM 4)

At its 12th meeting on 23 May 2000, the Working Group reviewed the texts of Resolution 25 (WRC-95), Resolution 95 (Rev.WRC-97), Resolution 706 (Mob-87), Resolution 716 (WRC-95) and Resolution 727 (WRC-97).

The agreed revisions, as reproduced in the following, are submitted to Committee 4 for consideration. With respect to Resolution 95, compromise text developed subsequent to the meeting is shown in square brackets as alternative text.

A. ALLISON
Chairperson, Working Group 4B
Box 68

MOD

RESOLUTION 25 (~~WRC-95~~Rev.WRC-2000)

Operation of global satellite systems for personal communications

The World Radiocommunication Conference (~~Geneva, 1995~~Istanbul, 2000),

considering

a) that, in accordance with No. 6 of its Constitution (Geneva, 1992), one of the purposes of the Union is "to promote the extension of the benefits of the new telecommunication technologies to all the world's inhabitants";

b) that, to this end, the Union is fostering the use of new technologies in telecommunications and is studying questions relating to this use in the Radiocommunication and the Telecommunication Standardization Sectors;

c) that the Telecommunication Development Sector is studying questions aimed at identifying the benefits that developing countries may derive from using new technologies;

d) that, among these new technologies, constellations of low-Earth orbit satellites may provide global coverage and facilitate low-cost communications;

e) that ~~the Council, at its 1995 session, resolved in its Resolution 1083 that~~ the theme "global mobile personal communications by satellite" ~~be~~(GMPCS) was discussed at the first World Telecommunication Policy Forum established by Resolution 2 of the Plenipotentiary Conference (Kyoto, 1994)~~,~~;

f) that Council Resolution 1116 instructs the Secretary-General to act as depositary of the GMPCS Memorandum of Understanding (MoU) and its Arrangements, to act as the registry for type-approval procedures and terminal types and to authorize the use of the abbreviation "ITU" as part of the GMPCS-MoU mark;

g) Recommendations ITU-R M.1343 and ITU-R M.1480 on the essential technical requirements of GMPCS earth stations that should be used by administrations as a common technical basis facilitating the global circulation and use of such GMPCS terminals in conformity with these Recommendations,

recognizing

a) that the spectrum available to global satellite systems for personal communications is limited;

b) that successful coordination does not in any way imply licensing authorization to provide a service within the territory of a Member State~~‡~~,

considering further

that other countries intending to use these systems should be guaranteed that they will be operated in accordance with the Constitution, the Convention and the Administrative Regulations,

noting

a) that the Constitution recognizes the sovereign right of each State to regulate its telecommunications;

b) that the International Telecommunication Regulations "recognize the right of any Member, subject to national law and should it decide to do so, to require that administrations and private operating agencies, which operate in its territory and provide an international telecommunication service to the public, be authorized by that Member", and specifies that "within the framework of the present Regulations, the provision and operation of international telecommunication services in each relation is pursuant to mutual agreement between administrations";

c) that Article **S18** specifies the authorities for licensing the operation of stations within any given territory;

d) the right of each Member State~~‡~~ to decide on its participation in these systems, and the obligations for entities and organizations providing international or national telecommunication services by means of these systems to comply with the legal, financial and regulatory requirements of the administrations in whose territory these services are authorized,

resolves

that administrations licensing global satellite systems and stations intended to provide public personal communications by means of fixed, mobile or transportable terminals shall ensure, when licensing these systems and stations, that they can be operated only from the territory or territories of administrations having authorized such service and stations in compliance with Articles **S17** and **S18**, in particular No. **S18.1**,

~~*urges administrations and other Members of the Sectors*~~

~~to participate in the first World Telecommunication Policy Forum dealing with global satellite systems for personal communications,~~

invites administrations

1 to ~~cooperate~~continue cooperating with worldwide satellite system operators in ~~establishing mutually beneficial~~improving the established arrangements for the provision of service within their territories~~,~~ and with the Secretary-General in implementing the GMPCS-MoU and its Arrangements;

2 to participate actively in the ITU-R studies in developing and improving relevant Recommendations,

reminds operators of such systems

to take account, when contracting agreements on the operation of their systems from the territory of a country, of any potential loss of revenue that the country may suffer from a possible reduction of its international traffic existing at the time such agreements are executed.

MOD

RESOLUTION 95 (Rev.WRC-~~97~~2000)

General review of the Resolutions and Recommendations of world administrative radio conferences and world radiocommunication conferences

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

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 Reports of the Director of the Radiocommunication Bureau submitted to ~~this~~ previous ~~C~~conferences provided a useful basis for a general review of the Resolutions and Recommendations of past conferences ~~which was conducted by this Conference,~~;

c) that some principles and guidelines are necessary for future conferences to treat the Resolutions and Recommendations of previous conferences which are not related to the agenda of the Conference,

resolves to invite~~s~~ future competent world radiocommunication conferences

1 to review the Resolutions and Recommendations of previous conferences that are related to the agenda of the Conference with a view to their possible revision, replacement or abrogation and to take appropriate action~~,~~;

2 to review the Resolutions and Recommendations of previous conferences that are not related to any agenda item of the Conference with a view to:

– abrogating those Resolutions and Recommendations that have served their purpose or have become no longer necessary;

– updating and modifying Resolutions and Recommendations, or parts thereof that have become out of date, and to correct obvious omissions, inconsistencies, consequential alignment, ambiguities or editorial errors;

3 at the beginning of the Conference, to determine which Committee within the Conference has the primary responsibility to review each of the Resolutions and Recommendations referred to in *resolves* 1 and 2 above,

invites

the Conference Preparatory Meeting to include, in its Report, the result of a general review of the Resolutions and Recommendations of previous conferences,

instructs the Director of the Radiocommunication Bureau

1 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, and the Conference Preparatory

Meeting, to submit a Report to future competent world radiocommunication conferences which indicates their current status, and what follow-up action may be advised.;

2 if practicable, to include, in the above Report, an indication of the agenda item if appropriate, and possible responsible Committee within the Conference for each text, based on the available information as to the possible structure of the Conference,

instructs the Director of the Radiocommunication Bureau

1 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 and Vice 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 the second Conference Preparatory Meeting in respect of *resolves* 1 and *resolves* 2;.

2 if practicable, to include in the above Report, an indication of the agenda item, if appropiate, and possible responsible Committees within the Conference for each text, based on the available information as to the possible structure of the Conference,

invites

the Conference Preparatory Meeting to include, in its Report, the results of a general review of the Resolutions and Recommendations of previous conferences.

MOD

RESOLUTION 706 (~~Mob-87~~Rev.WRC-2000)

Operation of the fixed ~~and maritime mobile~~ services ~~in~~ the band 90-110 kHz

~~The World Administrative Radio Conference for the Mobile Services, Geneva, 1987,~~The World Radiocommunication Conference (Istanbul, 2000),

considering

a) the need to protect phased pulse hyperbolic radionavigation systems (Loran-C) operating in the band 90-110 kHz used as a safety service for both maritime and aeronautical services;

b) the studies made by the ITU-R in this band;

c) that harmful interference affecting safety of flight and ship navigation may be caused to this service by the operation of the fixed ~~and maritime mobile~~ service~~s~~ having a secondary allocation in this band;

d) that, ~~notwithstanding No. **S5.63**[1] of the Radio Regulations, this Conference has~~the 1987 World Administrative Radio Conference for the Mobile Services (Mob-87) removed the allocation for the maritime mobile service from this band,

noting

that ~~this Conference is~~Mob-87 was not competent to affect significantly the allocation of the fixed service,

resolves

to invite the next competent conference to review the fixed service allocation in this band~~, and No. **S5.63**[1],~~ with a view to ~~their~~ its possible deletion~~,~~.

~~*invites the Council*~~

~~to place this matter on the agenda of the next competent world radiocommunication conference.~~

~~[1] *Note by the Secretariat:* WRC-97 suppressed No. **S5.63**.~~

MOD

RESOLUTION 716 (~~WRC-95~~Rev.WRC-2000)

Use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the fixed and mobile-satellite services and associated transition arrangements

The World Radiocommunication Conference (~~Geneva, 1995~~Istanbul, 2000),

considering

a) that WARC-92 allocated the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the mobile-satellite service with a date of entry into force of 1 January 2005, these allocations being co-primary with fixed and mobile service allocations;

b) that the use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service (MSS), in accordance with the provisions of Nos. **S5.389A**, **S5.389C** and **S5.389D** of the Radio Regulations, as adopted by WRC-95 and WRC-97, is subject to a date of entry into force of 1 January 2000, 1 January 2002 (for Region 2) or 1 January 2005~~, in accordance with the provisions of Nos. **S5.389A**, **S5.389C**[1] and **S5.389D** of the Radio Regulations, as adopted by this Conference WRC-95~~;

c) that these bands are shared with the fixed and mobile~~2~~[21] services on a primary basis and that they are widely used by the fixed service in many countries;

d) that the studies made have shown that, while sharing of the MSS with the fixed service in the short to medium term would be generally feasible, in the long term sharing will be complex and difficult in both bands, so that it would be advisable to transfer the fixed service stations operating in the bands in question to other segments of the spectrum;

e) that for many developing countries, the use of the 2 GHz band offers a substantial advantage for their radiocommunication networks and that it is not attractive to transfer these systems to higher frequency bands because of the economic consequences that this would entail;

f) that ~~in response to Resolution **113 (WARC-92)*~~ the ITU-R has developed a new frequency plan for the fixed service in the 2 GHz band, set out in Recommendation ITU-R F.1098 which will facilitate the introduction of new fixed service systems in band segments that do not overlap with the above-mentioned MSS allocations at 2 GHz;

g) that sharing between fixed service systems using tropospheric scatter and Earth-to-space links in the MSS in the same frequency band segments is generally not feasible;

h) that some countries utilize these bands in application of Article 48 of the Constitution (Geneva, 1992),

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~~1 *Note by the Secretariat:* WRC-97 modified the date referred to in No. **S5.389C**.~~

~~2~~[21] This Resolution does not apply to the mobile service. In this respect, the use of these bands by the mobile-satellite service is subject to coordination with the mobile service under the provisions of Resolution **46 (Rev.WRC-97)**~~/~~ or No. **S9.11A**, as applicable.

~~* This Resolution was abrogated by WRC-97.~~

recognizing

a) that WARC-92 identified the bands 1 885-2 025 MHz and 2 110-2 200 MHz for worldwide use by ~~FPLMTS[3]~~the International Mobile Telecommunication-2000 (IMT-2000), the satellite component being limited to the frequencies 1 980-2 010 MHz and 2 170-2 200 MHz, and that the development of ~~FPLMTS[3]~~IMT-2000 can offer great potential in helping the developing countries develop more rapidly their telecommunications infrastructure;

b) that ~~in Resolution **22 (WARC-92)**[*], "Assistance to the Developing Countries to Facilitate the Implementation of Changes in Frequency Band Allocations Which Necessitate the Transfer of Existing Assignments",~~ WARC-92 resolved to request the Telecommunication Development Bureau (BDT), when formulating its immediate plans for assistance to the developing countries, to consider the introduction of specific modifications in the radiocommunication networks of the developing countries and that a future world development conference should examine the needs of developing countries and should assist them with the resources needed to implement the required modifications to their radiocommunication networks,

resolves

1 to request administrations to notify to the Radiocommunication Bureau the basic characteristics of frequency assignments to existing or planned fixed stations requiring protection, or those typical~~[4]~~[2] of existing and planned fixed stations brought into use before 1 January 2000 in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2;

2 that administrations proposing to bring an MSS system into service must take account of the fact that, when coordinating their system with administrations having terrestrial services, such administrations may have existing or planned installations covered by Article 48 of the Constitution;

3 that in respect of stations of the fixed service taken into account in the application of Resolution **46 (Rev.WRC-97)/S9.11A**, administrations responsible for MSS networks operating in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 shall ensure that unacceptable interference is not caused to fixed service stations notified and brought into use before 1 January 2000;

4 that to facilitate the introduction and future use of the 2 GHz bands by the MSS:

4.1 administrations are urged to ensure that frequency assignments to new fixed service systems, to be brought into operation after 1 January 2000, do not overlap with the 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 MSS allocations, for example by using the channel plans of Recommendation ITU-R F.1098;

~~[3] ITU-R replaced this term by the term "International Mobile Telecommunication-2000 (IMT-2000)".~~

~~[4]~~[2] With respect to the notification of frequency assignments to stations in the fixed and mobile services, it was possible to notify the characteristics of typical stations ~~may be notified~~ in accordance with No. **S11.17**~~**/1223**~~ without restriction up until 1 January 2000.

~~[*] This Resolution was abrogated by WRC-97.~~

4.2 administrations are urged to take all practicable steps to phase out troposcatter systems operating in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2 by 1 January 2000. New troposcatter systems shall not be brought into operation in these bands;

4.3 administrations are encouraged, where practicable, to draw up plans for the gradual transfer of the frequency assignments to their fixed service stations in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 to non-overlapping bands, giving priority to the transfer of their frequency assignments in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2, considering the technical, operational and economical aspects;

5 that administrations responsible for the introduction of mobile-satellite systems should take into account and address the concerns of affected countries, especially developing countries, to minimize the possible economic impact of transition measures in respect to existing systems;

6 to invite the Bureau to provide assistance to developing countries requesting it for the introduction of specific modifications to their radiocommunication networks that will facilitate their access to the new technologies being developed in the 2 GHz band as well as in all coordination activities;

7 that administrations responsible for the introduction of mobile-satellite systems urge their mobile-satellite system operators to participate in the protection of terrestrial fixed services especially in the least developed countries,

requests

1 the ITU-R to conduct, as a matter of urgency, further studies, in conjunction with the Bureau, to:

1.1 develop and provide to administrations the necessary tools in a timely manner and not later than WRC-02/03 to assess the impact of interference in the detailed coordination of mobile-satellite systems;

1.2 develop the necessary planning tools as soon as possible to assist those administrations considering a replanning of their terrestrial fixed networks in the 2 GHz range not later than WRC-02/03;

2 the Telecommunication Development Sector to evaluate, as a matter of urgency, the financial and economic impact on the developing countries of the transfer of fixed services, and to present its results to a future competent world radiocommunication conference and/or world telecommunication development conference,

invites

the Director of the Telecommunication Development Bureau to implement *requests* 2 by encouraging joint activities between the relevant study groups of both ITU-D and ITU-R,

instructs the Director of the Radiocommunication Bureau

to submit a report on the implementation of this Resolution to world radiocommunication conferences.

MOD

RESOLUTION 727 (~~WRC-97~~Rev.WRC-2000)

Use of the frequency band 420-470 MHz by the earth exploration-satellite (active) service

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that the United Nations Conference on Environment and Development (UNCED) (Rio de Janeiro, 1992) identified an urgent need for assessment and systematic observations of forest cover and rate of forest degradation in tropical and temperate regions;

b) that, during ~~this Conference~~WRC-97, many countries agreed to the principle that ITU should take action in response to the need identified by UNCED;

c) that frequencies around 450 MHz have been identified as having the unique capability to penetrate the canopy of forests and to determine the ground-trunk interaction;

d) that a bandwidth of about 6 MHz is considered necessary to provide the required resolution,

recognizing

a) that ~~this Conference~~WRC-97 considered a proposal for a secondary allocation for the earth exploration-satellite (active) service within the frequency band 432-438 MHz;

~~*b)* that the Report of the 1997 Conference Preparatory Meeting (CPM-97) stated that this Conference may deem it appropriate to defer consideration of this agenda item to WRC-99, by which time all relevant studies should be completed;~~

~~*c*~~*b)* that CPM-97 concluded that spaceborne sensors cannot be considered technically compatible with terrestrial tracking radars without restriction on the spaceborne sensors;

~~*d*~~*c)* that measures may be needed to minimize interference to fixed, mobile, mobile-satellite, amateur, amateur-satellite and space operation services,

resolves

1 to invite ITU-R to study, as a matter of urgency, emission criteria, specific sharing criteria and operational characteristics for active spaceborne sensors in the frequency band 420-470 MHz, and develop a relevant Recommendation;

2 to invite ITU-R to develop an ITU-R Report by the date of ~~the 1999~~a future Conference Preparatory Meeting ~~(CPM-99)~~ on the specific emission and operational characteristics used by the Earth exploration-satellite (active) service in order to minimize the potential interference to existing services, and in order to support the selection of a frequency band having the optimal sharing scenarios;

3 that, on the basis of proposals from administrations, and taking into account the results of the ITU-R studies, the ITU-R Report mentioned in *resolves* 2, and ~~the~~a future CPM~~-99~~ Report, ~~WRC-99~~a future competent world radiocommunication conference should consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite (active) service in the frequency band 420-470 MHz.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 403-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Chairperson, Working Group 5D

MODIFICATION TO RR S21, RR S22 AND RELEVANT FOOTNOTES

MOD

TABLE **S21-4** *(continued)*

Frequency band	**Service***	**Limit 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 (space-to-Earth) geostationary-satellite orbit	–150 ~~– 14~~	–150 + 0.5(δ – 5) ~~14~~	–140 ~~– 14~~	4 kHz
10.7-11.7 GHz	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	–126	–126 + 0.5(δ – 5)	–116	1 MHz
11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. **S5.494** and **S5.496)** 11.7-12.~~2~~7 GHz (Region 2) 11.7-12.~~2~~75 GHz (Region 3) ~~12.2-12.7 GHz (Region 2)~~	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	~~–148 15~~ –124	~~–148 + 0.5(δ – 5) 15~~ –124 + 0.5(δ – 5)	~~–138 15~~ –114	~~4 kHz~~ 1 MHz

12.2-12.~~5~~75 GHz[7] (Region 3) 12.5-12.75 GHz[7] (Region 1~~ and Region 3~~ countries listed in Nos. **S5.494** and **S5.496**)	Fixed-satellite (space-to-Earth)<u>, geostationary-satellite orbit</u>	–148~~–[14]~~	–148 + 0.5(δ – 5)~~[14]~~	–138~~–[14]~~	4 kHz
15.43-15.63 GHz	Fixed-satellite (space-to-Earth)	–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
17.7-19.3 GHz[7, 8]	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth)	–115<u>[12bis]</u> or ~~–125~~ ~~[12]~~ <u>–115–X[12]</u>	–115 + 0.5(δ – 5)<u>[12bis]</u> or ~~–125 + (δ – 5)~~ ~~[12]~~ <u>–115 – X + ((10 + X)/20) (δ – 5)[12]</u>	–105<u>[12bis]</u> or –105 [12]	1 MHz
19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz	Fixed-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth) Inter-satellite	–115	–115 + 0.5(δ – 5)	–105	1 MHz

MOD

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[12] **S21.16.6** ~~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 **131 (WRC-97)**).~~The function X is defined as a function of the number, N, of satellites in the non-GSO FSS constellation as follows:

– for N ≤ 50 $X = 0$ (dB)

– for 50 < N ≤ 288 $X = \frac{5}{119}(N - 50)$ (dB)

– for N > 288 $X = \frac{1}{69}(N + 402)$ (dB)

In the band 18.8-19.3 GHz, these limits apply to emissions of any space station in a non-geostationary FSS system for which complete coordination or notification information, as appropriate, has been received by the Radiocommunication Bureau after 17 November 1995, and which was not operational by that date.

ADD

12*bis* **S21.16.6*bis*** These limits apply to emissions of a space station on a meteorological-satellite and on a geostationary FSS satellite. These limits also apply to emissions of any space station in a non-geostationary FSS system in the bands 18.8-19.3 GHz for which complete coordination or notification information has been received by the Radiocommunication Bureau by 17 November 1995, or was in operation by that date.

NOC

13 **S21.16.7**

SUP

14 **S21.16.8**

SUP

15 **S21.16.9**

SUP

RESOLUTION 131 (WRC-97)

Power flux-density limits applicable to non-geostationary fixed-satellite service systems for protection of terrestrial services in the bands 10.7-12.75 GHz and 17.7-19.3 GHz

ARTICLE S22

Space services[1]

Section II – Control of interference to geostationary-satellite systems

NOC

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.

S22.3 2) Whenever the emissions from geostationary satellites in the inter-satellite service are directed towards space stations at distances from Earth greater than that of the geostationary-satellite orbit, the boresight of the antenna mainbeam of the geostationary satellite shall not be pointed within 15° of any point on the geostationary-satellite orbit.

S22.4 § 3 In the frequency band 29.95-30 GHz space stations in the earth exploration-satellite service on board geostationary satellites and operating with space stations in the same service on board non-geostationary satellites shall have the following restriction:

Whenever the emissions from the geostationary satellites are directed towards the geostationary-satellite orbit and cause unacceptable interference to any geostationary-satellite space system in the fixed-satellite service, these emissions shall be reduced to a level at or less than accepted interference.

S22.5 § 4 In the frequency band 8 025-8 400 MHz, which the Earth exploration-satellite service using non-geostationary satellites shares with the fixed-satellite service (Earth-to-space) or the meteorological-satellite service (Earth-to-space), the maximum power flux-density produced at the geostationary-satellite orbit by any Earth exploration-satellite service space station shall not exceed –174 dB(W/m^2) in any 4 kHz band.

S22.5A § 5 In the frequency band 6 700-7 075 MHz, the maximum aggregate power flux-density produced at the geostationary-satellite orbit and within ±5° of inclination around the geostationary-satellite orbit by a non-geostationary-satellite system in the fixed-satellite service shall not exceed –168 dB(W/m^2) in any 4 kHz band. The maximum aggregate power flux-density shall be calculated in accordance with Recommendation ITU-R S.1256.

SUP

S22.5B

MOD

S22.5C § ~~5~~6 1) The equivalent power flux-density[2], epfd$_{down}$ 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 in the fixed-satellite service in the frequency bands listed in Tables ~~**S22-1**~~**S22-1A** to **S22-1D**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Tables ~~**S22-1**~~ **S22-1A** to **S22-1D** 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 specified in Tables ~~**S22-1**~~**S22-1A** to **S22-1D**, for all pointing directions towards the geostationary-satellite orbit.

MOD

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[2] **S22.5C.1, D.1, F.1** The equivalent power flux-density is defined as the sum of the power flux-densities produced at a ~~point~~GSO receive station on the Earth's surface or in the geostationary orbit, as appropriate, by all ~~space~~the transmit 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~~in its nominal direction. The equivalent power flux-density is calculated using the following formula:

$$\sim\sim epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{max}}\right]\sim\sim$$

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_a} 10^{\frac{P_i}{10}} \cdot \frac{G_t(\theta_i)}{4.\pi d_i^2} \cdot \frac{G_r(\phi_i)}{G_{r,\max}}\right]$$

where:

~~N_s: 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: index of the non-geostationary space station considered;~~

~~pfd_i: power flux-density produced at the point considered on the Earth's surface in dB(W/m^2) in the reference bandwidth;~~

~~θ_i: angle between the direction considered towards the geostationary-satellite orbit and the direction of the interfering space station in the non-geostationary-satellite system;~~

~~$G_r(\theta_i)$: gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary-satellite network;~~

~~G_{max}: maximum gain (as a ratio) of the above receive reference antenna;~~

~~$epfd$: computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.~~

N_a: is the number of transmit stations in the non-geostationary-satellite system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i: is the index of the transmit station considered in the non-geostationary-satellite system;

P_i: is the RF power at the input of the antenna of the transmit station, considered in the non-geostationary satellite system in dBW in the reference bandwidth;

θ_i: is the off-axis angle between the boresight of the transmit station considered in the non-geostationary satellite system and the direction of the GSO receive station;

$G_t(\theta_i)$: is the transmit antenna gain (as a ratio) of the station considered in the non-geostationary satellite system in the direction of the GSO receive station;

d_i: is the distance in metres between the transmit station considered in the non-geostationary satellite system and the GSO receive station;

ϕ_i: is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the ith transmit station considered in the non-geostationary satellite system;

$G_r(\phi_i)$: is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the ith transmit station considered in the non-geostationary satellite system;

$G_{r,max}$: is the maximum gain (as a ratio) of the antenna of the GSO receive station;

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-geostationary fixed-satellite service system in the frequency bands to be applied in accordance with Resolutions **130 (WRC-97)** and **538 (WRC-97)**. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.~~

SUP

TABLE **S22-1**

ADD

TABLE **S22-1A**[3, 5, 6, 6*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	$epfd_{down}$ dB(W/m^2)	Percentage of time during which $epfd_{down}$ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[4]
10.7-11.7 in all Regions; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–175.4 –174 –170.8 –165.3 –160.4 –160 –160	0 90 99 99.73 99.991 99.997 100	40	60 cm Recommendation ITU-R S.1428
	–181.9 –178.4 –173.4 –173 –164 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.74 99.857 99.954 99.984 99.991 99.997 99.997 99.9993 100	40	1.2 m Recommendation ITU-R S.1428

	–190.45 –189.45 –187.45 –182.4 –182 –168 –164 –162 –160 –160	0 90 99.5 99.7 99.855 99.971 99.988 99.995 99.999 100	40	3 m Recommendation ITU-R S.1428
	–195.45 –195.45 –190 –190 –172.5 –160 –160	0 99 99.65 99.71 99.99 99.998 100	40	10 m Recommendation ITU-R S.1428

3 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

4 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

5 In addition to the limits shown in Table **S22-1A**, the following single-entry $epfd_{down}$ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **S22-1A**.

100% of the time $epfd_{down}$ (dB(W/m^2) per 40 kHz)	**Latitude (North or South) (°)**
–160	0 < |Latitude| ≤ 57.5
–160 + 3.4 (57.5 – |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
–165.3	63.75 ≤ |Latitude|

6 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

6*bis* In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30B** will be fully protected.

ADD

TABLE **S22-1B**[7, 9, 9*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{down}$ dB(W/m^2)**	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[8]**
17.8-18.6	–175.4 –175.4 –172.5 –167 –164 –164	0 90 99 99.714 99.971 100	40	1 m Recommendation ITU-R S.1428
	–161.4 –161.4 –158.5 –153 –150 –150	0 90 99 99.714 99.971 100	1 000	
17.8-18.6	–178.4 –178.4 –171.4 –170.5 –166 –164 –164	0 99.4 99.9 99.913 99.971 99.977 100	40	2 m Recommendation ITU-R S.1428
	–164.4 –164.4 –157.4 –156.5 –152 –150 –150	0 99.4 99.9 99.913 99.971 99.977 100	1 000	

17.8-18.6	–185.4 –185.4 –180 –180 –172 –164 –164	0 99.8 99.8 99.943 99.943 99.998 100	40	5 m Recommendation ITU-R S.1428
	–171.4 –171.4 –166 –166 –158 –150 –150	0 99.8 99.8 99.943 99.943 99.998 100	1 000	

7 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

8 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

9 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

9*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidth.

ADD

TABLE **S22-1C**[10, 12, 12*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{down}$ dB(W/m^2)**	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[11]**
19.7-20.2	–187.4 –182 –172 –154 –154	0 71.429 97.143 99.983 100	40	70 cm Recommendation ITU-R S.1428
	–173.4 –168 –158 –140 –140	0 71.429 97.143 99.983 100	1 000	

19.7-20.2	–190.4 –181.4 –170.4 –168.6 –165 –160 –154 –154	0 91 99.8 99.8 99.943 99.943 99.997 100	40	90 cm Recommendation ITU-R S.1428
	–176.4 –167.4 –156.4 –154.6 –151 –146 –140 –140	0 91 99.8 99.8 99.943 99.943 99.997 100	1 000	
19.7-20.2	–196.4 –162 –154 –154	0 99.98 99.99943 100	40	2.5 m Recommendation ITU-R S.1428
	–182.4 –148 –140 –140	0 99.98 99.99943 100	1 000	
	–200.4 –189.4 –187.8 –184 –175 –164.2 –154.6 –154 –154	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	40	5 m Recommendation ITU-R S.1428
	–186.4 –175.4 –173.8 –170 –161 –150.2 –140.6 –140 –140	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	1 000	

10 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

11 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS networks.

12 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

12*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidth.

ADD

TABLE **S22-1D**[13, 15, 16, 16*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	$epfd_{down}$ $dB(W/m^2)$	Percentage of time during which $epfd_{down}$ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[14]
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–165.841 –165.541 –164.041 –158.6 –158.6 –158.33 –158.33	0 25 96 98.857 99.429 99.429 100	40	30 cm Recommendation ITU-R BO.1443 Annex 1
	–175.441 –172.441 –169.441 –164 –160.75 –160 –160	0 66 97.75 99.357 99.809 99.986 100	40	45 cm Recommendation ITU-R BO.1443 Annex 1
	–176.441 –173.191 –167.75 –162 –161 –160.2 –160 –160	0 97.8 99.371 99.886 99.943 99.971 99.997 100	40	60 cm Recommendation ITU-R BO.1443 Annex 1
	–178.94 –178.44 –176.44 –171 –165.5 –163 –161 –160 –160	0 33 98 99.429 99.714 99.857 99.943 99.991 100	40	90 cm Recommendation ITU-R BO.1443 Annex 1
	–182.44 –180.69 –179.19 –178.44 –174.94 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.68 99.68 99.85 99.915 99.94 99.97 99.99 99.998 100	40	120 cm Recommendation ITU-R BO.1443 Annex 1

	–184.941 –184.101 –181.691 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.571 99.946 99.974 99.993 99.999 100	40	180 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–187.441 –186.341 –183.441 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.786 99.957 99.983 99.994 99.999 100	40	240 cm Recommendation ITU-R BO.1443 Annex 1
	–191.941 –189.441 –185.941 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.857 99.914 99.951 99.983 99.991 100	40	300 cm Recommendation ITU-R BO.1443 Annex 1

[13] For BSS antenna diameters 180 cm, 240 cm and 300 cm, in addition to the single-entry limits shown in Table **S22-1D**, the following single-entry 100% of the time $epfd_{down}$ limit also applies in the frequency bands listed in Table **S22-1D**:

100% of the time $epfd_{down}$ (dB(W/m^2) per 40 kHz)	**Latitude (North or South) (°)**
–160	$0 \le \lvert \text{Latitude} \rvert \le 57.5$
$-160 + 3.4 (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \le \lvert \text{Latitude} \rvert \le 63.75$
–165.3	$63.75 \le \lvert \text{Latitude} \rvert$

[14] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

[15] For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

[16] For BSS earth station antenna diameter of 240 cm, in addition to the single-entry 100% of the time $epfd_{down}$ limit specified in footnote 13 of this table, a single-entry 100% of the time operational $epfd_{down}$ limit is specified in Table **S22-4C**.

[16*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30** will be fully protected.

ADD

S22.5CA 2) The limits given in Tables **S22-1A** to **S22-1D** may be exceeded on the territory of any country whose administration has so agreed.

MOD

S22.5D ~~2~~3) The ~~aggregate~~ equivalent power flux-density~~3~~[2], $epfd_{up}$, produced at any point in the geostationary-satellite orbit by emissions from all the earth stations in a non-geostationary-satellite system in the fixed-satellite service in the frequency bands listed in Table **S22-2**, 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 equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth specified in Table **S22-2**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary-satellite orbit.

~~3~~ ~~**S22.5D.1** The aggregate power flux-density is defined as the sum 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:~~

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_e} 10^{P_i/10} \cdot \frac{G_t(\theta_i)}{4\,\pi\,{d_i}^2}\right]$$

where:

N_e: 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: index of the earth station considered in the non-geostationary-satellite system;

P_i: 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;

θ_i: 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;

$G_t(\theta_i)$: 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: distance in metres between the earth station considered in the non-geostationary-satellite system and the point considered in the geostationary-satellite orbit;

$apfd$: aggregate 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-geostationary fixed-satellite service system in the frequency bands to be applied in accordance with Resolutions **130 (WRC-97)** and **538 (WRC-97)**. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

MOD

TABLE **S22-22**[17*bis*]

~~**Frequency band (GHz)**~~	~~**Aggregate pfd dB(W/m^2/4 kHz)**~~	~~**Percentage of time during which aggregate pfd level may not be exceeded**~~
~~17.3-18.1 in Regions 1 and 3 and 17.8-18.1 in Region 2~~	~~–163~~	~~100%~~

Limits to the epfd$_{up}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd$_{up}$ dB(W/m^2)**	**Percentage of time epfd$_{up}$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[17]
12.50-12.75 12.75-13.25 13.75-14.5	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.3-18.1 (Regions 1 and 3) 17.8-18.1 (Region 2)*	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
27.5-28.6	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10
29.5-30.0	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10

[17] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. For the case of Ls = –10, the values a = 1.83 and b = 6.32 should be used in the equations in Annex 1 of Recommendation ITU-R S.672-4 for single-feed circular beams. In all cases of Ls, the parabolic main beam equation should start at zero.

* This epfd$_{up}$ level also applies to the frequency band 17.3-17.8 GHz to protect BSS feeder links in Region 2 from non-GSO FSS Earth-to-space transmissions in Regions 1 and 3.

[17*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30A** will be fully protected.

SUP

S22.5E

MOD

S22.5F 4) The ~~aggregate~~ equivalent power flux-density[~~5~~2], epfd$_{is}$ produced at any point in the geostationary-satellite orbit by emissions from all the ~~earth~~ space stations in a non-geostationary-satellite system in the fixed-satellite service in the frequency bands listed in

~~4 **S22.5E.1** See No. **S22.5C.1**.~~

~~5 **S22.5F.1** See No. **S22.5D.1**.~~

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 **S22-43** for ~~any~~ the specified percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions into ~~the~~ a reference antenna and in the reference bandwidth specified in Table **S22-43**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary orbit.

MOD

TABLE **S22-3**[18*bis*]

Limits to the $epfd_{is}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{is}$ dB(W/m^2)**	**Percentage of time during which $epfd_{is}$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[18]
10.7-11.7 (Region 1) 12.5-12.75 (Region 1) 12.7-12.75 (Region 2)	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.8-18.4	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20

[18] Under this section, this reference pattern is to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. In applying the equations of Annex 1 of Recommendation ITU-R S.672-4, the parabolic main beam equation should start at zero.

[18*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30A** will be fully protected.

~~PART A~~

~~**Frequency band (GHz)**~~	~~**Equivalent pfd dB(W/m^2)**~~	~~**Percentage of time during which equivalent pfd level may not be exceeded**~~	~~**Reference bandwidth (kHz)**~~	~~**Reference antenna diameter, and reference radiation pattern**~~
~~10.7-11.7; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3~~	~~–179~~	~~99.7~~	~~4~~	~~60 cm, Rec. ITU-R S.465-5~~
	~~–192~~	~~99.9~~	~~4~~	~~3 m, Rec. ITU-R S.465-5~~
	~~–186~~	~~99.97~~	~~4~~	~~3 m, Rec. ITU-R S.465-5~~
	~~–195~~	~~99.97~~	~~4~~	~~10 m, Rec. ITU-R S.465-5~~
	~~–170~~	~~99.999~~	~~4~~	~~60 cm, Rec. ITU-R S.465-5~~
	~~–173~~	~~99.999~~	~~4~~	~~3 m, Rec. ITU-R S.465-5~~
	~~–178~~	~~99.999~~	~~4~~	~~10 m, Rec. ITU-R S.465-5~~
	~~–170~~	~~100~~	~~4~~	~~≥ 60 cm, Rec. ITU-R S.465-5~~

~~TABLE **S22-3**~~

~~**PART B**~~

~~**Frequency band (GHz)**~~	~~**Equivalent pfd dB(W/m^2)**~~	~~**Percentage of time during which equivalent pfd 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, Rec. ITU-R S.465-5~~
	~~–165~~ ~~–151~~	~~99.0~~	~~–40~~ ~~1000~~	~~70 cm, Rec. ITU-R S.465-5~~
	~~–165~~ ~~–151~~	~~99.5~~	~~–40~~ ~~1000~~	~~90 cm, Rec. ITU-R S.465-5~~
	~~–167~~ ~~–153~~	~~99.8~~	~~–40~~ ~~1000~~	~~1.5 m, Rec. ITU-R S.465-5~~
	~~–180~~ ~~–166~~	~~99.9~~	~~–40~~ ~~1000~~	~~5 m, Rec. ITU-R S.465-5~~
	~~–184~~ ~~–170~~	~~99.9~~	~~–40~~ ~~1000~~	~~7.5 m, Rec. ITU-R S.465-5~~
	~~–188~~ ~~–174~~	~~99.9~~	~~–40~~ ~~1000~~	~~12 m, Rec. ITU-R S.465-5~~
	~~–165~~ ~~–151~~	~~100~~	~~–40~~ ~~1000~~	~~30 cm to 12 m, Rec. ITU-R S.465-5~~
~~19.7-20.2~~	~~–154~~ ~~–140~~	~~99.0~~	~~–40~~ ~~1000~~	~~30 cm, Rec. ITU-R S.465-5~~
	~~–164~~ ~~–150~~	~~99.9~~	~~–40~~ ~~1000~~	~~90 cm, Rec. ITU-R S.465-5~~
	~~–167~~ ~~–153~~	~~99.8~~	~~–40~~ ~~1000~~	~~2 m, Rec. ITU-R S.465-5~~
	~~–174~~ ~~–160~~	~~99.9~~	~~–40~~ ~~1000~~	~~5 m, Rec. ITU-R S.465-5~~
	~~–154~~ ~~–140~~	~~100~~	~~–40~~ ~~1000~~	~~30 cm to 12 m, Rec. ITU-R S.465-5~~

SUP

S22.5G

ADD

S22.5H 5) The limits specified in Nos. **S22.5C** to **S22.5D** and **S22.5F** apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau after 22 November 1997. The limits in Tables **S22-4A**, **S22-4B** and **S22-4C** do not apply to non-GSO FSS systems for which complete coordination or notification, as appropriate, information has been received by the Bureau before 22 November 1997.

ADD

S22.5I 6) An administration operating a non-GSO FSS system which is in compliance with the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** (see also Resolution **[COM5/6] (WRC-2000)**) 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 coordination or notification information, as appropriate, for the non-GSO system and of the complete coordination information for the GSO network, provided that the $epfd_{down}$ radiated by the non-GSO FSS system

into any operating GSO FSS earth station does not exceed the operational and additional operational limits given in Tables **S22-4A**, **S22-4B** and **S22-4C**, when the diameter of the earth station is equal to the values given in Table **S22-4A** or **S22-4C** or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite. Except as otherwise agreed between concerned administrations, an administration operating a non-GSO FSS system that is subject to the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** and which radiates $epfd_{down}$ into any operating GSO FSS earth station at levels in excess of the operational or additional operational limits given in Tables **S22-4A**, **S22-4B** and **S22-4C**, when the diameter of the earth station is equal to the values given in Table **S22-4A** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite, shall be considered to be in violation of its obligations under No. **S22.2**.

SUP

TABLE **S22-4**

PART A

PART B

ADD

TABLE **S22-4A**[20, 22, 22*bis*]

Operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{down}$ dB(W/m^2)**	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Reference bandwidth (kHz)**	**Receive GSO earth station antenna diameter[21] (m)**	**Orbital inclination of GSO satellite (degrees)**
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (prior to 31 December 2005)	–163 –166 –167.5 –169.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–160 –163 –164.5 –166.5	100	40	3 6 9 ≥ 18	≤ 4.5
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (from 31 December 2005)	–161.25 –164 –165.5 –167.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–158.25 –161 –162.5 –164.5	100	40	3 6 9 ≥ 18	≤ 4.5

20 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

21 For antenna diameters between the tabulated values, the limits are given by linear interpolation using a linear scale for $epfd_{down}$ in decibels and a logarithmic scale for antenna diameter in metres.

22 In addition to the operational limits shown in Table **S22-4A**, the additional operational limits in Table **S22-4A1** apply to certain GSO FSS earth station antenna sizes in the frequency bands listed in Table **S22-4A**.

22*bis* The operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems shall be the values given in footnote 5 to Table **S22-1A** or Table **S22-4A**, whichever are the more stringent.

ADD

TABLE **S22-4A1**

Additional operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems into 3 m and 10 m GSO FSS earth station antennas

$epfd_{down}$ (dB(W/m^2) per 40 kHz)	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Receive GSO earth station antenna diameter (m)**
–182	99.9	3
–179	99.94	
–176	99.97	
–171	99.98	
–168	99.984	
–165	99.993	
–163	99.999	
–161.25	99.99975	
–161.25	100	
–185	99.97	10
–183	99.98	
–179	99.99	
–175	99.996	
–171	99.998	
–168	99.999	
–166	99.9998	
–166	100	

ADD

TABLE **S22-4B**[23]

Operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	$epfd_{down}$ $dB(W/m^2)$	Percentage of time during which $epfd_{down}$ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna gain (dBi)	Orbital inclination of GSO satellite (degrees)
19.7-20.2	–157 –157 –155	100 100 100	40 40 40	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
19.7-20.2	–143 –143 –141	100 100 100	1 000 1 000 1 000	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–164 –162	100 100	40 40	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–150 –148	100 100	1 000 1 000	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5

23 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

24 The operational limit applies to non-GSO systems operating at altitudes of 7 000 km or above in order to protect GSO FSS systems employing adaptive coding.

ADD

TABLE **S22-4C**[25]

Operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	$epfd_{down}$ $dB(W/m^2)$	Percentage of time during which $epfd_{down}$ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna diameter (m)	Orbital inclination of GSO satellite (degrees)
12.2-12.7 GHz in Region 2	–167	100	40	2.4	≤ 0.5

25 These limits apply into GSO earth stations located in Region 2 west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.] *

ADD

S22.5J 7) In case of *force majeure*, telecommand and ranging carriers transmitted to non-geostationary satellites in the fixed-satellite service are not subject to the limits given in Table **S22-2**.

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* Comment: This transitional regime would be applicable only if the pfd limits in section 5 *c)* of Annex 1 to Appendix S30 are sufficiently relaxed. It is expected that WRC-2000 will decide on this issue.

ADD

S22.5K 8) Administrations operating or planning to operate non-GSO FSS systems in the bands listed in Tables **S22-1A** through **S22-1D** of No. **S22.5C** will apply the provisions of Resolution **[COM5/6] (WRC-2000)** to ensure that the actual aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables **[COM5/6]-1A** through **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**. In the event that an administration operating a GSO network in conformity with the Radio Regulations identifies epfd levels from non-GSO FSS systems which may be in excess of the aggregate limits contained in Tables **[COM5/6]-1A** through **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**, the administrations responsible for the non-GSO FSS systems will apply the provisions contained in *resolves* 2 of Resolution **[COM5/6] (WRC-2000)**.

ARTICLE S9

Sub-Section IIA – Requirement and request for coordination

ADD

S9.7A *a1)* [11*bis*, 11*ter*] for a specific earth station within a geostationary-satellite network in the fixed-satellite service in certain frequency bands in respect of a non-geostationary-satellite system in the fixed-satellite service;

ADD

S9.7B *a2)* [11*bis*, 11*ter*] for a non-geostationary-satellite system in the fixed-satellite service in certain frequency bands in respect of a specific earth station within a geostationary-satellite network in the fixed-satellite service;

ADD

_____

[11*bis*] **S9.7A.1** and **S9.7B.1** The coordination of a specific earth station under **S9.7A** or **S9.7B** shall remain within the authority of the administration having this station located on its territory.

ADD

_____

[11*ter*] **S9.7A.2** and **S9.7B.2** Coordination information relating to a specific earth station received by the Bureau prior to 30 June 2000 is considered as complete **S9.7A** or **S9.7B** information from the date of receipt of complete information of the associated satellite network under **S9.7** provided that the maximum isotropic antenna gain, the lowest total receiving system noise temperature of the earth station and the necessary bandwidth of the emission received by the earth station are equal to the ones of any typical earth station included in the GSO FSS network coordination request.

MODIFICATIONS TO APPENDIX **S4**

ANNEX 2A

Characteristics of satellite networks or earth or radio astronomy stations[2]

A General characteristics to be provided for the satellite network or the earth or radio astronomy station

Add in section A.4 *b)*

In addition, if the stations operate in a frequency band subject to **S22.5C**, D or F.

6) new data elements required to characterize properly the orbital operation of the non-GSO satellite systems:

a) for each range of latitudes provide:

– the maximum number of non-GSO satellites transmitting with overlapping frequencies to a given location; and

– the associated latitude range;

b) the minimum altitude of the space station above the surface of the Earth at which any satellite transmit;

c) where the space station uses station-keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same location with respect to the Earth and each other;

d) an indicator identifying if the space station should be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term;

e) for a space station that is to be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term, the precession rate in degrees/day, measured counter-clockwise in the equatorial plane;

f) the longitude of the ascending node for the *j*-th orbital plane, measured counter-clockwise in the equatorial plane from the Greenwich meridian to the point where the satellite orbit makes its south-to-north crossing of the equatorial plane ($0° \le \Omega_j < 360°$) (NOTE 1);

g) the time at which the satellite is at the location defined by Ω_j (NOTE 1);

h) the longitudinal tolerance of the longitude of the ascending node.

NOTE 1 - Currently non-GSO space stations are referenced by the "right ascension of ascending node" (A.4b5 Ω_j) to the first point of Aries. However, for the evaluation of epfd a reference to a point on the Earth is used and hence the "longitude of the ascending node" is required. All satellites in the constellation should use the same reference time.

NOC

2

Add in section A.4 *b)*

7) new data elements required to characterize properly the performance of the non-GSO satellite systems:

a) the maximum number of non-GSO satellites receiving simultaneously with overlapping frequencies from the associated earth stations within a given cell;

b) the average number of associated earth stations with overlapping frequencies per square kilometre within a cell;

c) the average distance between co-frequency cells;

d) for the exclusion zone about the geostationary orbit provide:

– the type of zone;

– the width of the zone in degrees.

Add new section A.14

A.14 Spectrum masks

For stations operating in a frequency band subject to **S22.5C**, D or F.

a) for each e.i.r.p. mask used by the non-GSO space station provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

b) for each associated earth station e.i.r.p. mask provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

– the minimum elevation angle at which any associated earth station can transmit to a non-GSO satellite;

– the minimum separation angle between the GSO arc and the associated earth station main beam-axis at which the associated earth station can transmit towards a non-GSO satellite;

c) for each pfd mask used by the non-GSO space station provide:

– the type of mask;

– the mask identification code;

– the mask pattern of the power flux-density defined in three dimensions;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid.

(The space-station pfd mask is defined by the maximum power flux-density generated by any space station in the interfering non-GSO system as seen from any point on the surface of the Earth.)

Add new section A.15

A.15 Commitment regarding compliance with additional operational $epfd_{down}$ limits

For non-geostationary satellite systems operating in the fixed-satellite service in the bands 10.7-11.7 GHz (in all Regions), 11.7-12.2 GHz (Region 2), 12.2-12.5 GHz (Region 3), and 12.5-12.75 GHz (Regions 1 and 3), a commitment that the filed for system will meet the additional operational $epfd_{down}$ limits that are specified in Table **S22-4A** under No. **S22.5I**.

Add in section C.9

d) For stations operating in a frequency band subject to **S22.5C**, D or F, provide:

– the type of mask;

– the mask identification code.

ANNEX 2B

Table of characteristics to be submitted for space and radio astronomy services

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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[11]	X	X	X	A.5	
A.6				X	X	X[11]	X	X	X	A.6	
A.7.a						X[11]		X		A.7.a	
A.7.b						X[11]		X		A.7.b	
A.7.c						X[11]				A.7.c	
A.7.d						X[11]		X		A.7.d	
A.8							X			A.8	

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.

A – General characteristics of the satellite network or the earth station *(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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service under Appendix S30B	Items in Appendix	Radio astronomy
A.9							X			A.9	
A.10						X[11]				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				X	X	X				A.13	
A.14					X					A.14	
A.15					X					A.15	
A.16				X							

[11] Not required for coordination under No. **S9.7A or S9.7B**.

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]			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 – Characteristics to be provided for each satellite antenna beam and for each earth station antenna *(end)*

B.5.b						X[11]				B.5.b	
B.5.c						X[12]				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.

11 Not required for coordination under No. **S9.7A** or **S9.7B**.

12 In the case of coordination under **S9.7A**, the reference radiation pattern is to be provided.

* The application of this column is suspended pending the decision of WRC-99.

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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[11]				C.8.b	
C.8.c			O	X[6]	X[6]	X[6, 11]				C.8.c	
C.8.d				X[2]	X[2]					C.8.d	
C.8.e			O	X[6]	X[6]	X[6, 11]				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	
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 – Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna *(end)*

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

[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**.

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

[11] Not required for coordination under No. **S9.7A or S9.7B**.

* The application of this column is suspended pending the decision of WRC-99.

APPENDIX S5

ADD

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.7A** GSO earth station/ non-GSO system	A specific earth station in a geostationary-satellite network in the fixed-satellite service in respect of a non-geostationary-satellite system in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meet all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency bands 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher; c) emission bandwidth of 250 MHz or higher for the frequency bands below12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination does not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
			iii) the $epfd_{down}$ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency band 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/ (m^2 · 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude; b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude	iii) use the $epfd_{down}$ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.7B** non-GSO system/ GSO earth station	A non-geostationary-satellite system in the fixed-satellite service in respect of a specific earth station in a geostationary-satellite network in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meets all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency bands 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher; c) emission bandwidth of 250 MHz or higher for the frequency bands below 12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination do not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit

TABLE S5-1 (*end*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
			iii) the $epfd_{down}$ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency bands 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/(m^2· 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude; b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m^2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude	iii) use the $epfd_{down}$ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	

Additional data items required in Appendix S4 for the epfd calculations

1 Section A.4 *b)*

ADD

In addition, if the stations operate in a frequency band subject to the provisions of Resolution **130 (WRC-97)** or Resolution **538 (WRC-97)**:

6) new data elements required to characterize properly the orbital operation of the non-GSO satellite systems:

a) for each range of latitudes provide:

– the maximum number of non-GSO satellites transmitting with overlapping frequencies to a given location; and

– the associated latitude range;

b) the minimum altitude of the space station above the surface of the Earth at which any satellite will transmit;

b)bis an indicator identifying if the space station uses station keeping to maintain a repeating ground track

c) where the space station uses station keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same location with respect to the Earth and each other;

d) an indicator identifying if the space station should be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term;

e) for a space station that is to be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term, the precession rate in degrees/day, measured counter-clockwise in the equatorial plane;

f) the longitude of the ascending node for the *j*-th orbital plane, measured counter-clockwise in the equatorial plane from Greenwich meridian to the point where the satellite orbit makes its south-to-north crossing of the equatorial plane ($0° \le \Omega_j < 360°$) (NOTE 1);

g) the time at which the satellite is at the location defined by Ω_j (NOTE 1);

h) the longitudinal tolerance of the longitude of the ascending node.

NOTE 1 - Currently non-GSO space stations are referenced by the "right ascension of ascending node" (A.4b5 Ω_j) to the first point of Aries. However, for the evaluation of epfd a reference to a point on the Earth is used and hence the "longitude of the ascending node" is required. All satellites in the constellation should use the same reference time.

2 Section A.4 *b)*

ADD

7) new data elements required to characterize properly the performance of the non-GSO satellite systems:

a) the maximum number of non-GSO satellites receiving simultaneously with overlapping frequencies from the associated earth stations within a given cell;

b) the average number of associated earth stations with overlapping frequencies per square kilometre within a cell;

c) the average distance between co-frequency cells;

d) for the exclusion zone about the geostationary orbit provide:

– the type of zone;

– the width of the zone in degrees.

3 Section A.14

ADD

A.14 Spectrum masks

For stations operating in a frequency band subject to the provisions of Resolution **130 (WRC-97)** or Resolution **538 (WRC-97)**:

a) for each e.i.r.p. mask used by the non-GSO space station provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

b) for each associated earth station e.i.r.p. mask provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

– the minimum elevation angle at which any associated earth station can transmit to a non-GSO satellite;

– the minimum separation angle between the GSO arc and the associated earth station main beam-axis at which the associated earth station can transmit towards a non-GSO satellite;

c) for each pfd mask used by the non-GSO space station provide:

– the mask identification code;

– the mask pattern of the power flux-density defined in three dimensions;
– the lowest frequency for which the mask is valid;
– the highest frequency for which the mask is valid;
– the type of mask.

4 Section C.9

ADD

d) for stations operating in a frequency band subject to the provisions of Resolution **130 (WRC-97)** or Resolution **538 (WRC-97)**, provide:
– the type of mask;
– the mask identification code.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 2 to Document 404-E 26 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Report by the Chairperson of Working Group 4B

NINTH REPORT FROM WORKING GROUP 4B TO COMMITTEE 4 (AGENDA ITEM 1.1)

Does not concern the English text.

A. ALLISON
Chairperson of Working Group 4B, Box 68

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 404-E 26 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Report by the Chairperson of Working Group 4B

NINTH REPORT FROM WORKING GROUP 4B TO COMMITTEE 4

(AGENDA ITEM 1.1)

ADD S5.359A - Please read the text as follows:

ADD

S5.359A *Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Lithuania, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Democratic People's Republic of Korea, Romania, Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine the band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005. After this date, the fixed service may continue to operate on a secondary basis until 1 January 2015 upon which time this allocation shall be no longer valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical-radionavigation service and not authorize new frequency assignments to fixed service systems in this band.

A. ALLISON
Chairperson of Working Group 4B, Box 68

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 404-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Report by the Chairperson of Working Group 4B

NINTH REPORT FROM WORKING GROUP 4B TO COMMITTEE 4

(AGENDA ITEM 1.1)

At its thirteenth meeting on 24 May 2000, the Working Group reviewed the proposals related to footnotes of Article S5.

The agreed revisions of footnotes, as reproduced in the following, are submitted to Committee 4 for consideration.

This report also contains proposed revisions of footnotes S5.355, S5.355A, S5.359, S5.359A (based on Document 280), and S5.415A, S5.420A, and S5.551D which are subject to consideration in Committee 5. One document (330(Add.1)) which was not yet available at the thirteenth meeting, has been included (S5.314 refers), for first consideration by Committee 4.

In some cases, country names remain in square brackets pending further consultations with affected administrations.

A. ALLISON
Chairperson of Working Group 4B, Box 68

ARTICLE S5

Frequency allocations

MOD

S5.55 *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, Russian Federation, Georgia, ~~Kazakstan,~~ Kyrgyzstan, Tajikistan~~,~~ and Turkmenistan ~~and Ukraine~~, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.58 *Additional allocation:* in Armenia, Azerbaijan, ~~Bulgaria,~~ Georgia, Kazakstan, Kyrgyzstan, Russian Federation, Tajikistan~~,~~ and Turkmenistan ~~and Ukraine~~, the band 67-70 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.59 *Different category of service:* in Bangladesh~~, the Islamic Republic of Iran~~ and Pakistan, the allocation of the bands 70-72 kHz and 84-86 kHz to the fixed and maritime mobile service is on a primary basis (see No. **S5.33**).

MOD

S5.65 *Different category of service:* in Bangladesh, ~~the Islamic Republic of Iran and Pakistan,~~ the allocation of the bands 112-117.6 kHz and 126-129 kHz to the fixed and maritime mobile services is on a primary basis (see No. **S5.33**).

MOD

S5.67 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania~~,~~ and 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

S5.75 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, ~~Kazakstan,~~ Moldova, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Bulgaria and Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned.

MOD

S5.77 *Different category of service:* in Australia, China, the French Overseas Territories of Region 3, India, Indonesia (until 1 January 2005), the Islamic Republic of Iran, Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in these countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the band 435-495 kHz do not cause interference to reception by coast stations of ship stations transmitting on frequencies designated for ship stations on a worldwide basis (see No. **S52.39**).

MOD

S5.93 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, ~~Bulgaria,~~ Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz and in Bulgaria the bands 1 625-1 635 kHz and 1 800-1 810 kHz, are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Denmark, Estonia, Finland, Georgia, Hungary, Ireland, Israel, Jordan, Kazakstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, the United Kingdom, Russian Federation, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W.

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, Russian Federation, 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, Austria, 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

S5.107 *Additional allocation:* in Saudi Arabia, Botswana, Eritrea, Ethiopia, Iraq, Lesotho, Libya, Somalia~~,~~ and 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.

SUP

S5/124

MOD

S5.139 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, [Japan], Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 6 765-7 000 kHz to the land mobile service is on a primary basis (see No. **S5.33**).

MOD

S5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, the Islamic Republic of Iran, Kazakstan, Moldova, ~~Uzbekistan,~~ Kyrgyzstan, Russian Federation, 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, Russian Federation, 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.

MOD

S5.155A In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, ~~Hungary,~~ Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

MOD

S5.160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, ~~Namibia,~~ Dem. Rep. of the Congo, Rwanda and Swaziland, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

MOD

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, the Netherlands, Poland, Portugal, Slovakia, the Czech Republic, the United Kingdom, Russian Federation, Sweden~~,~~ and 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 **217 (WRC-97)**.

MOD

S5.175 *Alternative allocation:* in Armenia, Azerbaijan, Belarus, [~~Estonia,~~] ~~-~~Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned.

MOD

S5.176 *Additional allocation:* in Australia, China, the Republic of Korea, the Philippines, the Democratic People's Republic of Korea, [Estonia] and Western Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis.

MOD

S5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, [~~Estonia,~~] ~~-~~Georgia, Kazakstan, Latvia, ~~Lithuania,~~ Moldova, ~~Mongolia,~~ Uzbekistan, Poland, Kyrgyzstan, Russian Federation, 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,~~ and 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

S5.197 *Additional allocation:* in ~~Germany, Austria, Cyprus, Denmark,~~ Egypt, ~~France, Italy,~~ Japan, ~~Jordan, Lebanon, Malta, Morocco, Monaco, Norway,~~ Pakistan~~,~~ and 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

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, Russian Federation, 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.

MOD

S5.206 *Different category of service:* in Armenia, ~~Austria,~~ Azerbaijan, Belarus, Bulgaria, Egypt, Finland, France, Georgia, Greece, ~~Hungary,~~ Kazakstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Syria, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. **S5.33**).

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

S5.211 *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Bosnia and Herzegovina, Denmark, the United Arab Emirates, Spain, [Estonia,] Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Malta, Norway, the Netherlands, Qatar, the United Kingdom, ~~Slovenia,~~ Somalia, Sweden, Switzerland, Tanzania, Tunisia, Turkey and Yugoslavia, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis.

MOD

S5.214 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, ~~Slovenia,~~ Somalia, Sudan, Tanzania and Yugoslavia, the band 138-144 MHz is also allocated to the fixed service on a primary basis.

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, 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, Lithuania, 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, Russian Federation, 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

S5.259 *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,~~ and 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

S5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, ~~Estonia,~~ Georgia, Hungary, ~~Indonesia,~~ the Islamic Republic of Iran, Iraq, Israel, Jordan, Kazakstan, Kuwait, Liberia, Malaysia, Moldova, Nigeria, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, Russian Federation, Singapore, Somalia, ~~Sri Lanka,~~ Tajikistan, Turkmenistan, Ukraine and Yugoslavia, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.271 *Additional allocation:* in Azerbaijan, Belarus, China, Estonia, India, Latvia, Lithuania, Kyrgyzstan~~,~~ and Turkmenistan ~~and Ukraine~~, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

MOD

S5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, the Congo, Djibouti, ~~Gabon,~~ Georgia, Hungary, Israel, Kazakstan, Latvia, Mali, Moldova, Mongolia, Uzbekistan, ~~Pakistan,~~ Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, Rwanda, Tajikistan, Chad, Turkmenistan and Ukraine, the band 430-440 MHz is also allocated to the fixed service on a primary basis.

MOD

S5.278 *Different category of service:* in Argentina, Colombia, Costa Rica, Cuba, Guyana, Honduras, [Japan,] Panama and Venezuela, the allocation of the band 430-440 MHz to the amateur service is on a primary basis (see No. **S5.33**).

MOD

S5.290 *Different category of service:* in Afghanistan, ~~Armenia,~~ Azerbaijan, Belarus, China, Japan, ~~Kazakstan,~~ Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, ~~the Czech Republic,~~ Russian Federation, 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

S5.293 *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico ~~and~~, Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed and mobile services is on a primary basis (see No. **S5.33**), subject to agreement obtained under No. **S9.21**. In Argentina and Ecuador, the allocation of the band 470-512 MHz to the fixed and mobile services 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, Lithuania, 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 listed 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.

MOD

S5.297 *Additional allocation:* in Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica, and Mexico ~~and Venezuela~~, the band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.314 *Additional allocation*: in Austria, Italy, Moldova, Uzbekistan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis.

MOD

S5.315 *Alternative allocation*: in Greece, Italy~~, Morocco~~ and Tunisia, the band 790-838 MHz is allocated to the broadcasting service on a primary basis.

MOD

S5.316 *Additional allocation*: in Germany, Saudi Arabia, 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.

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, Namibia, Nigeria, South Africa, Tanzania, ~~and~~ Zimbabwe and Zambia, subject to agreement obtained under No. **S9.21**.

MOD

S5.331 *Additional allocation:* in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, the Islamic Republic of Iran, Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, ~~Pakistan,~~ the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.338 In Azerbaijan, Bulgaria, Mongolia, ~~Poland,~~ Kyrgyzstan, Slovakia, the Czech Republic, Romania~~,~~ and Turkmenistan ~~and Ukraine~~, 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, 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**).

MOD

S5.350 *Additional allocation:* in Azerbaijan, Kyrgyzstan~~,~~ and 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~~,~~ and Yemen ~~and Zambia~~, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis.

ADD

S5.355A *Additional allocation:* in Bahrain, Bangladesh, the Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015 at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed service systems in this band.

MOD

S5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Lithuania, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Democratic People's Republic of Korea, Romania, Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan~~,~~ and Ukraine, ~~Zambia and Zimbabwe~~ the bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands ~~1 550-1 555 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz~~.

ADD

S5.359A *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Lithuania, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, Dem. People's Rep. of Korea, Romania, Russia, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, the band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005. After this date, the fixed service may continue to operate on a secondary basis until 1 January 2015 at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed service systems in this band.

MOD

S5.387 *Additional allocation:* in ~~Armenia,~~ Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, ~~Uzbekistan,~~ Kyrgyzstan, Slovakia, ~~the Czech Republic,~~ Romania, ~~Russian Federation,~~ Tajikistan~~,~~ and 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

S5.389F In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Israel, Mali, Syria and Tunisia, the use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services.

MOD

S5.390 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, ~~and~~ Suriname and Uruguay, 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 No. **S9.11A** and to the provisions of Resolution **716 (WRC-95)**.

SUP

S5.408

MOD

S5.412 *Alternative allocation:* in Azerbaijan, Bulgaria, Kyrgyzstan~~,~~ and 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

S5.415A *Additional allocation*: in India and 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~~ their national boundar~~y~~ies from 1 January 2000.

MOD

S5.418 *Additional allocation:* in Bangladesh, Belarus, ~~China,~~ Rep. of Korea, India, Japan, Pakistan, ~~Russian Federation,~~ Singapore, Sri Lanka~~,~~ and Thailand, ~~and Ukraine~~ the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to provisions of Resolution **528 (WARC-92)**. The provisions of No. **S5.416** and Article **S21**, Table **S21-4**, do not apply to this additional allocation.

MOD

S5.420A *Additional allocation:* in India and 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 operation limited to within ~~its~~ their national boundar~~y~~ies from 1 January 2000.

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, Dem Rep. of the Congo, Romania, Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen~~,~~ and Yugoslavia ~~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, ~~Kazakstan,~~ Mongolia, ~~Poland,~~ Kyrgyzstan, Romania~~,~~ and Turkmenistan ~~and Ukraine~~, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.430 *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Mongolia, ~~Poland,~~ Kyrgyzstan, Romania~~,~~ and 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

S5.437

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

S5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, [Estonia], Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Luxembourg, Malta, ~~Morocco,~~ Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania~~,~~ and Turkmenistan ~~and Ukraine~~, the band 5 250-5 350 MHz is also allocated to the 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, Russian Federation, 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

S5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, ~~Kazakstan,~~ Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis.

MOD

S5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, ~~Kazakstan,~~ Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan. Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service 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, ~~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 Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, ~~and~~ Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, El Salvador, Ecuador, Spain, Guatemala, Japan, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, Democratic People's Republic of Korea, Sweden, Tanzania, ~~and~~ Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

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, Russian Federation, 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

S5.495 *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, Kyrgyzstan~~,~~ and 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 listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed 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 listed 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, 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,~~ Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom~~,~~ and 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

S5.509 *Additional allocation:* in Japan ~~and Pakistan~~ the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service 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~~,~~ and 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, Dem. Rep. of the Congo, Syria, Democratic People's Republic of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, 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 the 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, Russian Federation, 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

S5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, ~~Bulgaria,~~ Egypt, United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, the Islamic Republic of Iran, Israel, Jordan, ~~Kazakstan,~~ Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, Russian Federation, 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**).

MOD

S5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, ~~Bulgaria,~~ Georgia, ~~Kazakstan,~~ Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, 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

S5.551D *Additional allocation:* in Algeria, Saudi Arabia, Bahrain, Belarus, Benin, Cameroon, Egypt, United Arab Emirates, Israel, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Moldova, Nigeria, Oman, Uzbekistan, Qatar, Syria, [Russian Federation], Tunisia, Ukraine 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 **134 (WRC-97)**.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 405-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Report by the Chairperson of Working Group 4B

TENTH REPORT FROM WORKING GROUP 4B TO COMMITTEE 4

(AGENDA ITEM 1.8)

At its thirteenth meeting on 24 May 2000, the Working Group reviewed the text of draft new Resolution [COM4/3].

The agreed text, as reproduced in the following, is submitted to Committee 4 for consideration.

A. ALLISON
Chairperson of Working Group 4B, Box 68

RESOLUTION [COM4/3] (WRC-2000)

Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that there is a demand for global wideband satellite communication services on vessels;

b) that the technology exists that permits the use of fixed-satellite service (FSS) networks by earth stations on board vessels (ESVs) operating in the 3 700-4 200 MHz and 5 925-6 425 MHz bands;

c) that ESVs have the potential to cause unacceptable interference to other services in the band 5 925-6 425 MHz;

d) that ESVs operating in these bands require considerably less than the full bandwidth in this FSS allocation and only a portion of the visible geostationary arc;

e) that there are a limited number of geostationary FSS systems that have global coverage;

f) that there may be a number of vessels using these ESVs which may cause a high coordination burden to some administrations, especially those in developing countries;

g) that in order to ensure the protection and future growth of other services, the ESV shall operate with certain technical and operational constraints;

h) that based on appropriate assumptions a minimum distance can be calculated beyond which the ESV will not have the potential to cause unacceptable interference to the other services in this band,

noting

a) that earth stations on board vessels may operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz under **S4.4** of the Radio Regulations and shall not claim protection from nor cause interference to other services allocated in the band;

b) that operation within the territorial waters is at the discretion of the administration with territorial authority, in which case the relevant procedures of that administration will apply;

c) that operation of earth stations on board vessels from specified fixed points at locations outside the territorial sea but for which an administration has jurisdiction is fully within the FSS,

recognizing

a) that progress has been made within ITU-R in determining the technical and operational provisions under which ESVs could operate;

b) that further studies are needed,

resolves

1 to request ITU-R to continue to study, as a matter of urgency, the regulatory, technical and operational constraints to be applied to ESV operations, considering the provisional guidelines for ESV use in Annex 1 and the provisional technical guidelines given in Annex 2 and, in particular, to determine the appropriate value for the minimum distance from the coast of any

administration beyond which ESVs are assumed not to have the potential to cause unacceptable interference to stations of other services of that administration and beyond which no coordination would be required;

2 to request ITU-R, as a matter of urgency:

– to develop recommendations on methods for coordination between terrestrial services and ESVs;

– to study the feasibility of mitigation techniques such as various frequency arrangements or dual-band systems as a way to avoid the need for detailed coordination of ESVs without constraining existing services;

– to study, as a complement to the 3 700-4 200 MHz and 5 925-6 425 MHz bands, the use of other FSS allocations for ESVs transmitting in the 6 GHz and 14 GHz bands;

3 to invite WRC-03 to assess, in the light of these studies, the provisions under which earth stations located on board vessels could operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz, without causing unacceptable interference to radiocommunication services operating in accordance with the Radio Regulations;

4 that until a decision is adopted for ESVs by WRC-03, agreement between the administrations licensing ESVs and affected administrations should be made on a bilateral or multilateral basis in accordance with the guidelines in Annexes 1 and 2;

5 that until a decision is adopted for ESVs by WRC-03, administrations licensing ESVs that enter into bilateral or multilateral agreements under *resolves* 4 should ensure that as part of the licensing process ESVs operate in compliance with such agreements, taking into consideration the interest of concerned neighbouring countries,

encourages concerned administrations

to cooperate with administrations which license ESVs while seeking agreement under *resolves* 4,

encourages ESV licensing administrations

to consider registering their ESV frequency assignments in the Master International Frequency Register, for information purposes only,

urges all administrations

to participate actively in the above-mentioned studies by submitting contributions,

instructs the Secretary-General

to bring this Resolution to the attention of the Secretary-General of the International Maritime Organization and to invite this organization to participate in the work on this issue.

ANNEX 1 TO RESOLUTION [COM4/3] (WRC-2000)

Guidelines for ESV use

1 The administration that issues the radio licence for the use of ESVs in these bands (licensing administration) shall ensure that such stations do not cause unacceptable interference to other services of the concerned administration;

2 operators of ESVs shall comply with the technical guidelines listed in Annex 2 and/or those agreed by the licensing and concerned administrations;

3 ESVs shall not claim protection from transmissions of other services operating in accordance with the Radio Regulations;

4 any transmissions from ESVs within an agreed distance* of any given coast shall be based upon the prior agreement of the concerned administration;

5 administrations which issue ESV licences shall ensure that ESV operators endeavour to provide the necessary assistance to the concerned administrations in order to facilitate the agreement;

6 administrations, in determining the distance referred to in item 4 above, are encouraged to exclude those parts of their territory, such as remote small islands, where other services in the band 5 925-6 425 MHz are neither operating nor planned;

7 if an administration changes its actual or planned deployment of stations in other services, it may require revision of the agreement with the ESV licensing administration(s);

8 the ESV system should include means of identification and automatic mechanisms to terminate transmissions whenever the station operates outside its pre-authorized geographic (see item 4 above) or operational limits;

9 ESVs should be equipped so as to enable the licensing administration under the provisions of Article **S18** to verify earth station performance and to terminate ESV transmission immediately upon request by an administration whose services may be affected;

10 when ESVs operating beyond the territorial waters but within the distance (as referred to in item 4 above) of the coast of an administration fail to comply with the terms required by that administration pursuant to items 2 and 4, then that administration may:

– request the ESV to comply with such terms or cease operation immediately; or

– request the licensing administration to require such compliance or immediate cessation of the operation;

11 any licensing authority that licenses ESVs should maintain at all times a point of contact, that may be contacted by a concerned administration.

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* The distance is a minimum distance from the coast of an administration beyond which ESVs are assumed not to have the potential to cause unacceptable interference to fixed service stations of that administration and beyond which no coordination is required.

ANNEX 2 TO RESOLUTION [COM4/3] (WRC-2000)

Technical guidelines applicable to ESVs operating in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

Minimum diameter of ESV antenna:	2.4 m
Maximum half-power beamwidth of ESV antenna:	1.5 degrees
Minimum elevation angle of ESV antenna:	10°
Maximum necessary bandwidth per vessel:	2.346 MHz
Maximum necessary bandwidth in a single operating area:	36 MHz (see Note)
Maximum ESV transmitter power spectral density at the input to the antenna:	17 dB(W/MHz)
Tracking accuracy of ESV antenna:	0.2 degrees

NOTE - The actual bandwidth required in an operating area will depend on the number of ESVs that would be present simultaneously in that area, and in many areas the required bandwidth will be less than 36 MHz. In addition, because ESV stations are frequency agile, the necessary bandwidth per vessel (2.346 MHz) can be generally identified anywhere within the 4/6 GHz bands and does not have to be contiguous with bandwidth of other ESV stations.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 406-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Chairperson, Working Group 4B

REPORT BY THE CHAIRPERSON OF WORKING GROUP 4B TO THE CHAIRPERSON OF COMMITTEE 4

Working Group 4B has considered a proposal concerning the alignment of the provisions of S21.7 with the Table of Frequency Allocations in Article S5 and agreed on the following modification:

MOD

S21.7 5) Transhorizon systems in the 1 700-1 710 MHz, ~~1 970~~1 980-2 010 MHz, 2 025-2 110 MHz and 2 200-2 290 MHz bands may exceed the limits given in Nos. **S21.3** and **S21.5**, but the provisions of Nos. **S21.2** and **S21.4** should be observed. Considering the difficult sharing conditions with other services, administrations are urged to keep the number of transhorizon systems in these bands to a minimum.

A. ALLISON
Chairperson, Working Group 4B,
Box 68

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 407-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Chairperson, Working Group 4B

NOTE BY THE CHAIRPERSON OF WORKING GROUP 4B TO COMMITTEE 4

(AGENDA ITEM 4)

According to its terms of reference Working Group 4B has reviewed a number of resolutions and recommendations of previous conferences. Following this revision, those provisions of the Radio Regulations that have references to the modified resolutions/recommendations should be amended consequentially, pursuant to agenda item 3 of the Conference.

It is proposed that the updates of the references to the revised resolutions/recommendations in the relevant provisions be done by the Secretariat, after the Conference, in accordance with the example given below.

Other consequential changes, which introduce substantial modifications in the relevant provisions, will be presented to the Conference separately.

Example:

MOD

S52.106 2) When assigning pairs of frequencies listed in Appendix **S17** for narrow-band direct-printing telegraphy, administrations shall apply the procedure described in Resolution **300 (Rev.~~Mob-87~~WRC-2000)**.

A. ALLISON
Chairperson of Working Group 4B,
Box 68

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 1 to Document 408-E 27 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 376 **COMMITTEE 6**

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

Committee 5 has continued its consideration of its agenda items. As a result of these deliberations, it has adopted, at its fourth meeting, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

Chris Van DIEPENBEEK
Chairperson, Committee 5

ADD

RESOLUTION [COM5/6] (WRC-2000)

Protection of GSO FSS and GSO BSS networks from the maximum aggregate equivalent power flux-density produced by multiple non-GSO FSS systems in frequency bands where epfd limits have been adopted

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 has adopted, in Article **S22**, provisional epfd limits to be met by non-GSO FSS systems in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30 GHz;

b) that WRC-2000 has revised Article **S22** to ensure the limits contained therein provide adequate protection to GSO systems without causing undue constraints to any of the systems and services sharing these frequency bands;

c) that WRC-2000 decided that a combination of single-entry validation, single-entry operational and for certain antenna sizes single-entry additional operational epfd limits, which are included in Article **S22**, along with the aggregate limits in Tables **COM5/6-1A** through **COM5/6-1D**, which apply to non-GSO FSS systems protect GSO networks in these bands;

d) that these single-entry validation limits have been derived from aggregate equivalent power flux-density (epfd) masks contained in Tables **COM5/6-1A** through **COM5/6-1D**, assuming a maximum effective number of non-GSO FSS systems of 3.5;

e) that the aggregate interference caused by all co-frequency non-GSO FSS systems in these bands into GSO FSS systems should not exceed the aggregate epfd levels in Tables **COM5/6-1A** through **COM5/6-1D**;

f) that WRC-97 decided, and WRC-2000 confirmed, that non-GSO FSS systems in these bands are to coordinate the use of these frequencies between themselves under the provisions of No. **S9.12** of the Radio Regulations;

g) that the orbital characteristics of such systems are likely to be inhomogeneous;

h) that as a result of this likely inhomogeneity, the aggregate epfd levels from multiple non-GSO FSS systems are not directly related to the number of actual systems sharing a frequency band, and the number of such systems operating co-frequency is likely to be small;

i) that the possible misapplication of single-entry limits should be avoided,

recognizing

a) that non-GSO FSS systems are likely to need to implement interference mitigation techniques to share frequencies among themselves;

b) that because the use of such interference mitigation techniques will likely keep the number of non-GSO systems small, the aggregate interference caused by non-GSO FSS systems into GSO systems will also likely be small;

c) that notwithstanding *considering d), considering e)* and *recognizing b)*, there may be instances where the aggregate interference from non-GSO systems could exceed the interference levels given in Tables **COM5/6-1A** through **COM5/6-1D**;

d) that administrations operating GSO systems may wish to ensure that the aggregate epfd produced by all operating co-frequency non-GSO FSS systems in the frequency bands referred to in *considering a)* above into GSO FSS and/or GSO BSS networks does not exceed the aggregate interference levels given in Tables **COM5/6-1A** through **COM5/6-1D**,

resolves

1 that administrations operating or planning to operate non-GSO FSS systems, for which coordination or notification information, as appropriate, was received after 21 November 1997, in the frequency bands referred to in *considering a)* above, individually or in collaboration, take all possible steps, including by means of appropriate modifications to their systems if necessary, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not cause the aggregate power levels shown in Tables **COM5/6-1A** through **COM5/6-1D** to be exceeded (see No. **S22.5K**);

2 that, in the event that the aggregate interference levels in Tables **COM5/6-1A** through **COM5/6-1D** are exceeded, administrations operating non-GSO FSS systems in these frequency bands shall expeditiously take all necessary measures to reduce the aggregate epfd levels to those in Tables **COM5/6-1A** through **COM5/6-1D** or to higher levels where those levels are acceptable to the affected GSO administration (see No. **S22.5K)**,

requests ITU-R

1 to develop, as a matter of urgency, and complete, in time for consideration by the next WRC, a suitable methodology for calculating the aggregate epfd produced by all non-GSO FSS systems operating or planning to operate co-frequency in the frequency bands referred to in *considering a)* above into GSO FSS and GSO BSS networks, which may be used to determine whether the systems are in compliance with the aggregate power levels shown in Tables **COM5/6-1A** through **COM5/6-1D**;

2 to continue its studies and to develop, as a matter of urgency, a recommendation on the accurate modelling of interference from non-GSO FSS systems into GSO FSS and GSO BSS networks in the frequency bands referred to in *considering a)* above in order to assist the administrations planning or operating non-GSO FSS systems in their efforts to limit the aggregate epfd levels produced by their systems into GSO networks and to provide guidance to GSO network designers on the maximum epfd↓ levels expected to be produced by all non-GSO FSS systems when accurate modelling assumptions are used;

3 to develop a recommendation, as a matter of urgency, that contains procedures to be used amongst administrations to ensure that the aggregate epfd limits contained in Tables **COM5/6-1A** through **COM5/6-1D** are not exceeded by operators of non-GSO FSS systems;

4 to attempt to develop measurement techniques to identify the interference levels from non-GSO systems in excess of the “aggregate” limits given in Tables **COM5/6-1A** through **COM5/6-1D** of this Resolution, and to confirm compliance with these limits,

requests the Director of the Radiocommunication Bureau

1 to assist in the development of the methodology referred to in *requests ITU-R* 1 above;

2 to report to WRC-02/03 on the results of studies in *requests ITU-R* 1 and 3 above.

ANNEX 1 (TO RESOLUTION [COM5/6] (WRC-2000))

TABLE **COM5/6-1A**[1, 3, 4]

Limits to the aggregate epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd↓ dB(W/m^2)**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[2]**
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–170.0 –168.6 –165.3 –160.4 –160.0 –160.0	0 90 99 99.97 99.99 100	40	60 cm Recommendation ITU-R S.1428
	–176.5 –173.0 –164.0 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.84 99.945 99.97 99.99 99.99 99.9975 100	40	1.2 m Recommendation ITU-R S.1428
	–185 –184 –182 –168 –164 –162 –160 –160	0 90 99.5 99.9 99.96 99.982 99.997 100.00	40	3 m[3bis] Recommendation ITU-R S.1428
	–190 –190 –166 –160 –160	0 99 99.99 99.998 100	40	10 m[3bis] Recommendation ITU-R S.1428

1 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

2 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 In addition to the limits shown in Table **COM5/6-1A**, the following aggregate epfd↓ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **COM5/6-1A**.

100% of the time epfd↓ dB(W/(m^2·40 kHz))	**Latitude (North or South) (°)**
–160	0 < |Latitude| ≤ 57.5
–160 + 3.4(57.5 – |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
–165.3	63.75 ≤ |Latitude|

3*bis* The values for the 3 metre and 10 metre antennas are applicable only for the methodology referred to *requests ITU-R* 1.

4 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

TABLE **COM5/6-1B**[1, 3, 3*bis*]

Limits to the aggregate epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[2]
17.8-18.6	–170 –170 –164 –164	0 90 99.9 100	40	1 m Recommendation ITU-R S.1428
	–156 –156 –150 –150	0 90 99.9 100	1 000	
17.8-18.6	–173 –173 –166 –164 –164	0 99.4 99.9 99.92 100	40	2 m Recommendation ITU-R S.1428
	–159 –159 –152 –150 –150	0 99.4 99.9 99.92 100	1 000	
17.8-18.6	–180 –180 –172 –164 –164	0 99.8 99.8 99.992 100	40	5 m Recommendation ITU-R S.1428
	–166 –166 –158 –150 –150	0 99.8 99.8 99.992 100	1 000	

1 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

2 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

3*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidth.

TABLE COM5/6-1C[1, 3, 3*bis*]

Limits to the aggregate epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[2]
19.7-20.2	–182 –172 –154 –154	0 90 99.94 100	40	70 cm Recommendation ITU-R S.1428
	–168 –158 –140 –140	0 90 99.94 100	1 000	
19.7-20.2	–185 –176 –165 –160 –154 –154	0 91 99.8 99.8 99.99 100	40	90 cm Recommendation ITU-R S.1428
	–171 –162 –151 –146 –140 –140	0 91 99.8 99.8 99.99 100	1 000	
19.7-20.2	–191 –162 –154 –154	0 99.933 99.998 100	40	2.5 m Recommendation ITU-R S.1428
	–177 –148 –140 –140	0 99.933 99.998 100	1 000	
19.7-20.2	–195 –184 –175 –161 –154 –154	0 90 99.6 99.984 99.9992 100	40	5 m Recommendation ITU-R S.1428
	–181 –170 –161 –147 –140 –140	0 90 99.6 99.984 99.9992 100	1 000	

1 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

2 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

3*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidth.

TABLE **COM5/6-1D**[2, 3]

Limits to the aggregate epfd↓ radiated by non-GSO FSS systems in certain frequency bands 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	**epfd↓ 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[1]**
11.7- 12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–160.4 –160.1 –158.6 –158.6 –158.33 –158.33	0 25 96 98 98 100	40	30 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–170 –167 –164 –160.75 –160 –160	0 66 97.75 99.33 99.95 100	40	45 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–171 –168.75 –167.75 –162 –161 –160.2 –160 –160	0 90 97.8 99.6 99.8 99.9 99.99 100	40	60 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–173.75 –173 –171 –165.5 –163 –161 –160 –160	0 33 98 99.1 99.5 99.8 99.97 100	40	90 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz In Region 2	–177 –175.25 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.7 99.82 99.9 99.965 99.993 100	40	120 cm Recommendation ITU-R BO.1443 Annex 1

11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–179.5 –178.66 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.81 99.91 99.975 99.995 100	40	180 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–182 –180.9 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.85 99.94 99.98 99.995 100	40	240 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz In Region 1 11.7-12.2 GHz and 12.5-12.75 GHz In Region 3 12.2-12.7 GHz In Region 2	–186.5 –184 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.7 99.83 99.94 99.97 100	40	300 cm Recommendation ITU-R BO.1443 Annex 1

1 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

2 For BSS antenna diameters 180 cm, 240 cm and 300 cm, in addition to the aggregate limit shown in Table **COM5/6-1D**, the following aggregate 100% of the time epfd↓ limit also applies:

100% of the time epfd↓ dB(W/(m^2·40 kHz))	**Latitude (North or South) (°)**
–160	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160 + 3.4 * (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \leq \lvert \text{Latitude} \rvert \leq 63.75$
–165.3	$63.75 \leq \lvert \text{Latitude} \rvert$

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

For BSS antenna diameter 240 cm, in addition to the above aggregate 100% of the time epfd↓ limit, a –167 dB(W/(m^2 · 40 kHz)) aggregate 100% of the time operational epfd↓ limit also applies to receive antennas located in Region 2, west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.]

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 408-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 367, 371, 305, 337, 356, 306, 357, 275, 274, 374, 368, 338, 336

COMMITTEE 6

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

Committee 5 has continued its consideration of its agenda items. As a result of these deliberations, it has adopted, at its fourth meeting, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

Committee 6 should note that the square brackets containing the reference to two new footnotes in *considering q)* of the modification to Resolution 122 in Document 340 can now be removed as Committee 5 has approved the text of these two footnotes.

In addition Committee 6 should note that the attached text includes modifications to Article S9 (S9.11A to S9.22 and S9.27 to S9.40A) and to Table S5-1 of Appendix S5. These changes will need to be merged with the output of Committee 4 on this Article and this Appendix.

Chris Van DIEPENBEEK
Chairperson, Committee 5

Annexes: 13

ARTICLE S5

MOD

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 000-5 150	AERONAUTICAL RADIONAVIGATION S5.367 MOD S5.444 S5.444A ADD S5.444B S5.444C	

MOD

S5.444 The band ~~5 000~~5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **S5.444A** and Resolution **114 (WRC-95)** apply.

ADD

S5.444B *Additional allocation:* The band 5 000-5 010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution **[COM5/15] (WRC-2000)**.

ADD

S5.444C *Additional allocation:* The band 5 010-5 030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz the aggregate power flux-density produced on the surface of the Earth in bands above 5 030 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5 010-5 030 MHz shall not exceed the level of –124.5 dB(W/m^2) in 150 kHz. In order not to cause harmful interference to the radio astronomy service in the band 4 990-5 000 MHz, the aggregate power flux-density in the 4 990-5 000 MHz band by all the space stations within any RNSS (space-to-Earth) system operating in the 5 010-5 030 MHz band shall not exceed the provisional value of –171 dB(W/m^2) in a 10 MHz bandwidth at any radio astronomy observatory site for more than 2% of the time. For the use of this band Resolution **[COM5/16] (WRC-2000)** applies.

ADD

RESOLUTION [COM5/15] (WRC-2000)

Studies on compatibility between stations of the radionavigation-satellite service (RNSS) (Earth-to-space) operating in the frequency band 5 000-5 010 MHz, and the international standard system (microwave landing system) operating in the 5 030-5 150 MHz band

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the aeronautical radionavigation service is allocated on a primary basis in the band 5 000-5 250 MHz;

b) that WRC-2000 added a primary allocation to the radionavigation-satellite service (Earth-to-space) in the 5 000-5 010 MHz band;

c) that the band 5 030-5 150 MHz is to be used for the operation of the international standard MLS for precision approach and landing. The requirements for this system shall take precedence over other uses of this band as per footnote **S5.444**;

d) that unwanted emissions from the RNSS stations may fall into the frequency band used by the MLS;

e) that studies to determine the compatibility between these RNSS transmitters and the MLS receivers operated on board aircraft used during approach and landing have not been carried out;

f) that the MLS can be well-protected through the implementation of an adequate separation distance between the stations of the RNSS (Earth-to-space) transmitter and the MLS receiver, and other mitigation techniques,

resolves to request ITU-R

to conduct as a matter of urgency, the appropriate technical, operational and regulatory studies to ensure that stations of the RNSS (Earth-to-space) do not cause harmful interference to the operation of the international standard MLS, and to develop, if needed, appropriate Recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

requests the Secretary-General

to bring this Resolution to the attention of ICAO.

ADD

RESOLUTION [COM5/16] (WRC-2000)

Studies on compatibility between the radionavigation-satellite service (RNSS) (space-to-Earth) operating in the frequency band 5 010-5 030 MHz, and the radio astronomy service (RAS) operating in the band 4 990-5 000 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that new radiocommunication services are developing, many of which require satellite transmitters, and need to be allocated sufficient spectrum;

b) that research in radio astronomy depends critically upon the ability to make observations at the extreme limits of sensitivity and/or precision;

c) that transmissions from RNSS space stations in the frequency band 5 010-5 030 MHz near the radio astronomy service operating in the band 4 990-5 000 MHz may cause interference harmful to the radio astronomy service;

d) that Recommendation ITU-R RA.769-1 recommends, *inter alia*, that all practicable steps be taken to reduce to the absolute minimum all unwanted emissions falling into RAS bands, particularly those emissions from aircraft, spacecraft and balloons;

e) that protection requirements of RAS are explained and interference threshold values detailed in the Annex to Recommendation ITU-R RA.769-1;

f) that different coupling mechanisms apply to interfering emissions from terrestrial transmitters or from transmitters on board GSO or non-GSO satellites;

g) that this Conference has revised Recommendation 66, which asks to study those frequency bands and instances where, for technical or operational reasons, out-of-band emission limits may be required to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;

h) that administrations may require criteria to protect RAS from interference detrimental to radio astronomy observations from space-to-Earth transmissions by space stations,

noting

a) that this Conference has adopted footnotes **S5.444C** specifying a provisional pfd limit in the band 4 990-5 000 MHz, for space-to-Earth out-of-band emissions of the RNSS operating in the band 5 010-5 030 MHz;

b) that the general problem of protection of radio astronomy and passive services is under study in ITU-R *inter alia* in response to Recommendation 66,

resolves

1 that WRC-03 be invited to review the provisional pfd limit on the RNSS in the band 4 990-5 000 MHz, for space-to-Earth out-of-band emissions of the RNSS operating in the band 5 010-5 030 MHz;

2 that the limits stated in No. **S5.444C** shall be applied provisionally for systems for which complete notification information has been received by the Bureau after 2 June 2000;

3 that, as of 3 June 2000, when notifying frequency assignments to a satellite network in the radionavigation-satellite service in the bands 5 010-5 030 MHz, the responsible administration shall provide the calculated values of the aggregate power flux-density in the bands above 5 030 MHz and in the band 4 990-5 000 MHz, as defined in No. **S5.444C**, in addition to the relevant characteristics listed in Appendix **S4**,

requests ITU-R

1 to conduct, or continue to conduct, as a matter of urgency and in time for consideration by WRC-03, the appropriate technical, operational and regulatory studies to review the provisional pfd limit concerning the operation of space stations including the development of a methodology for calculating the aggregate power levels in order to ensure that the radionavigation-satellite service (space-to-Earth) in the band 5 010-5 030 MHz will not cause interference detrimental to the RAS in the band 4 990-5 000 MHz;

2 to report to CPM-03 on the conclusions of the studies asked for under 1 above,

urges administrations

1 to participate actively in the aforementioned studies by submitting contributions to ITU-R;

2 to ensure that systems designed to operate in the RNSS frequency band 5 010-5 030 MHz incorporate interference avoidance techniques, such as filtering, to the extent feasible,

instructs the Radiocommunication Bureau

as of the end of WRC-03, to review and, if appropriate, revise any finding previously made on the compliance with the limits of out-of-band emission contained in No. **S5.444C** of an RNSS (space-to-Earth) system for which notification information has been received before the end of WRC-03. This review shall be based on the values, as revised, if appropriate, by WRC-03.

MOD

S5.488 ~~The use of the bands 11.7-12.2 GHz in the fixed-satellite service in Region 2 and 12.2-12.7 GHz by the broadcasting-satellite service in Region 2 is limited to national and subregional systems.~~ The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to ~~previous agreement between administrations concerned and those having services, operating or planned to operate in accordance with the Table, which may be affected (see Articles **S9** and **S11**)~~the provisions of Resolution **[COM5/18] (WRC-2000)**. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **S30**.

ADD

RESOLUTION [COM5/18] (WRC-2000)

Protection of terrestrial services in all Regions from Region 2 GSO FSS networks using the frequency band 11.7-12.2 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in Regions 1 and 3, the band 11.7-12.2 GHz is allocated on a co-primary status to terrestrial services and to the broadcasting-satellite service;

b) that, in Region 2, the band 11.7-12.1 GHz is allocated on a co-primary status to terrestrial services (except in the countries listed in **S5.486**) and to the fixed-satellite service;

c) that, in Region 2, the band 12.1-12.2 GHz is allocated on a co-primary status to terrestrial services in Peru (see **S5.489**) and to the fixed-satellite service;

d) that the protection of the broadcasting-satellite service in Regions 1 and 3 from the fixed-satellite service in Region 2 is assured by Article 7 and Annex 4 to Appendix **S30**;

e) that the protection of the fixed-satellite service in Region 2 from the fixed-satellite service in that Region is assured either by **S9** (**S9.7** or **S9.12**) or **S22**;

f) that the protection of terrestrial services in Regions 1, 2 and 3 from non-geostationary satellite systems in the fixed-satellite service in Region 2 is assured by **S21**;

g) that there is a need to protect terrestrial services in Regions 1, 2 and 3 from geostationary- satellite networks in the fixed-satellite service in Region 2;

h) that WRC-2000 has modified No. **S5.488** by revising the regulatory limitations on the operation of the GSO FSS in Region 2 in the band 11.7-12.2 GHz,

recognizing

that ITU-R has developed Recommendation ITU-R SF.674-1, dealing with sharing between the fixed-satellite service in Region 2 and the fixed service in the band 11.7-12.2 GHz in Region 2,

resolves

before an administration notifies to the Bureau or brings into use, in Region 2, a frequency assignment for a GSO FSS network in the 11.7-12.2 GHz band, it shall seek the agreement of any administration of Regions 1, 2, and 3 having a primary allocation to terrestrial services in the same frequency band if the power flux-density produced on its territory exceeds the following thresholds:

–124	dB(W/m^2) in 1 MHz	for $0° \leq \Theta \leq 5°$
$-124 + 0.5 (\Theta-5)$	dB(W/m^2) in 1 MHz	for $5° < \Theta \leq 25°$
–114	dB(W/m^2) in 1 MHz	for $\Theta \geq 25°$

where Θ is the angle of arrival of the incident wave above the horizontal plane, in degrees.*

instructs the Radiocommunication Bureau

in its examination of requests for coordination for any geostationary fixed-satellite space station operating in the band 11.7-12.2 GHz in Region 2, to determine if the power flux-density thresholds in the *resolves* are exceeded on the territory of any administration having a primary allocation to terrestrial services other than the notifying administration and, if so, to so notify both the notifying and the affected administrations.

* These values relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

MOD

S5.502 In the band 13.75-14 GHz, ~~the e.i.r.p. of any emission from~~ an earth station in the fixed-satellite service shall ~~be at least 68 dBW, and should not exceed 85 dBW, with~~ have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services~~towards the geostationary-satellite orbit~~ shall not exceed 59 dBW. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations. **S5.43** does not apply. See Resolution COM5/10.

MOD

S5.503 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. ~~The e.i.r.p. density of emissions from any earth station in the fixed-satellite service shall not exceed 71 dBW in any 6 MHz band in the frequency range 13.772-13.778 GHz u~~Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band~~.~~:

a) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in the 6 MHz band in the frequency range 13.772-13.778 GHz;

b) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band in the frequency range 13.772-13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density ~~above 71 dBW~~ in ~~any~~the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power-flux density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in ~~any~~the 6 MHz band in clear sky conditions.

ADD

RESOLUTION [COM5/10] (WRC-2000)

Review of sharing conditions between services in the band 13.75-14 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WARC-92 (Malaga-Torremolinos) added an allocation to the fixed-satellite service (FSS) Earth-to-space in the band 13.75-14 GHz;

b) that this band is shared with the radiolocation and radionavigation services and certain limitations have been placed on the fixed-satellite, radiolocation and radionavigation services in provision No. **S5.502**;

c) that the services operating in this band are evolving and may have new technical requirements;

d) that the band 13.772-13.778 GHz is also shared with the space research service under the conditions set out in provisions Nos. **S5.503**;

e) that in some countries, the band is also allocated to the fixed service and the mobile service (provisions Nos. **S5.499** and **S5.500**) and to the radionavigation service (provision No. **S5.501**);

f) that the GSO FSS operators have expressed interest in operating earth station antennas with a diameter less than 4.5 m in the band 13.75-14 GHz;

g) that there is a need to determine the sharing conditions affecting the radiolocation, space research and fixed-satellite services and to maintain the delicate balance between these services,

resolves to invite ITU-R

1 to conduct studies, as a matter of urgency, with the aim of completion in time for consideration by WRC-03 the sharing conditions stated in footnotes Nos. **S5.502** and **S5.503** with a view to reviewing the constraints in **S5.502** regarding the minimum antenna diameter of FSS earth stations operating with GSO and the constraints on the e.i.r.p. of the radiolocation service;

2 to identify and study with the aim of completion in time for consideration by WRC-03 possible alternative sharing conditions to those stated in footnotes Nos. **S5.502** and **S5.503**.

MOD

24.75-29.9 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
27.5-28.5	FIXED ADD S5.5SSS FIXED-SATELLITE (Earth-to-space) S5.484A S5.539 MOBILE S5.538 S5.540	

MOD

29.9-34~~,~~.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
31-31.3	FIXED ADD S5.5RRR MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research S5.544 S5.545 S5.149	

ADD

S5.5SSS In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations. The use of the band 27.5-28.35 GHz by high altitude platform stations is limited to operation in the direction from the high altitude platform station down to the ground and shall not cause harmful interference to nor claim protection from other types of fixed-service systems or other co-primary services.

ADD

S5.5RRR In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31.0-31.3 GHz may also be used by high altitude platform stations in the direction from ground up to the high altitude platform stations. The use of the band 31.0-31.3 GHz by high altitude platforms shall not cause harmful interference to nor claim protection from other types of fixed-service systems or other co-primary services taking into account **S5.545**. The use of HAPS in the band 31.0-31.3 GHz shall not cause harmful interference to the passive services allocated on a primary basis in the band 31.3-31.8 GHz, taking into account the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769. The administrations mentioned above are urged to limit the deployment of HAPS within the band 31.0-31.3 GHz to the lower half of this band (31.0-31.15 GHz) until WRC-03.

1 Modification of Article S15

ARTICLE S15

Interferences

Section I – Interference from Radio Stations

MOD

S15.8 § 4 Special consideration shall be given to avoiding interference on distress and safety frequencies and those related to distress and safety identified in Article **S31,** Appendix **S13** and safety and regularity of flight identified in Appendix **S27**.

Section VI – Procedure in a case of harmful interference

MOD

S15.28 § 20 Recognizing that transmissions on the distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article **S31** ~~and~~, Appendix **S13** and Appendix **S27**) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference.

MOD

S15.35 § 27 On being informed that a station over which it has jurisdiction is believed to have been the cause of harmful interference, an administration shall, as soon as possible, acknowledge receipt of that information by ~~telegram~~ the quickest means available. Such acknowledgement shall not constitute an acceptance of responsibility.

MOD

S15.37 § 29 An administration receiving a communication to the effect that one of its stations is causing harmful interference to a safety service shall promptly investigate the matter and take any necessary remedial action and respond in a timely manner.

2 Modification of Resolution 207

RESOLUTION 207 (~~Mob-87~~Rev.WRC-2000)

Measures to address ~~U~~unauthorized use of and interference to frequencies in the bands allocated to the maritime mobile service and to the aeronautical mobile (R) service[1]

The World ~~Administrative~~ Radiocommunication Conference ~~for the Mobile Services, Geneva, 1987~~(Istanbul, 2000),

considering

a) that the HF frequencies currently used by the aeronautical and maritime mobile services for distress, safety and other communications, including allotted operational frequencies, suffer from harmful interference and are often subject to difficult propagation conditions;

b) that WRC-97 considered some aspects of the use of the HF bands for distress and safety communications in the context of the Global Maritime Distress and Safety System (GMDSS), especially with regard to regulatory measures;

c) that unauthorized operations using maritime and aeronautical frequencies in the HF bands are continuing to increase and are already a serious risk to HF distress, safety and other communications;

d) that some administrations have resorted to, for example, transmitting warning messages on operational HF channels as a means of deterring unauthorized users;

e) that provisions of the Radio Regulations prohibit the unauthorized use of certain safety frequencies for other than safety related communications;

f) that enforcing compliance with these regulatory provisions is becoming increasingly difficult with the availability of low-cost HF SSB transceivers;

~~*a*~~*g)* that monitoring observations of the use of frequencies in the band 2 170-2 194 kHz and in the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 27 500 kHz and to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz show that a number of frequencies in these bands are still being used by stations of other services, ~~some~~ many of which are operating in contravention of No. **S23.2**;

~~*b) that these stations are causing harmful interference to the maritime mobile and aeronautical mobile (R) services;*~~

[1] WRC-97 made editorial amendments to this Resolution.

~~e~~*h)* that HF radio is the sole means of communication in certain situations for the maritime mobile service and that certain frequencies in the bands mentioned in *considering ~~a~~g)* are reserved for distress and safety purposes;

~~d~~*i)* that HF radio is the sole means of communication in certain situations for the aeronautical mobile (R) service and that this is a safety service~~,~~;

j) that this Conference has reviewed 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,

considering in particular

~~e~~*k)* that it is of paramount importance that the distress and safety channels of the maritime mobile service be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

~~f~~*l)* that it is also of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the safety of life and property,

resolves to invite ITU-R and ITU-D, as appropriate

1 to study possible technical and regulatory solutions to assist in the mitigation of interference to the operational distress and safety communications in the maritime mobile service and aeronautical mobile (R) service;

2 to increase regional awareness of appropriate practices to help mitigate interference in the HF bands, especially on distress and safety channels;

3 to report the results of the studies referred to in *resolves a)* to the next competent conference,

~~*to* urge~~s *administrations*

1 to ensure that stations of services other than the maritime mobile service abstain from using frequencies in distress and safety channels and their guard bands and in the bands allocated exclusively to that service, except under the conditions expressly specified in Nos. **S4.4**, **S5.128**, **S5.129**, **S5.137** and **S4.13** to **S4.15**; and to ensure that stations of services other than the aeronautical mobile (R) service ~~refrain~~ abstain from using frequencies allocated to that service except under the conditions expressly specified in Nos. **S4.4** and **S4.13**;

2 to make every effort to identify and locate the source of any unauthorized emission capable of endangering human life or property and the safe and regular conduct of aircraft operations, and to communicate their findings to the Radiocommunication Bureau;

3 to participate in the monitoring programmes that the Radiocommunication Bureau may organize pursuant to this Resolution;

4 to make every effort to ~~ensure~~ prevent unauthorized transmissions in bands allocated to ~~that such emissions are made in appropriate bands allocated to services other than~~ the maritime mobile service and~~or~~ the aeronautical mobile (R) service;

5 to request their competent authorities to take, within their respective jurisdiction, such legislative or regulatory measures which they consider necessary or appropriate in order to prevent stations from unauthorized use of distress and safety channels or operating in contravention of No. **S23.2**~~,~~;

6 to take all necessary steps in such cases of contravention of No. **S23.2** to ensure the cessation of any transmissions contravening the provisions of the Radio Regulations on the frequencies or in the bands referred to in this Resolution;

7 to participate actively in the studies requested by this Resolution,

~~*to* *invites the Radiocommunication Bureau*~~

1 to continue to organize monitoring programmes, at regular intervals, in the maritime distress and safety channels and their guard bands and in the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 27 500 kHz and to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz, with a view to ensuring the timely distribution of monitoring data and identifying the stations of other services operating on these channels or in these bands;

2 to seek the cooperation of administrations in identifying the sources of those emissions by all available means and in securing the cessation of those emissions;

3 when the station of another service transmitting in a band allocated to the maritime mobile service or to the aeronautical mobile (R) service has been identified, to inform the administration concerned~~,~~;

4 to include the problem of interference to maritime and aeronautical distress and safety channels on the agenda of relevant regional radiocommunication seminars,

~~*requests administrations*~~

~~to take all necessary steps in such cases to ensure the cessation of any transmissions contravening the provisions of the Radio Regulations on the frequencies or in the bands referred to in this Resolution.~~

instructs the Secretary-General

to communicate this Resolution to the attention of the International Maritime Organization and the International Civil Aviation Organization and to invite them to participate in these studies.

MOD

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5]

Section II – Procedure for effecting coordination[8, 9]

Sub-Section IIA – Requirement and request for coordination

S9.11A *e)* for a station for which the requirement to coordinate is included either in a footnote of the Table of Frequency Allocations referring to this provision or in a Resolution referring to this provision~~:~~, the provisions in **S9.12** to **S9.16** are applicable;

S9.12 *f*~~———i~~) for a station for which the requirement to coordinate is included either in a footnote of the Table of Frequency Allocations referring to this provision or to **S9.11A**, or in a Resolution referring to this provision or to **S9.11A**, 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;

S9.12A *g)* for a station for which the requirement to coordinate is included either in a footnote of the Table of Frequency Allocations referring to this provision or to **S9.11A**, or in a Resolution referring to this provision or to **S9.11A**, in a satellite network using a non-geostationary-satellite orbit, 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;

S9.13 *h*~~———ii~~) for a station for which the requirement to coordinate is included either in a footnote of the Table of Frequency Allocations referring to this provision or to **S9.11A**, or in a Resolution referring to this provision or to **S9.11A**, 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;

S9.14 *i*~~———iii~~) ~~which is~~for a space station of a satellite network for which the requirement to coordinate is included either in a footnote of the Table of Frequency Allocations referring to **S9.11A** or in a Resolution referring to **S9.11A**, in respect of stations of terrestrial services where the threshold value is exceeded;

S9.15 *j* ~~iv~~) ~~which is~~for either a specific earth station or typical earth station of a non-geostationary satellite network for which the requirement to coordinate is included either in a footnote of the Table of Frequency Allocations referring to **S9.11A** or in a Resolution referring to **S9.11A**, 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;

S9.16 *k* ~~v~~) ~~which is~~for a transmitting station of a terrestrial service for which the requirement to coordinate is included either in a footnote of the Table of Frequency Allocations referring to **S9.11A** or in a Resolution referring to **S9.11A** and which is located within the coordination area of an earth station in a non-geostationary-satellite network;

S9.17 *~~f~~l)*[13] 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**;

S9.17A *~~g~~m)* 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;

S9.18 *~~h~~n)* 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**;

S9.19 *~~i~~o)* 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;

S9.20 Not used.

S9.21 *~~j~~p)* for any station of a service for which the requirement to seek the agreement of other administrations is included in a footnote of the Table of Frequency Allocations referring to this provision.

S9.22 Not used.

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[13] **S9.17.1** Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending a decision of WRC-99 on the revision of these two Appendices.

MOD

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **S9.11** GSO/terrestrial	A space station in the BSS in any band shared on an equal primary basis with terrestrial services and where the BSS 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 (Region 3) 17.7-17.8 GHz (Region 2) 21.4-22 GHz (Region 1 and 3) 40.5-42.5 GHz ~~84-86 GHz~~74-76 GHz	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
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 or a Resolution refers to **S9.11A** or to **S9.12** 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~~[See modifications by 4A]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	

No. **S9.12A** ~~2)~~Non-GSO/ GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote or a Resolution refers to **S9.11A** or to **S9.12A** 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~~[See modifications by 4A]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
No. **S9.13** GSO/non-GSO	A station in a satellite network using the GSO in the frequency bands for which a footnote or a Resolution refers to No. **S9.11A** or to **S9.13** in respect of any other satellite network using a non-GSO, with the exception of coordination between earth stations operating in the opposite direction of transmission	~~See Table S5-2~~[See modifications by 4A]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	

MOD

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5]

Sub-Section IIA – Requirement and request for coordination

S9.27 Frequency assignments to be taken into account in effecting coordination are identified using Appendix **S5**.

S9.30 Requests for coordination made under Nos. **S9.7** to **S9.14** and **S9.21** shall be sent by the requesting administration to the Bureau, together with the appropriate information listed in Appendix **S4** to these Regulations.

S9.34 On receipt of the complete information sent under No. **S9.30** or No. **S9.32** the Bureau shall promptly:

S9.35 *a)* examine that information with respect to its conformity with No. **S11.31**[13*bis*];

S9.36 *b)* identify in accordance with No. **S9.27** any administration with which coordination may need to be effected[14];

S9.37 *c)* include their names in the publication under No. **S9.38;**

S9.38 *d)* publish, as appropriate, the complete information in the Weekly Circular within four 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 therefore.

S9.39 Not used.

S9.40 *e)* inform the administrations concerned of its actions and communicate the results of its calculations, drawing attention to the relevant Weekly Circular.

S9.40A If the information is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

13*bis* **S9.35.1** The Bureau shall include the detailed results of its examination under No. **S11.31** of compliance with the limits in Tables **S22-1** to **S22-3** inclusive in the publication under No. **S9.38**.

14 **S9.36.1** The list of administrations identified by the Bureau under Nos. **S9.11** to **S9.14** and **S9.21** is only for information purposes, to help administrations comply with this procedure.

NOC

RESOLUTION 346 (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

1 Modification of Article S52

ARTICLE S52

Special rules relating to the use of frequencies

Section VI – Use of frequencies for radiotelephony

C2 – Call and reply

ADD

S52.220A Administrations should encourage the coast stations and ship stations under their jurisdiction to use digital selective calling techniques for call and reply.

ADD

S52.220B When calling by radiotelephony is necessary, it should be done (in the order of preference):

ADD

S52.220C 1) on the national frequencies assigned to the coast stations; or

ADD

S52.220D 2) when this is not possible, on the calling frequencies listed under **S52.221** or **S52.221A** below.

MOD

S52.221 § 97 1) Ship stations may use the following carrier frequencies for calling in radiotelephony:

4 125 kHz[3, 4, 5]
6 215 kHz[4, 5]
8 255 kHz
12 290 kHz[5] (see also No. **S52.221A**)
16 420 kHz[5] (see also No. **S52.221A**)
18 795 kHz
22 060 kHz
25 097 kHz

ADD

S52.221A Calling on the carrier frequencies 12 290 kHz and 16 420 kHz shall cease as soon as possible and no later than 31 December 2003. Alternative carrier frequencies 12 359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis provided that the peak envelope power does not exceed 1 kW.

---

[3] **S52.221.1** In the United States, the carrier frequency 4 125 kHz is also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis, provided the peak envelope power of such stations does not exceed 1 kW (see also No. **S52.222.2**).

[4] **S52.221.2** The carrier frequencies 4 125 kHz and 6 215 kHz are also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis for call and reply purposes, provided that the peak envelope power of such stations does not exceed 1 kW. The use of these frequencies for working purposes is not permitted (see also Appendix **S13** and No. **S52.221.1**).

[5] **S52.221.3** The carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz and 16 420 kHz are also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis for distress and safety traffic.

MOD

S52.222 2) Coast stations may use the following carrier frequencies for calling in radiotelephony[6]:

4 417 kHz[7]
6 516 kHz[7]
8 779 kHz
13 137 kHz (see No. **S52.222A**)
17 302 kHz (see No. **S52.222A**)
19 770 kHz
22 756 kHz
26 172 kHz

ADD

S52.222A The carrier frequencies 13 137 kHz and 17 302 kHz shall not be used as calling frequencies after 31 December 2003. Alternative carrier frequencies 12 359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis provided that the peak envelope power does not exceed 1 kW.

MOD

S52.224 § 99 1) Before transmitting on the carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz or 16 420 kHz a station shall listen on the frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **S52.221A** and Recommendation ITU-R M.1171).

---

[6] **S52.222.1** These frequencies may also be used by coast stations with class H2B emission, when using the selective calling system defined in Recommendation ITU-R M.257-3.

[7] **S52.222.2** The carrier frequencies 4 417 kHz and 6 516 kHz are also authorized for common use by coast and ship stations for single-sideband radiotelephony on a simplex basis, provided that the peak envelope power of such stations does not exceed 1 kW. The use of 6 516 kHz for this purpose should be limited to daytime operation (see also No. **S52.221.1**).

2 Modification of Appendix S17

APPENDIX S17

Frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service

PART B – Channelling arrangements

Section I – Radiotelephony

MOD

5 The following frequencies in Sub-Section A are allocated for calling purposes:

– Channel No. 421 in the 4 MHz band;

– Channel No. 606 in the 6 MHz band;

– Channel No. 821 in the 8 MHz band;

– Channel No. 1221 in the 12 MHz band;

– Channel No. 1621 in the 16 MHz band;

– Channel No. 1806 in the 18 MHz band;

– Channel No. 2221 in the 22 MHz band;

– Channel No. 2510 in the 25 MHz band.

The use of channels 1221 and 1621 for calling purposes shall cease as soon as possible and no later than 31 December 2003 (see **S52.221A** and **S52.222A**).

The remaining frequencies in Sub-Sections A, B, C-1 and C-2 are working frequencies.

Sub-Section A

Table of single-sideband transmitting frequencies (kHz) for duplex (two-frequency) operation

NOC to the tables

MOD notes after the tables

1 These coast station frequencies may be paired with a ship station frequency from the table of simplex frequencies for ship and coast stations (see Sub-Section B) or with a frequency from the band 4 000-4 063 kHz (see Sub-Section C-1) to be selected by the administration concerned.

2 ~~For the use and notification of these frequencies, see Resolution **325 (Mob-87)***.~~(Not used)

3 These channels may also be used for simplex (single frequency) operation.

4 For the conditions of use of the carrier frequency 4 125 kHz, see Nos. **S52.224** and **S52.225**, and Appendix **S15**.

5 For the conditions of use of the carrier frequency 6 215 kHz, see Appendices **S13** and **S15**.

6 These coast station frequencies may be paired with a ship station frequency from the table of simplex frequencies for ship and coast stations (see Sub-Section B) or with a frequency from the band 8 100-8 195 kHz (see Sub-Section C-2) to be selected by the administration concerned.

7 For the conditions of use of the carrier frequency 8 291 kHz, see Appendix **S15**.

8 For the conditions of use of the carrier frequency 12 290 kHz, see Nos. **S52.221A** and **S52.222A** and Appendix **S15**.

9 For the conditions of use of the carrier frequency 16 420 kHz, see Nos. **S52.221A** and **S52.222A** and Appendix **S15**.

* The frequencies followed by an asterisk are calling frequencies (see Nos. **S52.221** and **S52.222**).

Sub-Section B

Table of single-sideband transmitting frequencies (kHz) for simplex (single-frequency) operation and for intership cross-band (two-frequency) operation

(See § 4 of Section I of this Appendix)

MOD

4 MHz band[1]		6 MHz band		8 MHz band[2]		12 MHz band	
Carrier frequency	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**
4 146	4 147.4	6 224	6 225.4	8 294	8 295.4	12 353	12 354.4
4 149	4 150.4	6 227	6 228.4	8 297	8 298.4	12 356	12 357.4
		6 230	6 231.4			~~12 359~~	~~12 360.4~~
						12 362	12 363.4
						12 365	12 366.4

1 These frequencies may be used for duplex operation with coast stations operating on Channel Nos. 428 and 429 (see Sub-Section A).

2 These frequencies may be used for duplex operation with coast stations operating on Channel Nos. 834 up to and including 837 (see Sub-Section A).

* ~~This Resolution was abrogated by WRC-95.~~

MOD

16 MHz band		**18/19 MHz band**		**22 MHz band**		**25/26 MHz band**	
Carrier frequency	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**
16 528	16 529.4	18 825	18 826.4	22 159	22 160.4	25 100	25 101.4
16 531	16 532.4	18 828	18 829.4	22 162	22 163.4	25 103	25 104.4
16 534	16 535.4	18 831	18 832.4	22 165	22 166.4	25 106	25 107.4
~~16 537~~	~~16 538.4~~	18 834	18 835.4	22 168	22 169.4	25 109	25 110.4
16 540	16 541.4	18 837	18 838.4	22 171	22 172.4	25 112	25 113.4
16 543	16 544.4	18 840	18 841.4	22 174	22 175.4	25 115	25 116.4
16 546	16 547.4	18 843	18 844.4	22 177	22 178.4	25 118	25 119.4

For use of frequencies 12 359 kHz and 16 537 kHz see Nos. **S52.221A** and **S52.222A**.

ADD

RESOLUTION [COM5/12]

Study on the interference caused to the distress and safety frequencies 12 290 kHz and 16 420 kHz by routine calling

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the distress and safety frequencies 12 290 kHz and 16 420 kHz are the ship station transmitting frequencies of the maritime radiotelephony channels 1221 and 1621;

b) that at the date of this conference some coast stations continue using channels 1221 and 1621 for calling purposes and have indicated a wish to continue calling on these channels in the future;

c) that this conference decided to cease calling on channels 1221 and 1621 on 31 December 2003 at the latest;

d) that replacement channels may need to be made available for the coast stations mentioned under *considering b)* and *c)*;

e) that there are differing opinions as to whether calling on channels 1221 and 1621 causes significant interference to distress and safety communications;

f) that this issue can be resolved by analysing the results of an ITU-R study;

g) that this conference has adopted additional measures that may significantly reduce this interference;

h) that IMO and several Member States have requested that the distress and safety frequencies 12 290 kHz and 16 420 kHz be reserved solely for that purpose;

i) that the full implementation of the cessation of calling on 31 December 2003 on the distress and safety frequencies 12 290 kHz and 16 420 kHz will allow this issue to be reconsidered by the next world radiocommunication conference,

resolves

1 to invite ITU-R to study the interference to the distress and safety frequencies 12 290 kHz and 16 420 kHz caused by routine calling on channels 1221 and 1621;

2 to invite the Radiocommunication Bureau, in consultation with administrations, to organize monitoring programmes for the support of these studies;

3 to urge administrations to participate actively in these studies;

4 to invite ITU-R to complete the study under *resolves* 1 in time for consideration by WRC-03;

5 to invite WRC-03 to consider this issue,

instructs the Secretary-General

to communicate this Resolution to the International Maritime Organization.

ADD

RESOLUTION [COM5/2] (WRC-2000)

Criteria and process for resolution of possible misapplication of non-GSO FSS single-entry limits in Article S22 [Rev.WRC-2000]

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the non-GSO FSS single-entry limits are based on certain assumptions;

b) that these single-entry limits can be misapplied and that misapplication of single-entry limits should be avoided,

noting

that avoiding misapplication of the single-entry limits is of interest to all administrations,

recognizing

a) that misapplication of single-entry limits can reduce the number of competing non-GSO FSS systems;

b) that misapplication of single-entry limits can lead to differing regulatory regimes for non-GSO FSS systems meeting limits with respect to non-GSO FSS systems capable of misapplying the limits in Article S22;

c) that misapplication of single-entry limits can disadvantage non-GSO FSS systems meeting, and intending to always meet, single-entry limits in Article **S22** [Rev.WRC-2000],

resolves

that misapplication of single-entry limits shall not be permitted,

requests

1 the Secretary-General of ITU to note this Resolution in the context of Article 1 of the ITU Convention;

2 ITU-R to conduct as a matter of urgency, and complete in time for consideration by WRC-02/03, the technical studies and to develop regulatory procedures to avoid misapplication of the single-entry limits included in Tables **S22-1**, **S22-2** and **S22-3** of Article **S22**,

instructs the Director of the Radiocommunication Bureau

1 as of the end of WRC-02/03, to review and, if appropriate, revise, any finding previously made on compliance with the limits contained in Article S22 for a non-GSO FSS system for which notification information has been received on or after 22 November 1997. Such a review and revision shall be based on the result of the studies in *requests* 2;

2 to determine if and when misapplication of single-entry limits has occurred or will occur based on the process described in Annex 1;

3 to assist in the development of procedures to verify compliance with the intent of this Resolution.

ANNEX 1 TO RESOLUTION [COM5/2] (WRC-2000)

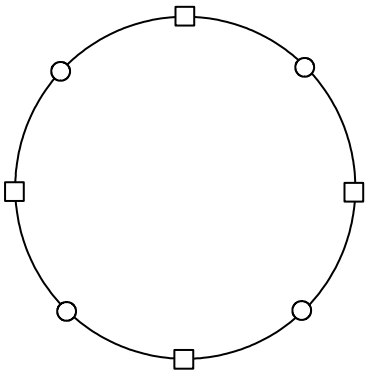
Process to be followed by BR in developing and implementing procedures to avoid misapplication of non-GSO FSS single-entry limits in Article S22 [Rev.WRC-2000]

1 In determining the following, BR will take all information available to it, or made available to it, into account in arriving at a decision or at a course of action to ensure that the requirements of Resolution [COM5/2] are met.

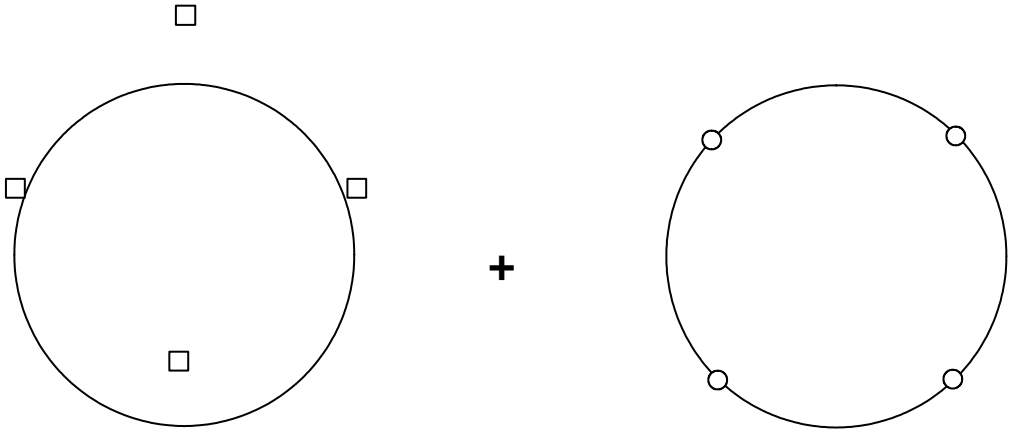
2 For the purpose of determining if misapplication of non-GSO FSS single-entry limits has occurred or will occur, it is necessary that the regulatory solutions focus not just on “the splitting of networks” but “combining of networks” as well. While disallowing “splitting or combining of networks” as a regulatory threshold criterion though, reasonable allowance needs to be made for the fact that some applications will use two or more different networks at certain times. The key then is to define certain limits in a way that will allow single-entry criteria to work effectively in practice, while at the same time allowing certain practical combinations of networks up to a point, from time to time.

Example of splitting

Before splitting: The whole network - as a single network - does not meet single-entry limits.

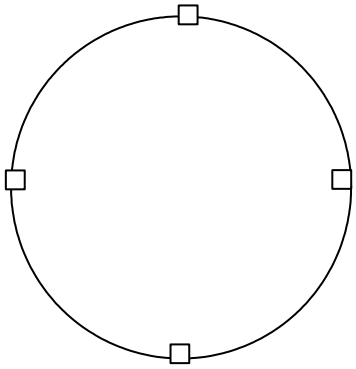


After splitting: When broken into two (or more) parts, each part network meets single-entry limits.

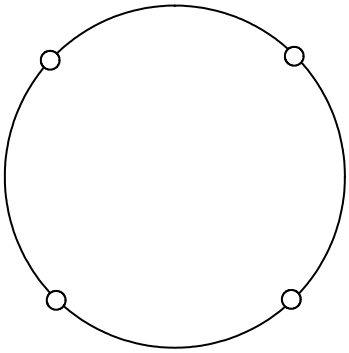


Example of combining

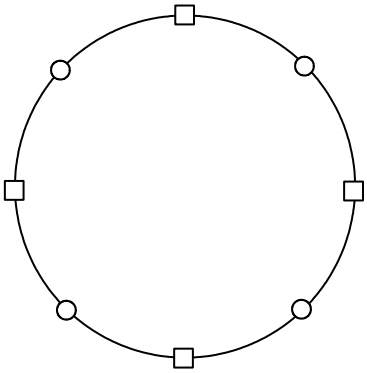
At filing stage (before combining): XYZ Ltd. owns network A. Network A meets single-entry limits.



At filing stage (before combining): ABC Ltd. owns network B. Network B meets single-entry limits.



At implementation stage (after combining): XYZ Ltd. and ABC Ltd. combine networks A and B to implement end-to-end non-GSO services full-time (if filed as such, the total of networks A and B will fail to meet the single-entry limits).



ADD

RESOLUTION [COM5/3] (WRC-2000)

Frequency sharing in the range 37.5-50.2 GHz between GSO FSS networks and non-GSO FSS systems

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this Conference has made provisions for the operation of GSO FSS networks and non-GSO FSS systems in the 10-30 GHz frequency range;

b) that there is an emerging interest in operating GSO FSS networks and non-GSO FSS systems in the 37.5-50.2 GHz frequency range;

c) that there is a need to provide for the orderly development and implementation of new satellite technologies in the 37.5-50.2 GHz frequency range;

d) that systems based on the use of new technologies associated with both GSO FSS networks and non-GSO FSS systems are capable of providing the most isolated regions of the world with high-capacity and low-cost means of communication;

e) 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;

f) that the Radio Regulations should be sufficiently flexible to accommodate the introduction and implementation of innovative technologies as they evolve;

g) that the CPM Report to WRC-2000 stated that in the bands 37.5-50.2 GHz where there has been little or no deployment of satellite systems to date, both GSO FSS and non-GSO FSS operators should be expected to exhibit flexibility in achieving the appropriate balance in the sharing environment,

resolves

to urge administrations, in the application of Article **S22** to their GSO FSS networks and non-GSO FSS systems in the 37.5-50.2 GHz frequency range prior to WRC-03, to seek balanced sharing arrangements between these systems,

requests ITU-R

1 as a matter of urgency, to undertake the appropriate technical, operational and regulatory studies of sharing arrangements which achieve an appropriate balance between GSO FSS networks and non-GSO FSS systems in the frequency range 37.5-50.2 GHz;

2 to report the results of these studies to WRC-03.

ADD

RESOLUTION [COM5/7] (WRC-2000)

Further studies on the sharing conditions between GSO networks and non-geostationary-satellite systems in the fixed-satellite service and between non-geostationary-satellite systems in the fixed-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 has adopted, in Article **S22**, epfd limits to be met by non-geostationary-satellite systems in the fixed-satellite service in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30.0 GHz;

b) that Article **S22** includes single-entry validation (Tables **S22-1A** to **S22-1D**, **S22-2** and **S22-3**), single-entry operational (Tables **S22-4A**, **S22-4B** and **S22-4C**) and for certain antenna sizes single-entry additional operational (Table **S22-4A1**) $epfd_{down}$ limits which apply to non-geostationary-satellite systems in the fixed-satellite service for the protection of GSO networks;

c) that compliance of a proposed non-GSO FSS system with the single-entry validation limits will be checked by the Bureau, under **S9.35** and **S11.31**;

d) that compliance of a proposed non-GSO FSS system with the single-entry operational and for certain antenna sizes single-entry additional operational $epfd_{down}$ limits is not subject to verification by the Bureau;

e) that Appendix **S4**, as modified by WRC-2000, requires an administration responsible for a non-GSO FSS system to commit to meeting the single-entry additional operational $epfd_{down}$ limits;

f) that administrations with assignments to geostationary networks that have been brought into use in the fixed-satellite service and/or in the broadcasting-satellite service, as well as administrations with assignments to non-geostationary systems that have been brought into use in the fixed-satellite service, in frequency bands where operational $epfd_{down}$ limits have been established, require reliable means of ascertaining that non-geostationary systems in the fixed-satellite service with overlapping frequency assignments that have been brought into use are in compliance with the single-entry operational limits referred to in *considering b)*;

g) that administrations with assignments to non-geostationary systems in the FSS in frequency bands where additional operation epfd limits have been established require reliable means of ascertaining whether their non-geostationary systems in the FSS would be in compliance with the single-entry additional operational limits referred to in *considering b)*;

h) that administrations with assignments to geostationary networks in the FSS that have been brought into use in bands where additional operational epfd limits have been established require reliable means of ascertaining whether a particular non-geostationary system in the FSS is in compliance with the single-entry additional operational limits referred to in *considering b)*,

recognizing

a) that assignments to geostationary-satellite networks in the fixed-satellite service and/or in the broadcasting-satellite service are already brought into use or will be brought into use in the frequency bands where operational $epfd_{down}$ limits and additional operational $epfd_{down}$ limits apply, and that assignments to non-geostationary systems in the fixed-satellite service subject to the limits have been submitted to the Bureau in the same bands;

b) that ITU-R has developed a recommendation containing the functional specifications for the software to be used by BR to verify the compliance of proposed non-GSO FSS systems with the single-entry validation limits included in Tables **S22-1A**, **S22-1B**, **S22-1C**, **S22-1D**, **S22-2** and **S22-3**;

c) that ITU-R has indicated that administrations will be able to check compliance of a proposed non-GSO FSS system with the single-entry operational limits by measurements at GSO earth stations and has confirmed the feasibility of such measurements;

d) that ITU-R has indicated it is not practicable for administrations to verify compliance with the single-entry additional operational $epfd_{down}$ limits by measurements at GSO earth stations;

e) that, in the light of *recognizing d)*, ITU-R is revising an existing recommendation to enable accurate predictions of the levels produced by a proposed non-GSO FSS system;

f) that ITU-R has initiated studies on the sharing criteria to be applied during the coordination between non-geostationary-satellite systems in the fixed-satellite service with a view to promoting efficient use of spectrum/orbit resources and equitable access to these resources by all countries,

recognizing further

that, taking into account Nos. **S22.5H** and **S22.5I**, it is important to discourage violations of the operational $epfd_{down}$ limits and additional operational $epfd_{down}$ limits by a non-geostationary fixed-satellite service system, but that if a violation nevertheless occurs, it should be corrected in the most expeditious manner,

resolves to invite ITU-R

1 to develop, with the aim of completion by WRC-02/03, methodologies to assess the interference levels (through measurement for operational limits or simulation for additional operational limits) that would be produced by a non-geostationary system in the fixed-satellite service in the frequency bands specified in Tables **S22-4A** through **S22-4C**, that may be used by administrations to verify compliance of an individual non-geostationary system in the fixed-satellite service with the operational limits and additional operational limits contained in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**;

2 to develop, with the aim of completion by 2003, an appropriate recommendation or recommendations describing suitable formats for administrations operating or planning to operate non-geostationary-satellite systems in the fixed-satellite service to make available all necessary information to be used by administrations when checking compliance with the operational limits and/or the additional operational limits;

3 to develop a methodology for the generation of continuous curves of $epfd_{down}$ versus percentage time for a range of antenna diameters of the GSO FSS earth station to be protected, in order for designers of GSO FSS satellite networks to determine the expected single-entry validation and additional operational interference levels in the case of antennas of sizes other than those given in Tables **S22-1A** through **S22-1D** and **S22-4A1**;

4 to develop a methodology for the generation of values of $epfd_{up}$ for different antenna beamwidths of the GSO FSS space station to be protected, in order for designers of GSO FSS satellite networks to determine the expected single-entry interference level in the case of antenna beamwidths other than those given in Table **S22-2**;

5 to conduct, with the aim of completion by WRC-02/03, the studies relating to the sharing criteria to be applied during the coordination between non-geostationary-satellite systems in the fixed-satellite service with a view to promoting efficient use of spectrum/orbit resources and equitable access to these resources by all countries,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

ADD

RESOLUTION [COM 5/9] (WRC-2000)

Transitional measures for coordination between certain specific GSO FSS receive earth stations and non-GSO FSS transmit space stations in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz where $epfd_{down}$ limits apply

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 adopted, in Article **S22**, provisional equivalent power flux-density (epfd) limits to be met by non-geostationary-satellite orbit (non-GSO) systems in the fixed-satellite service (FSS) in order to protect geostationary-satellite orbit (GSO) FSS and GSO broadcasting-satellite service (BSS) networks in parts of the frequency range 10.7-30 GHz;

b) that WRC-2000 revised these limits to ensure that they provide adequate protection to GSO systems without causing undue constraints to any of the systems and services sharing these frequency bands;

c) that additional protection above that provided by the revised $epfd_{down}$ limits in *considering b)* is required for certain GSO FSS networks with specific receive earth stations having all of the following characteristics:

i) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency bands 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz;

ii) G/T of 44 dB/K or higher; and

iii) emission bandwidth of 250 MHz or higher for the frequency bands below 12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz;

d) that, as a consequence, WRC-2000 adopted an alternative regulatory procedure to protect the earth stations referred to in *considering c)*;

e) that this regulatory procedure, specified in Nos. **S9.7A** and **S9.7B** as well as associated provisions specified in Articles **S9** (Nos. **S9.7A**, **S9.7B**, **S9.7.A.1** and **S9.7.B.1**, and **S9.7.A.2** and **S9.7.B.2**), **S11** (Nos. **S11.32A** and **S11.32A.1**), and **S22** and Appendices **S4** and **S5**, defines the conditions for effecting coordination between a specific earth station, referred to in *considering c)* in respect of a non-GSO FSS system and between a non-GSO FSS system in respect of a specific earth station referred to in *considering c)*;

f) that there was no requirement to provide the specific locations of earth stations referred to in *considering c)* prior to WRC-2000, except in respect of terrestrial stations or earth stations operating in the opposite direction of transmission under Nos. **S9.17** and **S9.17A**;

g) that the coordination of an earth station referred to in *considering c)* shall remain within the authority of the administration having this station located on its territory;

h) that complete coordination information for GSO FSS networks with typical earth station antennas having all the characteristics of *considering c)* were received by the Bureau before WRC-2000;

i) that complete notification or coordination information, as appropriate, for non-GSO FSS systems have been received by the Bureau prior to WRC-2000 and, in some cases, prior to WRC-97,

recognizing

that transitional measures are needed for the regulatory procedures referred to in *considering e)*,

resolves

1 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination and associated provisions referred to in *considering e)* shall be applied as from 3 June 2000;

2 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination under No. **S9.7A** shall be applied to specific earth stations for which complete coordination or notification information, as appropriate, is considered as having been received by the Bureau prior to 3 June 2000;

3 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination under No. **S9.7B** shall be applied to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau after 21 November 1997;

4 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination under No. **S9.7B** does not apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau before 22 November 1997 but **S22.2** applies in respect of any specific earth stations for which complete coordination information is considered as being received before 22 November 1997 if coordination under **S9.7A** has not been concluded;

5 that coordination information relating to a specific earth station received by the Bureau prior to 30 June 2000 shall be considered as complete No. **S9.7A** or No. **S9.7B** information from the date of receipt of complete coordination information of the associated GSO FSS satellite network under No. **S9.7** provided that:

5.1 the specific earth station maximum isotropic gain, lowest total receiving system noise temperature, and the necessary bandwidth are the same as those of any typical earth station included in the GSO FSS network that has previously entered coordination;

5.2 the coordination information, or notification information, as appropriate, of the GSO FSS network containing the typical earth station referred to in *resolves* 5.1 was received by the Bureau prior to 8 May 2000;

6 that, in cases other than those covered in *resolves* 5, the date of receipt by the Bureau of the complete coordination information under Nos. **S9.7A** or **S9.7B** or the complete coordination or notification information, as appropriate, of the associated GSO network, whichever is later, shall be used;

7 that the administration having the specific earth station on its territory shall submit the coordination information contained in Annex 1 to this Resolution,

requests the Director of the Radiocommunication Bureau

to identify the appropriate forms of notice and instructions to assist administrations in providing the information in Annex 1 of this Resolution immediately after WRC-2000, taking into account the deadline established by *resolves 5*,

instructs the Radiocommunication Bureau

as of the end of WRC-2000, to review and, if appropriate, identify in accordance with No. **S9.27**, any administration with which coordination may need to be effected in accordance with Nos. **S9.7A** or **S9.7B** in cases covered by *resolves* 2 and 3.

ANNEX 1 (TO RESOLUTION [COM 5/9] (WRC-2000))

Appendix S4 characteristics to be provided for specific receive GSO FSS earth stations

A.1.e.1	Type of earth station (i.e. specific)
A.1.e.2	Earth station name
A.1.e.3	Country and geographical coordinates of the antenna site
A.2.a	Date of bringing into use
A.3	Operating administration or agency
A.4.c	Identity of associated space station (i.e. name and nominal orbital longitude)
A.13	As appropriate, reference to the special section of the Bureau's weekly circular
B.1	Associated satellite transmitting beam designation
B.5.a	Maximum isotropic gain
B.5.c	Earth station antenna reference radiation pattern
C.2.a	Assigned frequency
C.3.a	Assigned frequency band
C.4	Class of station and nature of service
C.5.b	Lowest total receiving system noise temperature
C.7.a	Class of emission and the necessary bandwidth

SUP

RESOLUTION 712 (Rev.WRC-95)

Consideration by a future competent World Radiocommunication Conference of issues dealing with allocations to space services

MOD

RESOLUTION 723 (Rev.WRC-~~97~~2000)

Consideration by a future competent world radiocommunication conference of issues dealing with allocations to science services

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that WRC-~~97~~2000 recognized the importance of proper consideration of science service issues based on technical and operational criteria developed in Radiocommunication Study Groups;

b) that circumstances did not enable the completion of all necessary studies relating to a number of proposals concerning science services;

c) that a deficiency in telecommand (uplink) frequency allocations exists, compared to available telemetry (downlink) allocations in the 100 MHz to 1 GHz range;

d) ~~that additional frequency bands above 71 GHz are needed to satisfy user requirements for passive sensing of the Earth's environmental conditions~~that certain existing allocations may provide the means to satisfy requirements for space research applications without the need for additional frequency allocations, subject to the determination of appropriate allocation status and/or sharing conditions,

resolves

that, on the basis of proposals from administrations and taking into account the results of studies in Radiocommunication Study Groups and the ~~1999~~ Conference Preparatory Meeting for WRC-03, ~~WRC-99~~ the 2003 World Radiocommunication Conference should consider the following matters:

1) provision of up to 3 MHz of frequency spectrum for the implementation of telecommand links in the space research and space operations services in the frequency range 100 MHz to 1 GHz;

2) ~~allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and space research (passive) services and the radio astronomy service~~to consider incorporating the existing primary allocation to the space research service in the band 7 145-7 235 MHz, pursuant to No. **S5.460**, into the Table of Frequency Allocations;~~,~~

3) to review the allocations to the space research service (deep space) (space-to-Earth) and the inter-satellite service taking into account the coexistence of these two services in the frequency range 32-32.3 GHz with a view to facilitating satisfactory operation of these services;

4) to review existing allocations to space science services near 15 GHz and 26 GHz with a view to accommodating wideband space-to-Earth space research applications,

invites ~~Radiocommunication Study Groups~~ITU-R

to complete the necessary studies, as a matter of urgency, taking into account the present use of allocated bands, with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of the Conference,

instructs the Secretary-General

to bring this Resolution to the attention of the international and regional organizations concerned.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 409-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Chairperson, Committee 5

MSS ALLOCATION IN THE BAND 1 559-1 567 MHz

(WRC-2000 AGENDA ITEM 1.9)

Concerning the feasibility of allocation in the space-to-Earth direction to the mobile-satellite service in a portion of the 1 559-1 567 MHz frequency range, under WRC-2000, agenda item 1.9, Committee 5 considered proposals submitted by administrations and the results of ITU-R studies in the CPM Report and does not propose a change to the Radio Regulations in the above-mentioned frequency band.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 410-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Chairperson, Working Group 4A

THIRD REPORT FROM WORKING GROUP 4A TO COMMITTEE 4

In considering the proposed modification to S5.393 treated under agenda item PP Resolution 86, discussions were under way between the administrations concerned but it required more time to reach agreement. Therefore, WG 4A decided to send the modification with square brackets to Committee 4.

WG 4A agreed to a new footnote No. S11.44.1 with respect to the deadline for notification treated under agenda item PP Resolution 86 provided that this footnote will not encourage administrations to bring their assignments into use without coordination and not to provide any advantage on assignments under coordination. This was confirmed in the meeting by the Radio Regulations Board (RRB). Saudi Arabia requested that the above RRB confirmation be repeated in Committee 4 and noted in its minutes. Committee 4 is asked, if this proposal is adopted, to propose to instruct the RRB to take into account decision by WRC-2000 and amend its rules of procedure accordingly. In addition, the application of this provision is understood to come into effect when the Final Acts come into force, possibly around January 2002, giving a grace period to these assignments.

As for the proposed modifications to S9.17 treated under agenda item 1.3, it was agreed to lower the frequency to which this provision applies. However, other proposed modifications are put in square brackets pending advice from GT-PLEN 1.

On agenda item PP Resolution 84, the meeting discussed the proposals contained in Document 29(Rev.1), proposing modification to Article S13 (Instructions to the Bureau). However, the following delegations, Algeria, Morocco, Lebanon and Syria, declared their preference to keep the old text of this Article without any change and reserve their right to raise this issue at the Committee 4 level. On the issue of RRB minutes, there was a consensus to have these minutes as early as possible including clear justification for RRB decision. To meet such a request it was agreed that it is necessary for the ITU secretariat to provide additional support and effort in order to permit the approved Board minutes to be made available to administrations at least one month prior to the start of the subsequent meeting.

As for Resolution 49 (WRC-97) treated under agenda item PP Resolution 85, WG 4A concluded that the intention of WRC-97 was that *resolves* 3 shall apply to all satellite systems or networks within the scope of § 1, 2 or 3 of Annex 1 to the Resolution, i.e. also for systems already brought into use and where the date of bringing into use has been confirmed to the Radiocommunication Bureau. The group concluded that there was no need to revise the Resolution to clarify the issue,

but that the conclusion should be reflected in the minutes of this Conference. [The report to the Plenipotentiary Conference on this issue in the form of a Resolution is attached as a separate document.]

As for agenda item PP Resolution 87, after extensive debate, it was agreed to leave the current Radio Regulations unchanged and to accommodate the concerns of some administrations in the minutes of the Conference. Thus, the following text is proposed for the minutes of Committee 4 to be brought to the attention of the Plenary.

"In response to proposals to this WRC on Resolution 87, Committee 4 decided not to propose any modification to the Radio Regulations but concluded that the minutes of this Conference should clearly indicate that an administration, when notifying a satellite network on behalf of a named group of administrations, shall act on behalf of all members of the group of administrations in the application of the various procedures of Chapters SIII and SIV of the Radio Regulations, in particular provisions S9.1.1, S9.6.1 and S11.15.1.

In this context there is no intention to suggest that the notifying administration would be obliged to maintain any regulatory overview in the day-to-day activities of the multinational satellite organization."

N. KISRAWI
Chairperson, Working Group 4A
Box 50

MOD

S5.393 *Additional allocation:* in the United States, 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)** with the exception of *resolves* 3.

MOD

S9.17 [*f*)[13] for any specific earth station ~~or,~~ typical mobile earth station or typical earth station in the broadcasting-satellite service with parameters shown in Appendix **S7**, in frequency bands above ~~1 GHz~~100 MHz 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** [and Article 4 of Appendix **S30A** and the coordination of earth stations in the broadcasting-satellite service which are subject to the Appendix **S30** Plans];]

ADD

S9.53A Upon expiry of the deadline for comments to a coordination request under Nos. **S9.11** to **S9.14** and **S9.21**, the Bureau shall, according to its record, publish a Special Section, indicating the list of administrations having submitted their disagreement or other comments within the regulatory deadline.

MOD

S11.44 The notified date[16] 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 three months before the expiry of this period.

ADD

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[16] **S11.44.1** In the case of space station frequency assignments that are brought into use prior to the completion of the coordination process, and for which the Resolution **49 (WRC-97)** data has been submitted to the Bureau, the assignment shall continue to be taken into consideration for a maximum period of seven years from the date of receipt of the relevant information under No. **S9.1**. If the first notice for recording of the concerned assignments under **S11.15** has not been received by the Bureau by the end of this seven-year period, the relevant assignment shall no longer be taken into account by the Bureau and administrations. The Bureau shall inform concerned administrations of its pending actions three months in advance.

In the case of satellite networks for which relevant information under No. **S9.1** has been received prior to 22 November 1997; the corresponding period will be nine years from the date of publication of this information.

Section III – Maintenance of the Rules of Procedure by the Bureau

(MOD)

S13.13 The Rules of Procedure shall include, inter alia, calculation methods and other data required for the application of these Regulations. These shall be based upon the decisions of world radiocommunication conferences and the Recommendations of the Radiocommunication Sector. Where requirements arise for new data for which there are no such decisions or Recommendations the Bureau shall develop such data in accordance with No. ~~**S13.14**~~**S13.15**, and shall revise them when appropriate decisions or Recommendations are available.

MOD

S13.14 ~~The Bureau shall submit to the Board the final drafts of all proposed changes to the Rules of Procedure. The Rules of Procedure approved by the Board shall be published and shall be open for comment by administrations. In case of continuing disagreement, the matter shall be submitted by the Director in his report, with the agreement of the concerned administration, to the next world radiocommunication conference. The Director of the Bureau shall also inform the appropriate study groups of this matter. Pending resolution of the matter, the Board and the Bureau shall continue to use the particular Rule of Procedure in dispute but, following resolution of the matter by a decision of a world radiocommunication conference, the Board shall promptly review and revise as necessary the Rules of Procedure and the Bureau shall review all relevant findings.~~Any administration may request a review or a study of the Rules of Procedure or may submit proposals for either changes to the existing Rules of Procedure or for new Rules of Procedure. Any such proposals for changes to existing Rules or new Rules shall be submitted to the Bureau as soon as possible so that the Bureau may make these proposals available to other administrations for comment before submitting the proposal to the Board.

ADD

S13.14A The Board may also request the Bureau to undertake studies with respect to the Rules of Procedure and such reviews shall be treated in accordance with **S13.15**.

MOD

S13.15 ~~If an administration, or the Board or the Bureau identifies a need for a special study, in relation to the Rules of Procedure, of any provisions of these Regulations or of a regional agreement with an associated frequency allotment or assignment plan, the case shall be handled under No. **S13.14**.~~ The Bureau shall, where appropriate, prepare draft modifications, additions or deletions to the Rules of Procedure which shall be made available for comment by administrations before being submitted to the Board. The Director of the Bureau shall submit to the Board the final drafts of all proposed changes to the Rules of Procedure. The same shall apply if as a consequence of the review of a finding or other action by the Board it is necessary to re-examine the Rules of Procedure.

NOC

S13.16 The Rules of Procedure shall be maintained and published in a form that will facilitate easy modification and maximize their value to administrations and other users.

ADD

S13.16A The Rules of Procedure approved by the Board shall be published and shall be open for comment by administrations. In case of continuing disagreement, the matter shall be submitted by the Director in his report, with the agreement of the concerned administration, to the next world radiocommunication conference. Pending resolution of the matter, the Board and the Bureau shall

continue to use the particular Rule of Procedure in dispute but, following resolution of the matter by a decision of a world radiocommunication conference, the Board shall promptly review and revise as necessary the Rules of Procedure and the Bureau shall review all relevant findings.

ADD

S13.16B The Director of the Bureau shall also, where appropriate, request ITU-R study groups to study relevant technical matters.

Section IV – Board documents

MOD

S13.17 ~~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 referred to 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.

MOD

S13.18 Within one week after a meeting of the Board, a summary of all decisions taken in that meeting~~,~~ shall be made available in electronic form. ~~as well as the~~ After each Board meeting the approved minutes of ~~the preceding~~ that meeting, shall normally be ~~published. These shall be~~ circulated at least one month before the start of the following meeting to administrations by means of a circular-letter ~~from the Bureau~~ and ~~then~~ these approved minutes shall also be made available in electronic form.

MOD

S13.19 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 shall be available in electronic form as soon as possible.

APPENDIX S4

ANNEX 2A

A.7 Earth station site characteristics

For a specific earth station:

a) The horizon elevation angle in degrees and, in the case of a station submitted in accordance with Appendix **S30A**, the antenna gain in the direction of the horizon for each azimuth around the earth station.

ADD

b) The distance in kilometres from the earth station to the horizon for each azimuth around the earth station.

SUP

b)

SUP

c)

ADD

c) That is operating to an associated geostationary space station and having due regard to possible inclined-orbit operation of the associated space station:

i) the planned minimum angle of elevation of the antenna in the direction of maximum radiation in degrees from the horizontal plane;

ii) the planned range of operating azimuthal angles for the direction of maximum radiation in degrees, clockwise from True North.

ADD

d) That is operating to associated non-geostationary space stations, the minimum angle of elevation of the antenna in the direction of maximum radiation in degrees from the horizontal plane for each azimuth around the earth station.

(MOD)

~~*d*~~*e)* The altitude (metres) of the antenna above mean sea level.

APPENDIX S4

ANNEX 2B

Table of characteristics to be submitted for space and radio astronomy services

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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	
A.6				X	X	X	X	X	X	A.6	
A.7.a						X		X		A.7.a	
A.7.b						~~X~~O		~~X~~		A.7.b	
A.7.c i)						X		X		A.7.c i)	
A.7.c ii)						X				A.7.c ii)	
A.7.d						X		~~X~~		A.7.d	
A.7.e						X		X		A.7.e	
A.8							X			A.8	

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

MOD

5 Threshold values to determine whether coordination under No. **S9.11A** is required are given in Table AS5-2.

TABLE S5-1

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

MOD

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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, with the exception of coordination between earth stations operating in the opposite direction of transmission	~~See Table S5-2~~Frequency bands for which a footnote refers to No. **S9.11A**	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
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, with the exception of coordination between earth stations operating in the opposite direction of transmission	~~See Table S5-2~~Frequency bands for which a footnote refers to No. **S9.11A**	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.13** GSO/non-GSO	A station in a satellite network using the GSO in the frequency bands for which a footnote refers to No. **S9.11A** in respect of any other satellite network using a non-GSO, with the exception of coordination between earth stations operating in the opposite direction of transmission	~~See Table S5-2~~Frequency bands for which a footnote refers to No. **S9.11A**	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
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~~Frequency bands for which a footnote refers to No. **S9.11A**	See § 1 of Annex 1 of this Appendix	See § 1 of Annex 1 of this Appendix	
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~~Frequency bands for which a footnote refers to No. **S9.11A**	The coordination area of the earth station covers the territory of another administration	~~See § 2 of Annex 1 of this Appendix~~Appendix **S7**	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.16** Terrestrial/ non-GSO	A transmitting station in a terrestrial service within the coordination area of an earth station in a non-GSO network in frequency bands for which a footnote refers to No. **S9.11A**	~~See Table S5-2~~Frequency bands for which a footnote refers to No. **S9.11A**	Transmitting terrestrial station is situated within the coordination area of a receiving earth station	~~See § 2 of Annex 1 of this Appendix~~	The coordination area of the affected earth station has already been determined using the calculation method of ~~No. **S9.15**~~Appendix **S7**
No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above ~~1 GHz~~100 MHz 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 in 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 MHz, 2 483.5-2 500 MHz 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~~

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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 WRC-99 on the revision of these two Appendices
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 § 2 of Annex 1 of this Appendix~~ ~~ii) See Recommendations ITU-R IS.847, ITU-R IS.848 and ITU-R IS.849~~ Appendix **S7**	

MOD

TABLE S5-~~1A~~2

MOD

Applicability of No. S9.11A for space services

NOTE - Annex 1 contains the relevant coordination thresholds for sharing between the mobile-satellite service (MSS) (space-to-Earth) and terrestrial services ~~as well as the relevant coordination areas for mobile earth stations operating below 3 GHz~~. It also contains the relevant coordination thresholds for sharing between non-GSO MSS feeder links (space-to-Earth) and terrestrial services ~~as well as the relevant coordination areas for earth stations providing feeder links for non-GSO satellites operating in the MSS and for non-GSO FSS earth stations~~.

ANNEX 1

MOD

TABLE AS5-2

SUP

2 Hard limits

SUP

3 Coordination areas for mobile earth stations operating below 3 GHz and earth stations providing feeder links for non-GSO satellites operating in the MSS and for non-GSO FSS earth stations

3.2 General considerations

SUP

TABLE 1

Earth stations operating at frequencies below 1 GHz

SUP

TABLE 2

Earth stations operating at frequencies in the 1-3 GHz range

SUP

TABLE 3

Non-GSO MSS feeder-link earth stations

SUP

TABLE 4

Non-GSO FSS earth stations

APPENDIX S30B

ARTICLE 8

MOD

8.3 Such an assignment shall not be subject to the procedures for advance publication and coordination contained in Sections I and II of Article **S9** of the Radio Regulations[4]. Consequently, the provisions of Article **S11** of the Radio Regulations shall continue to be applicable except with respect to the coordination requirement vis-à-vis space radiocommunication stations of other administrations, under ~~regard to~~ No. **S11.32** and related provisions.

[4] For existing systems in Part B of the Plan, see Section IB of Article 6.

RESOLUTION 49 (~~WRC-97~~Rev.WRC-2000)

Administrative due diligence applicable to some satellite radiocommunication services

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

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 ~~this Conference~~WRC-97;

b) that the Director of the Radiocommunication Bureau provided a comprehensive report to ~~this Conference~~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 to WRC-97 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~~WRC-97, 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 and other satellite orbits, taking into account the needs of developing countries,

considering further

g) that ~~this Conference has~~ WRC-97 decided to reduce the regulatory time-frame for bringing a satellite network into use~~,~~;

h) that this Conference has considered the results of the implementation of the administrative due diligence procedures and prepared a report to 2002 Plenipotentiary Conference in response to Resolution 85 (Minneapolis, 1998),

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 under No. **S9.2B**, or for which the request for modifications of the Plans under Article 4, § 4.1 *b)* of Appendices **S30** and **S30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Plans under Article 4, § 4.1 *a)* of Appendices **S30** and **S30A** 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 **S30B** 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 **S30B**) has been received by the Bureau from 22 November 1997;

2 that for a satellite network or satellite system within the scope of § 1, 2 or 3 of Annex 1 to this Resolution not yet recorded in the Master International Frequency Register (MIFR) by 22 November 1997, for which the advance publication information under No. **1042** of the Radio Regulations 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 notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of No. **1550** of the Radio Regulations 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 § 1, 2 or 3 of Annex 1 to this Resolution recorded in the MIFR by 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 2000, or before the notified date of bringing the satellite network into use (including any extension period), whichever date comes later;

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;~~International Frequency Information Circular (IFIC);

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 **S30/30** and **S30A/30A** or for application of Section III of Article 6 of Appendix **S30B/30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **S30/30** and **S30A/30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **S30B/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~~International Frequency Information Circular (IFIC),

further resolves

that the procedures in this Resolution are in addition to the provisions under Article **S9** or **S11** of the Radio Regulations or Appendices **S30/30**, **S30A/30A** or **S30B/30B**, as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **S30/30**, **S30A/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 WRC-~~99~~02/03 and future competent 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~~2002 Plenipotentiary Conference.

ANNEX 1 TO RESOLUTION 49 (~~WRC-97~~REV.WRC-2000)

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 Nos. **S9.7**, **S9.8**, **S9.9**, **S9.11**, **S9.12** and **S9.13**, Resolution **33 (Rev.WRC-97)**, and Resolution **46 (Rev.WRC-97)** shall be subject to these procedures.

2 Any modifications of the Plans under Article 4, § 4.1 *b)* of Appendices **S30/30** and **S30A/30A** that involve the addition of new frequencies or orbit positions or modifications of the Plans under Article 4, § 4.1 *a)* of Appendices **S30/30** and **S30A/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 **S30B/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 **S30B/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 to be received before the end of the 5-year period established as a limit to bringing into use in No. **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 **S30/30** and **S30A/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 **S30/30**, § 4.3.5, and with Appendix **S30A/30A**, § 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 **S30B/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 so as 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~~ International Frequency Information Circular (IFIC) 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~~ International Frequency Information Circular (IFIC).

With respect to the request for modification of the Plans of Appendices **S30/30** and **S30A/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 **S30B/30B** under § 3 above, the network shall also be deleted from the Appendix **S30B/30B** List, if applicable.

12 Before the Bureau extends the date of bringing into use under No. **S11.44**, 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 No. **S11.41** by that administration.

ANNEX 2 TO RESOLUTION 49 (~~WRC-97~~Rev.WRC-2000)

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 Appendices **S30/30** and **S30A/30A**

e) Reference to the request for coordination (not applicable for Appendices **S30/30** and **S30A/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 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 l~~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 one satellite, the relevant information shall be submitted for each satellite.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 411-E
24 May 2000
Original: French
English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Radiocommunication Bureau

IMPLICATION OF A REVISION OF RESOLUTION 51 (WRC-97)

During the discussion in Committee 4 on Document 268, the Radiocommunication Bureau was asked to indicate the potential financial impact on the Bureau's budget of the new *resolves* 3 of Resolution 51, as well as the consequences for the current backlog in processing requests for coordination.

The information on financial consequences on the BR's budget is presented in the Annex.

Taking into account that the review of already processed cases (658 satellite networks) will be handled by the Bureau over a period of about 4 years, as and when each of the satellite networks will reach its date of bringing into use, the Bureau considers that the proposed revision to Resolution 51 should not have any adverse impact on the current backlog.

Satellite networks under consideration	Networks	SSD resources involved	Cost
Networks for which the request for extension of date of bringing into use has been received and processed by the Bureau under Resolution 51 (WRC-97) between 22.11.1997 and the Conference	**658**	1 P3, 1 G4 4 hours/network: - 2h (Exchange letters with Adm.) + 2h (publication, updating data base)	CHF 360 000
Networks already cancelled (refer Annex 2 Doc. 32 (Corr.1))	**36**	None (involved administrations confirmed suppression)	
Networks, which may have to be cancelled in application of *resolves* 6 of Resolution 49/Resolution 51 (WRC-97) (date of bringing into use between 1.10.1999 and 1.05.2000) (refer Annex 1 Doc. 32 (Corr.1)) networks	**22**	1 P3, 1 G4 2 hours/network: (Exchange letters with Adm.)	CHF 25 000

The above-mentioned figures represent the total cost of identified human resources. From the budgetary point of view, given that this work is spread over an approximate period of four years, the expenditure would break down as follows:

Budget for 2000/2001

For the 658 networks to be processed: **CHF 180 000** (8 months P3 + 8 months G4)

For the 22 networks to be processed: **CHF 12 500** (1 month P3 + 1 month G4)

Budget for 2002/2003

For the 658 networks to be processed: **CHF 180 000** (8 months P3 + 8 months G4)

For the 22 networks to be processed: **CHF 12 500** (1 month P3 + 1 month G4)

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 412-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2 OF THE PLENARY

Note from Chairperson, Committee 5

At its fourth meeting, Committee 5 approved a revision of Resolution 723 as well as a number of new draft resolutions which relate to items intended to be considered by WRC-03.

These resolutions are listed below along with the relevant input documents to Committee 5. The approved texts which are being forwarded to Committee 6 will be found in Document 408.

In three cases notes are appended to further explain the particular situation of the resolutions concerned.

Resolution	**Document**
[COM5/2]	275
[COM5/3]	274
[COM5/7]	374
[COM5/10]	305 *)
[COM5/12]	357 **)
[COM5/16]	367
MOD 723	336 ***)

Notes:

*) It is understood that the text of this resolution is required by GT PLEN-2 as a priority.

**) Regulatory text associated with this resolution (see document 357) includes dates which have been agreed on the basis of consideration of the relevant issues by WRC-03. If the issues are not to be considered by WRC-03, this regulatory text may need to be reconsidered.

***) This resolution may concern a number of potential agenda items for WRC-03.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 413-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

United Kingdom of Great Britain and Northern Ireland

ADDITIONAL ALLOCATION FOR THE MOBILE-SATELLITE SERVICE IN THE BAND 1 518-1 525 MHz

Document 381, Annex 2, presents a draft Resolution relating to the band 1 518-1 525 MHz. In that draft, the possibility of a new allocation to the MSS (space-to-Earth) is considered. Unfortunately, it was not possible to include in the report from Working Group 5B details of such a proposal.

In order for Committee 5 to take an informed decision, the United Kingdom considers it would be highly beneficial for the Committee to have the details of such a new allocation in writing. The following proposal is therefore presented in summary form. Should Committee 5 agree to adopt this proposal, full texts could be produced quickly, based on documentation available at this Conference.

It should be stressed that the following proposal be based on the original proposal from a number of European countries contained in Document 13, modified to take into account the concerns expressed in Working Group 5B.

Proposal:

1 ADD the band 1 518-1 525 MHz for MSS (s-E) in Regions 1 and 3 in Article S5.

2 Extend Region 2 provisions of S5.348 to Regions 1 and 3 to provide protection of Aeronautical Mobile telemetry.

3 MOD S5.348A to reduce the pfd threshold (from –150 to –156 dBW/m^2) for protection of Japanese MS systems.

4 ADD footnote to give additional protection to FS and MS (as per first sentence of S5.ZZZ in Addendum 1 to Addendum 2 to Document 13).

5 Consequential changes to Appendix S5.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 414-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Chairperson, Working Group 5D

Concerning the examination by the Bureau and the transitional measures for non-GSO FSS systems filed between WRC-97 and WRC-2000, Working Group 5D understood that the following conditions would apply:

~~2)~~ ~~Administrations would be required to supply the additional data necessary for that examination~~3<u>1</u>) By the end of the year 2000 the Bureau<u>, having modified its database and capture software,</u> would issue a circular letter defining the format in which the data should be submitted, along with any other necessary information.

~~4~~<u>2</u>) Administrations would be required to supply the data within 6 (six) months of the date of the circular letter.

~~1~~<u>3</u>) The Bureau would <u>then</u> examine those filings for compliance with the epfd limits as revised by WRC-2000. (For examination of non-GSO FSS systems in the bands covered by Resolution 130 and Resolution 538, the Bureau will use software defined in ITU-R Recommendation BO.1503 approved by RA-2000.)

<u>In order to avoid any later misunderstandings, the Bureau indicated that:</u>

1) <u>It has been clear from the very beginning, that the development of the required software to simulate non-GSO constellations, was beyond the Bureau's expertise and capabilities</u>.

2) <u>Administrations were then urged to provide the necessary software to the Bureau. However, to date, no such software was received from administration</u>s.

3) <u>Lately, two private companies have approached the Bureau, through their administrations, with commercial, specialized simulation software to carry out the analysis defined in Recommendation BO.1503</u>.

4) <u>The Bureau will test and compare these two software packages and will negotiate the best possible commercial arrangements for the purchase and long-term maintenance of the software and its availability to ITU Members</u>.

5) <u>As this is a rather unique situation where commercial software will be used for a regulatory examination, the Bureau wanted to bring this matter to the attention of this Conference.</u>

Working Group 5D suggests that the above understanding should be recorded.

John LEARY
Chairperson, Working Group 5D

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 415-E
24 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 379 **COMMITTEE 5**

Working Group 5B

MODIFICATIONS TO ARTICLE S5 OF THE RADIO REGULATIONS

(AGENDA ITEM 1.15.1)

Working Group 5B-2 is submitting for consideration and approval new allocations to RNSS in the bands 1 164-1 215 MHz (space-to-Earth), 1 260-1 300 MHz (space-to-Earth) and 1 300-1 350 MHz (Earth-to-space), as well as three new resolutions.

EDITORIAL NOTE - In this proposed modification to Article S5, No. S5.329A agreed under agenda item 1.15.2 in the bands 1 215-1 260 MHz and 1 559-1 610 MHz has been extended to the band 1 260-1 300 MHz. The text of ADD S5.329A as contained in the present document is the final text covering the above-mentioned changes.

T. MIZUIKE
Chairperson, Working Group 5B

ARTICLE S5

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
960-1 215	AERONAUTICAL RADIONAVIGATION MOD S5.328 ~~S5.328~~ADD S5.328A	

MOD

S5.328 The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the ~~use~~operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

ADD

S5.328A *Additional allocation:* the band 1 164-1 215 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux-density produced by all the space stations within all radionavigation-satellite systems at the Earth's surface shall not exceed the provisional value of –115 dB(W/m^2) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause harmful interference to nor claim protection from stations of the aeronautical-radionavigation service. The provisions of Resolution **[COM5/19] (WRC-2000)** apply.

RESOLUTION [COM5/19] (WRC-2000)

Use of the frequency band between 1 164-1 215 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that in accordance with the Radio Regulations the band 960-1 215 MHz is allocated on a primary basis to the aeronautical-radionavigation service in all ITU regions;

b) that this Conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 164-1 215 MHz with a provisional limit to the aggregate power flux-density produced by all the space stations within all radionavigation-satellite systems at the Earth's surface of –115 dBW/m^2 in any 1 MHz band for all angles of arrival;

c) that it is likely that no radionavigation-satellite service systems will be fully operational in this band before the next WRC;

d) that only a few radionavigation-satellite service systems are expected to be deployed in this band;

e) that it is unlikely that more than two systems will have overlapping frequencies,

noting

a) that the studies conducted to date by ICAO to ensure protection of current operation of distance measuring equipments (DME) indicate that a provisional power flux-density value for radionavigation-satellite service allocation in this band should be in the range of –115 to –119 dBW/m^2 in any 1 MHz band for the aggregate interference from all space stations within all radionavigation-satellite service systems operating in the same band;

b) that no methodology is available to derive an aggregate power flux-density for all radionavigation-satellite service space stations of one system from the aggregate power flux-density for all systems in No. **S5.328A**,

resolves

1 that the provisional power flux-density limit stated in No. **S5.328A** shall be applied for all radionavigation-satellite service (space-to-Earth) systems as of 2 June 2000;

2 to invite WRC-03 to review the results of the studies in *requests ITU-R* 1 and take appropriate action;

3 that the administrations planning to implement radionavigation-satellite service systems in this band shall consult each other in order to ensure that the provisional aggregate power flux-density limit is not exceeded,

requests ITU-R

1 to conduct, as a matter of urgency and in time for consideration by WRC-03, the appropriate technical, operational and regulatory studies on the overall compatibility between the radionavigation-satellite service and the aeronautical radionavigation service in the band 960-1 215 MHz, including the assessment of the need for an aggregate power flux-density limit, and the revision, if necessary, of the provisional pfd limit included in No. **S5.328A** concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 164-1 215 MHz;

2 to report to CPM before WRC-03 on the conclusions of these studies,

instructs the Radiocommunication Bureau

as of the end of WRC-03, to review and, if necessary, revise any finding previously made on the compliance with the limit of a radionavigation-satellite service (space-to-Earth) system for which notification information has been received before the end of WRC-03. This review shall be based on the values as revised, if necessary, by WRC-03,

requests the Secretary-General

to communicate the contents of this Resolution to the ICAO for such actions as they may consider appropriate and to invite ICAO to actively participate in the study activity identified under *requests ITU-R* 1.

ARTICLE S5

MOD

890-1 350 MHz

1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) MOD S5.329 ADD S5.329A SPACE RESEARCH (active) S5.330 S5.331 MOD S5.332
1 240-1 260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) MOD S5.329 ADD S5.329A SPACE RESEARCH (active) Amateur S5.330 S5.331 MOD S5.332 S5.334 S5.335
1 260-1 300	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) MOD S5.329 ADD S5.329A SPACE RESEARCH (active) Amateur S5.282 S5.330 S5.331 ~~S5.332~~MOD S5.333 S5.334 S5.335

MOD

S5.329 Use of the radionavigation-satellite service in the band 1 215-~~1 260~~1 300 MHz shall be subject to the condition that no harmful interference is caused to and no protection is claimed from the radionavigation service authorized under No. **S5.331**. See also Resolution **[COM5/20] (WRC-2000)**.

ADD

S5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service application, and shall not impose any additional constraints on other systems or services operating in accordance with the Table of Frequency Allocations.

MOD

S5.332 In the band 1 215-~~1 300~~1 260 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.

MOD

S5.333 ~~(SUP - WRC-97)~~In the band 1 260-1 300 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 and other services allocated by footnotes on a primary basis.

RESOLUTION [COM5/20] (WRC-2000)

Use of the frequency band between 1 215-1 300 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this Conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 260-1 300 MHz;

b) that in the band 1 215-1 260 MHz radionavigation-satellite service (space-to-Earth) systems have been successfully operated for a considerable time in a band used by radars;

c) the importance of the radionavigation service authorized in certain countries in accordance with No. **S5.331** and the radiolocation service and the necessity for adequate protection and continued operation of these services throughout the band 1 215-1 300 MHz,

resolves

1 that no additional constraints shall be put on radionavigation-satellite service (space-to-Earth) systems operating in the band 1 215-1 260 MHz;

2 to invite WRC-03 to review the results of the studies in *requests ITU-R* 1 and take appropriate action,

requests ITU-R

1 to conduct, as a matter of urgency and in time for consideration by WRC-03, the appropriate technical, operational and regulatory studies, including the assessment of the need for a power flux-density limit concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 215-1 300 MHz in order to ensure that the RNSS (space-to-Earth) will not cause harmful interference to the radionavigation and the radiolocation services;

2 to report to CPM before WRC-03 on the conclusions of these studies,

requests the Secretary-General

to communicate the contents of this Resolution to the ICAO for such actions as they may consider appropriate and to invite ICAO to actively participate in the study activity identified under *requests ITU-R* 1.

ARTICLE S5

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 300-1 350	AERONAUTICAL RADIONAVIGATION S5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) ~~Radiolocation~~ S5.149 ADD S5.337A	

ADD

S5.337A The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to nor constrain the operation and development of the aeronautical-radionavigation service.

RESOLUTION [COM5/21] (WRC-2000)

Studies on compatibility between stations of the radionavigation-satellite service (RNSS) (Earth to space) and the radiolocation service operating in the frequency band 1300-1350 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 added a primary allocation to the radionavigation-satellite service (Earth-to-space) in the 1 300-1 350 MHz band;

b) that WRC-2000 raised the status of the radiolocation service from secondary to primary in the 1 300-1 350 MHz band;

c) that studies to determine the compatibility between airborne radar systems operating in the radiolocation service and the radionavigation-satellite service have not been carried out;

d) that there is a potential for interference between ground-based beacons of the radionavigation-satellite service and airborne radiolocation systems;

e) that airborne radiolocation systems can be protected with the implementation of adequate separation distances, if necessary;

f) that a maximum of twenty ground-based beacons in the radionavigation satellite service are expected to be deployed globally,

resolves to requests ITU-R

to conduct, as a matter of urgency, the appropriate studies to ensure that stations of the radionavigation-satellite service (Earth-to-space) do not cause harmful interference to the operation of airborne radiolocation systems and to develop, if needed, appropriate recommendations,

urges administrations

to participate actively in these studies by submitting contributions to ITU-R.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 416(Rev.1)-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note by the Secretary-General

TRANSFER OF POWERS

FEDERATED STATES OF MICRONESIA - UNITED STATES OF AMERICA

1 The Government of the Federated States of Micronesia has informed me that it will be represented at the Conference by the delegation of the United States of America to which it has transferred full powers in pursuance of No. 335 of the ITU Convention.

2 The instrument for the transfer of powers has been deposited with the Secretariat of the Credentials Committee.

Y. UTSUMI
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 416-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note by the Secretary-General

TRANSFER OF POWERS

UNITED STATES OF AMERICA, MICRONESIA (FEDERATED STATES OF)

1 The Government of the Federated States of Micronesia has informed me that it will be represented at the Conference by the delegation of the United States of America to which it has transferred full powers in pursuance of No. 335 of the ITU Convention.

2 The instrument for the transfer of powers has been deposited with the Secretariat of the Credentials Committee.

Y. UTSUMI
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 417-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Note from the Chairperson of Committee 4 to the Chairperson of Committee 5

During consideration of paragraph 2.4 of Document 16 in Working Groups 4A and 4B, it was noted that this paragraph deals with pfd limits for certain services in certain bands. Committee 4 is of the opinion that paragraph 2.4 of Document 16 can be treated by Committee 5 more efficiently. Therefore, paragraph 2.4 of Document 16 is forwarded to Committee 5 for further consideration.

H. RAILTON
Chairperson of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 418-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 3

Note from Chairperson, Committee 5

At its fourth meeting, Committee 5 approved a revision of Resolution 207 as well as a number of new draft resolutions which instruct the Radiocommunication Bureau to carry out certain tasks and would therefore be of interest to Committee 3.

These resolutions are listed below along with the relevant input documents to Committee 5. The approved texts which are being forwarded to Committee 6 will be found in Document 408.

Resolution	**Document**
[COM5/2]	275
[COM5/6]	376
[COM5/9]	368
MOD 207	356

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 419-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Chairperson, Working Group 5A

CONCLUSIONS RELATING TO AGENDA ITEM 1.6.1 ON THE USE OF HAPS IN IMT-2000

1 Modifications to Article S5

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE S5.380 ADD S5.BBB S5.149 S5.341 S5.385 S5.386 S5.387 MOD S5.388	
1 930-1 970 FIXED MOBILE ADD S5.BBB MOD S5.388	**1 930-1 970** FIXED MOBILE ADD S5.BBB Mobile-satellite (Earth-to-space) MOD S5.388	**1 930-1 970** FIXED MOBILE ADD S5.BBB MOD S5.388
1 970-1 980	FIXED MOBILE ADD S5.BBB MOD S5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389A S5.389B S5.389F	
2 010-2 025 FIXED MOBILE ADD S5.BBB MOD S5.388	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 010-2 025** FIXED MOBILE ADD S5.BBB MOD S5.388

2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) S5.392	
2 110-2 120	FIXED MOBILE ADD S5.BBB SPACE RESEARCH (deep space) (Earth-to-space) MOD S5.388	
2 120-2 160 FIXED MOBILE ADD S5.BBB MOD S5.388	**2 120-2 160** FIXED MOBILE ADD S5.BBB Mobile-satellite (space-to-Earth) MOD S5.388	**2 120-2 160** FIXED MOBILE ADD S5.BBB MOD S5.388
2 160-2 170 FIXED MOBILE ADD S5.BBB MOD S5.388 S5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 160-2 170** FIXED MOBILE ADD S5.BBB MOD S5.388

ADD

S5.BBB In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz, and in Region 2, the bands 1 885-1 980 and 2 110-2 160 MHz, may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications 2000 (IMT-2000). (See Resolution [COM5/13] (WRC-2000).) These bands are allocated to the fixed, mobile and mobile-satellite services, and the use by IMT-2000 applications using high altitude platform stations as an IMT-2000 base station in these bands is based on the equality of rights between all allocated radio services and does not establish priority of assignments in these bands among stations of the primary services to which they are allocated.

2 New Resolution

ADD

RESOLUTION [COM5/13] (WRC-2000)

Use of high altitude platform stations providing IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2

The World Radiocommunication Conference 2000 (Istanbul, 2000),

considering

a) that the bands 1 885-2 025 MHz and 2 110-2 200 MHz, are identified in No. **MOD S5.388** as intended for use on a worldwide basis for IMT-2000, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000;

b) that a high altitude platform station is defined in No. **S1.66A** as "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";

c) that high altitude platform stations may offer a new means of providing IMT-2000 services with minimal network build out as it is capable of providing service to a large footprint together with a dense coverage;

d) that the use of high altitude platform stations as base stations of terrestrial IMT-2000 is optional for administrations and that such use should not have any priority over other terrestrial IMT-2000 use;

e) that, in accordance with No. **MOD S5.388** and Resolution **212 (Rev.WRC-97)**, administrations may use the bands identified for IMT-2000, including the bands noted herein, for stations of other primary services to which they were allocated;

f) that these bands are allocated to the fixed and mobile services on a co-primary basis;

g) that ITU-R has studied sharing and coordination between high altitude platform stations and other stations within IMT-2000, has considered compatibility of high altitude platform stations within IMT-2000 with some services allocated in the adjacent bands, and has established Recommendation ITU-R M.1456;

h) that ITU-R did not address sharing and coordination between high altitude platform stations and some existing systems, particularly PCS (Personal Communications Service), MMDS (Multichannel Multipoint Distribution Service), and systems in the fixed service, which are currently operating in some administrations in the bands 1 885-2 025 MHz and 2 110-2 200 MHz;

i) that in accordance with No. **S5.BBB**, high altitude platform stations may be used as base stations of terrestrial IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2 the use by high altitude platform stations as an IMT-2000 base station in these bands is based on the equality of rights between all allocated radio services and does not establish priority of assignments in these bands among stations of the primary services to which they are allocated,

recognizing

that the value in *resolves 1* may not be appropriate for the protection of some stations operating in these bands in the fixed and mobile services,

resolves

1 that:

a) for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, a high altitude platform station operating as a base station to provide IMT-2000 shall not exceed a provisional value of co-channel power flux-density (pfd) level –121.5 dB (W/(m^2/MHz)) on the Earth's surface outside an administration's borders unless agreed otherwise by the administration of the affected neighbouring country;

b) a high altitude platform station operating as a base station to provide IMT-2000, in order to protect fixed stations from interference, shall not exceed a provisional value of out-of-band pfd level on the Earth's surface in the bands 2 025-2 110 MHz of:

– –165 dB(W/(m^2/MHz)) for angles of arrival (θ) less than 5° above the horizontal plane;

– –165 + 1.75 (θ – 5) dB (W/(m^2/MHz)) for angles of arrival between 5° and 25° above the horizontal plane; and

– –130 dB(W/(m^2/MHz)) for angles of arrival between 25° and 90° above the horizontal plane,

2 that such a high altitude platform station shall, as of the end of WRC-03, operate only in accordance with such limits as are confirmed or, if appropriate, revised by WRC-03, irrespective of the date of bringing into use;

3 that administrations wishing to implement high altitude platform stations within a terrestrial IMT-2000 system shall conform with the following:

a) that for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, administrations using high altitude platform stations as base stations to IMT-2000 shall use antennas that comply with the following antenna pattern:

$G(\psi) = G_m - 3(\psi/\psi_b)^2$	dBi	for	$0° \le \psi \le \psi_1$
$G(\psi) = G_m + L_N$	dBi	for	$\psi_1 < \psi \le \psi_2$
$G(\psi) = X - 60\log(\psi)$	dBi	for	$\psi_2 < \psi \le \psi_3$
$G(\psi) = L_F$	dBi	for	$\psi_3 < \psi \le 90°$

where:

$G(\psi)$: gain at the angle ψ from the main beam direction (dBi)

G_m: maximum gain in the main lobe (dBi)

ψ_b: one-half of the 3 dB beamwidth in the plane of interest (3 dB below G_m) (degrees)

L_N: near-in-side-lobe-level in dB relative to the peak gain required by the system design, and has a maximum value of –25 dB

L_F: G_m - 73 dBi far side-lobe level (dBi)

$\psi_1 = \psi_b \sqrt{-L_N / 3}$ degrees

$\psi_2 = 3.745\ \psi_b$ degrees

$X = G_m + L_N + 60\log(\psi_2)$ dB

$\psi_3 = 10^{(X - L_F)/60}$ degrees

The 3 dB beamwidth ($2\psi_b$) is again estimated by:

$(\psi_b)^2 = 7442/(10^{0.1Gm})$ (in degrees^2)

where G_m is the peak aperture gain (dBi);

b) that a high altitude platform station operating as a base station to provide IMT-2000, in order to protect mobile earth stations of the satellite component of IMT-2000 from interference, shall not exceed an out-of-band pfd level of –165 dB (W/(m^2/4 kHz)) on the Earth's surface in the bands 2 160-2 200 MHz in Region 2 and 2 170-2 200 MHz in Regions 1 and 3;

4 that administrations wishing to implement high altitude platform stations within a terrestrial IMT-2000 system shall, prior to notification under Article **S11**, take into account in their bilateral coordination with administrations of neighbouring countries, the operation and growth of existing and planned systems in the fixed and the mobile service allocated on a primary basis;

5 that administrations wishing to implement high altitude platform stations within a terrestrial IMT-2000 system shall, pending the review by WRC-02/03 of the studies mentioned below, for the purpose of protecting fixed service stations operating in neighbouring countries from co-channel interference, take full account of the relevant ITU-R Recommendations relating to protection values for fixed stations (see Recommendation ITU-R F.758),

invites ITU-R

to complete, as a matter of urgency, additional studies of high altitude platform stations sharing criteria with, between and into other systems in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 in Region 2, and in adjacent bands, and to report on the results of these studies on time for consideration of WRC-02/03 to allow revision of the values in *resolves* 1.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 420-E
25 May 2000
Original: French

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 4

(REGULATORY AND ASSOCIATED ISSUES)

Tuesday, 23 May 2000, at 0930 hours

Chairperson: Mr H. RAILTON (RRB)

Subjects discussed		**Documents**
1	Organization of work (continued)	243, 246, 258, 343
2	Oral report by the Chairperson of Working Group 4A	-
3	Oral report by the Chairperson of Working Group 4B	-
4	Documents for approval (continued)	201, 277, 294, 298, 326

1 Organization of work (continued) (Documents 243, 246, 258 and 343)

1.1 The **Chairperson** urged the participants to work diligently, pointing out that the intention was to have the working groups complete their work by Thursday, 25 May. Since a number of the documents under discussion referred to footnotes, he proposed that they should be taken up directly by Working Group 4B.

1.2 It was so **agreed**.

1.3 The **Chairperson**, noting that the content of Document 243 had been considered by the various working groups and committees concerned, suggested that Document 246 should be allocated to Working Group 4A, and Documents 258 and 343 to Working Group 4B.

1.4 It was so **agreed**.

2 Oral report by the Chairperson of Working Group 4A

2.1 The **Chairperson of Working Group 4A** explained that the working group had held a total of eight meetings and had examined all the documents allocated to it. The ten subgroups that had been set up had completed their work on the previous day.

2.2 Sub-Working Group 4A-1 had completed its consideration of agenda item 1.3 (method for the determination of the coordination area around an earth station in frequency bands shared among space services and terrestrial radiocommunication services) and all the documents from that subgroup had been examined. A new Appendix S7, together with a new resolution and some amendments to the Radio Regulations, was submitted for approval.

2.3 Working Group 4A had taken up the working methods of RRB, in conformity with Resolution 84 (Minneapolis, 1998). Sub-Working Group 4A-2, whose task it was, had proposed amendments to Article S13, although the relevant document had yet to be approved by Working Group 4A.

2.4 After a lengthy debate on the administrative due diligence procedure under Resolution 85 (Minneapolis, 1998), Sub-Working Group 4A-3 had been established. It had proposed a revision of Resolution 49 (WRC-97), consisting in some minor editorial changes, and had prepared a resolution to which a number of amendments of substance were still pending.

2.5 Sub-Working Group 4A-4 had examined the coordination procedures for the non-GSO sound broadcasting-satellite service two documents on that subject having been prepared.

2.6 Sub-Working Group 4A-5, which had dealt with the simplification of the Radio Regulations in conformity with Resolution 86 (Minneapolis, 1998), had finished its work, which would be submitted at a later stage to Working Group 4A.

2.7 Sub-Working Groups 4A-6, 4A-7, 4A-8 and 4A-9 had examined the possible measures to be taken under Resolutions 86, 87 and 88 (Minneapolis, 1998) and Resolution 80 (WRC-97), respectively. They had all completed their work and would shortly submit their reports to Working Group 4A.

2.8 Lastly, the revision of Resolution 72 (WRC-97), proposed by Sub-Working Group 4A-10, had been approved at the final meeting of Working Group 4A, with some amendments.

2.9 The **Chairperson** thanked the Chairperson of Working Group 4A for the work that had been done.

3 Oral report by the Chairperson of Working Group 4B

3.1 The **Chairperson of Working Group 4B** said that the working group had held three meetings since the previous meeting of Committee 4. It had made considerable progress, but a great deal still remained to be done.

3.2 Under agenda item 1.1 concerning the deletion of country names from footnotes, the working group had received instructions from the Plenary enabling it to continue its work.

3.3 With regard to agenda item 1.8, Sub-Working Group 4B-2 had drawn up a compromise resolution contained in Document DT/82, which should be submitted shortly.

3.4 The working group had almost finished its work under agenda item 2 on incorporation by reference: revisions of Resolutions 27 (Rev.WRC-97) and 28 (WRC-95), whose purpose was to simplify and clarify the procedure, would be submitted to the committee.

3.5 Under agenda item 4, the working group was in the process of examining the relevant documents. Some revisions and deletions in various resolutions and recommendations had been agreed, while in other cases it had been decided to make no change. In addition, several notes would be brought to the attention of the relevant WRC committees.

3.6 Lastly, Working Group 4B had approved some editorial amendments to the Radio Regulations, and the first documents correcting errors in the Regulations had already been drawn up. Document 349, for instance, contained proposals relating to the updating of references (no longer to the Weekly Circular but to IFIC) and to the deletion of the prefix S in front of the provisions of the Radio Regulations.

3.7 The **Chairperson** thanked the working group and its Chairperson for their efforts.

4 Documents for approval (continued) (Documents 201, 277, 294, 298 and 326)

Document 326

4.1 The **Chairperson,** pointing out that Document 326 had involved a great deal of work, requested the participants to submit any drafting suggestions they might have directly to the secretariat.

4.2 The **Chairperson of Working Group 4A** said that Table 4 in Annex VII contained two sections relating to methods of determining the coordination distance, which remained in square brackets pending a final decision by Committee 5.

4.3 The **delegate of the United Kingdom** proposed the deletion of the two sections in square brackets since an alternative method of determining the coordination distance was given in the footnote.

4.4 It was so **agreed**.

4.5 Document 326, as amended, was **approved**.

4.6 The **delegate of Japan**, after recalling that Resolution 60 (WARC-79) and Recommendations 105 (WRC-95) and 711 (WARC-79) related to the determination of the coordination area, asked what measures Working Group 4A intended to take in regard to those texts, which now seemed superfluous in view of the adoption of the new Appendix S7. The **Chairperson of Working Group 4A** replied that the group had proposed the deletion of the resolution and recommendations in question, adding that a resolution from Sub-Working Group 4A-1, cancelling and replacing those texts, would shortly be submitted to the committee.

Document 201

4.7 The **delegate of Algeria** recalled the reservations he had made when Document 201 was drawn up: his country could not agree that a mere list of the recommendations proposed for incorporation by reference should be made available to delegations at a WRC without the texts being published as official conference documents. Realizing the need to make savings on the cost of documentation, he proposed that the principle of distributing the texts as official conference documents should be maintained, and that only the number of copies to be distributed to administrations should be discussed.

4.8 The **delegate of Morocco** said that he was reluctant to amend a text that was the result of complicated negotiations. He recalled that the basic texts of ITU, of which the Radio Regulations formed part, were deposited with the United Nations Secretary-General, and that conference documents were deposited with the ITU Secretary-General. From a legal standpoint it was essential that any recommendation incorporated by reference should appear in the documents of a conference. He therefore supported the proposal by the delegate of Algeria and recommended that no change should be made to the principle of distributing documents.

4.9 The **Chairperson of Working Group 4B** recalled that when Resolution 27 (Rev.WRC-97) had been examined, Working Group 4B had proposed the addition of an Annex 3, stipulating *inter alia* that a copy of the texts would be made available to administrations upon request. She therefore proposed the addition at the end of the second indent of Document 201 of a phrase based on Annex 3 reading: “A copy of these texts will be made available to each administration upon its request”.

4.10 The **delegate of Oman** endorsed the views expressed by the delegates of Morocco and Algeria, as did the **delegate of Saudi Arabia**, who added that procedures differing from those followed by previous conferences should not be established for the future.

4.11 The **delegate of Morocco** proposed that in the text suggested by the Chairperson of Working Group 4B the words “as a conference document” should replace "upon its request”.

4.12 The **delegate of the United States**, noting that the aim was to distribute one copy only to each delegation, asked whether the proposed amendment would involve the general distribution of those texts.

4.13 The **delegate of Morocco** said in reply that the proposed sentence would read: “A copy of these texts will be made available to each delegation as a conference document”.

4.14 The **Chairperson** proposed that for greater clarity the text should read: "A single copy of these texts will be made available to each delegation as a conference document.”

4.15 It was so **agreed**.

4.16 Document 201, as amended, was **approved**.

Document 277

4.17 The **Chairperson of Working Group 4B** pointed out that Document 277 contained proposed revisions to Resolutions 5 (WARC-79), 20 (Mob-87) and 124 (WRC-97).

4.18 Following an observation by the **delegate of Saudi Arabia** concerning the *resolves to invite the Secretary-General* in the draft revision of Resolution 5 (WARC-79), the **delegate of Syria** requested the Editorial Committee to align the headings of the operative parts of the various resolutions.

4.19 It was so **agreed**.

4.20 The draft revision of Resolution 5 (WARC-79) relating to technical cooperation with the developing countries in the study of propagation in tropical areas was **approved**.

4.21 The draft revision of Resolution 20 (Mob-87) concerning technical cooperation with developing countries in the field of aeronautical telecommunications was **approved**.

4.22 The draft revision of Resolution 124 (WRC-97) concerning protection of the fixed service in the frequency band 8 025-8 400 MHz sharing with geostationary-satellite systems of the Earth exploration-satellite service (space-to-Earth) was **approved**.

Document 294

4.23 The **Chairperson of Working Group 4B**, introducing Document 294, said that the purpose of the draft revision of Resolution 27 (Rev.WRC-97) was to align and streamline, notably through the addition of Annex 3, the procedures for incorporation by reference in the Radio Regulations for future conferences. She pointed out that the draft revision of Resolution 127 (WRC-97) had been placed in square brackets pending the decision of Working Group 2 of the Plenary regarding future WRC agendas. In the draft revision of Resolution 728 (WRC-97), the reference in *resolves* 2 to "a future competent conference/WRC-06" was in square brackets pending a decision on the matter.

4.24 With regard to the draft revision of Resolution 27 (Rev.WRC-97), the **delegate of Morocco** pointed out that the wording of the *noting* implied that incorporation by reference of resolutions and recommendations adopted by conferences in the past would be automatic.

4.25 The **delegate of the United States** explained that references to resolutions or recommendations of a previous WRC would be submitted for examination to the conference that was to decide whether or not to incorporate them by reference in the Radio Regulations. The **delegate of Syria** suggested that it should be made clear that such references would be acceptable for consideration.

4.26 In order to remove any ambiguity, the **delegate of Morocco** proposed that the words "without restriction" should be deleted.

4.27 It was so **agreed**.

4.28 The draft revision of Annexes 1 and 2 was **approved**.

4.29 It was **agreed** to delete Annex 3 to Resolution 27 (Rev.WRC-97).

4.30 The **Chairperson** recalled that, in the light of the amendment made to Document 201, the final sentence of the first paragraph of the new Annex 3 to Resolution 27 (Rev.WRC-2000) should read: "A single copy of these texts will be made available to each administration as a conference document". He drew the participants' attention to the square brackets around the final sentence of paragraph 2.

4.31 The **delegate of the United States** explained that, in view of the large number of working groups that would be responsible for updating the list of texts incorporated by reference, it was preferable to have the process monitored by the Editorial Committee at each conference.

4.32 After the **delegate of Syria** had pointed out that the work involved was highly complex and that the texts should be monitored before the documents were submitted to the Editorial Committee, it was **agreed** to delete the sentence in square brackets at the end of the second paragraph.

4.33 The **delegate of Morocco** having pointed out that the third paragraph was superfluous, it was **agreed** to delete that paragraph from the new Annex 3.

4.34 Draft Annex 3, as amended, was **approved**.

4.35 It was **agreed** to delete Annex 4 to Resolution 27 (Rev.WRC-97).

4.36 The **delegate of Syria** said that his delegation was concerned by the number of texts incorporated by reference and consequently by the increasing size of Volume 4 of the Radio Regulations.

4.37 The draft revision of Resolution 27 (Rev.WRC-97) on the use of incorporation by reference in the Radio Regulations, as amended, was **approved**.

4.38 With regard to the draft revision of Resolution 127 (WRC-97), the **delegate of the United States** recalled that the square brackets related solely to the issue of conference agendas and not to the amendments made to the text of the resolution.

4.39 The draft revision of Resolution 127 (WRC-97), on studies relating to consideration of allocations in bands around 1.4 GHz for feeder links of the non-geostationary-satellite systems in the mobile-satellite service with service links operating below 1 GHz, was **approved**.

4.40 The **delegate of Syria** said that the question of the revision of technical resolutions by groups responsible for regulatory issues would be brought up by his delegation at a later stage.

4.41 Referring to the draft revision of Resolution 728 (WRC-97), the **delegate of Spain** drew the participants' attention to the square brackets in *resolves* 2.

4.42 The **delegate of the United States** proposed that the words "a future competent conference/WRC-06" should remain in square brackets pending the decision of Working Group 2 of the Plenary, and that the phrase in square brackets at the end of *resolves* 2 should be deleted.

4.43 It was so **agreed**.

4.44 The draft revision of Resolution 728 (WRC-97) on studies relating to consideration of allocations in the broadcasting band 470-862 MHz to non-geostationary mobile-satellite services, as amended, was **approved**.

Document 298

4.45 The **Chairperson of Working Group 4B** explained that the text contained in Document 298 had been the subject of very lengthy discussions before the group decided to submit it to Committee 4. The former operative part of Resolution 51 (WRC-97) had been transferred to the *considering* for reference purposes, and the only remaining *resolves* paragraph had been amended to refer to the date of publication rather than to the date of receipt of the advance publication information. She drew the participants' attention to the fact that several administrations had expressed concern over that particular change. Other delegations had been concerned by the work already carried out by BR in that field and had stated that a revision of Resolution 51 would have repercussions on both the finances and the volume of work of BR. Still others had pointed out that the draft revision involved the reconsideration of a decision taken by the previous conference. In conclusion, she stressed that the text submitted to the committee had nevertheless enjoyed wide support, adding that any transitional arrangements that the present conference might adopt should appear in a resolution separate from Resolution 51.

4.46 The **representative of the Radiocommunication Bureau** recalled that, following the decisions taken by WRC-97, BR had received 658 requests for extension of the date of bringing satellite networks into use; those requests had been processed and published in special sections. Furthermore, several satellite networks for which the nine-year time limit had expired between 22 November 1997 and the present conference had been cancelled for non-conformity with Resolution 51 (WRC-97). Consequently, the adoption of the draft revision of Resolution 51 would involve reconsideration of such cases by BR and thus a further exchange of information with administrations, which might result in the reinsertion of those networks in the database and a study

of the impact that their reinsertion would have on future requests for coordination. Approval of the draft revision would have two consequences: the first would be financial, since BR would have to repeat the work it had already carried out, while the second would relate to the workload, since BR would have to reprocess all the requests, despite the fact that it was already far behind in that work.

4.47 The **delegate of Spain** pointed out that the text of the Spanish version of *considering d)*, *e)* and *f)* should be in the past tense since it referred to past events, and that the reference to No. 1056A of the Radio Regulations in *considering* e) should be amended to indicate that it was the previous version of the Radio Regulations that was being referred to.

4.48 It was so **agreed**.

4.49 In response to a question by the **delegate of Syria**, the **representative of the Radiocommunication Bureau** said that the operative part of the draft revision of Resolution 51 (WRC-97) did not affect the work of Working Group 1 of the Plenary.

4.50 The **delegate of Luxembourg** asked for an assessment of the impact on BR's workload of approving the revision of Resolution 51.

4.51 The **representative of the Radiocommunication Bureau** explained that the examination of the 658 requests for extension of the date of bringing satellite networks into use had resulted in the granting of a new time-limit of nine years following the date of receipt of the advance publication information. If the committee approved the draft revision of Resolution 51 (WRC-97), BR would not have to revisit systematically, as from 5 June, the dates of bringing such networks into use; it could deal with them as and when, i.e. by requesting confirmation of the date of bringing those networks into use, together with due diligence information. On that occasion, the administrations concerned would be able to ask for a further extension of the date of bringing their networks into use, in accordance with the new operative part of Resolution 51. Satellite networks that had already been cancelled could be divided into two categories: those belonging to the 36 networks referred to in the table in Annex 2 to Corrigendum 1 of Document 32 on due diligence, and those belonging to the 50 or so networks indicated in Annex 1 to that document, whose date of bringing into use fell between 1 October 1999 and 1 May 2000 and for which BR had received confirmation of the date of bringing into use as well as due diligence information. Consultation of the administrations concerned showed that the 36 networks in the first category could be definitively cancelled. Accordingly, BR would not have to undertake a study of the subject. As far as the 50 networks in the second category were concerned, he suggested that before the end of the present conference BR should draw up a list of the networks being processed and then carry out a full study of the effect that the new version of Resolution 51 would have, prior to communicating the results of that study to all administrations by circular letter in June, after consulting the administrations concerned. By proceeding in that way, BR and the administrations could apply the new provisions of Resolution 51 without too many additional constraints.

4.52 The **delegate of France** observed that the Union ran the risk of losing some of its credibility if it were to reconsider a decision taken at the previous conference. He also recalled that No. 488 of the Convention called upon conferences not to take decisions resulting in expenses beyond the credits which the Council was empowered to authorize, and therefore asked BR to report to the Plenary on the financial implications that approval of the resolution would have.

4.53 It was so **agreed**.

4.54 The **delegate of Colombia** pointed out that if the application of the new transitional arrangements relating to the advance publication and coordination of satellite networks was of benefit to the developing countries, concerns over financing and the workload could be regarded as having lesser importance. He would like to hear RRB's views on the proposed procedure.

4.55 The **delegate of Algeria** requested BR to submit a document on the implications of the revision of Resolution 51 and a report on the impact that a new examination of the cancelled networks would have on the current replanning process.

4.56 Those requests were **noted**.

The meeting rose at 1050 hours.

The Secretary:
P. LUNDBORG

The Chairperson:
H. RAILTON

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 421-E
25 May 2000
Original: Russian

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Armenia (Republic of), Azerbaijani Republic, Bulgaria (Republic of), Uzbekistan (Republic of), Kyrgyz Republic

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.9

In accordance with No. **S5.342** of the Radio Regulations, the band 1 429-1 535 MHz is allocated on a primary basis to the aeronautical mobile service (for aeronautical telemetry) in Belarus, the Russian Federation and Ukraine.

In view of the consideration by this conference of proposals for allocation of part of the band in question to the mobile-satellite service, and in order to reflect the actual use of the band by the aeronautical mobile service (for aeronautical telemetry) within the national territories of Armenia, Azerbaijan, Bulgaria, Uzbekistan and Kyrgyzstan, the coverage of footnote No. **S5.342** to the Table of Frequency Allocations should be extended. In this connection, protection of the aeronautical mobile service (aeronautical telemetry) should be in accordance with Recommendation ITU-R M.1459.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 422-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 358, 360, 364, 365 and 388 **COMMITTEE 5**

Chairperson, Working Group 5A

CONCLUSIONS RELATING TO AGENDA ITEM 1.6.1 ON THE TERRESTRIAL AND SATELLITE COMPONENTS OF IMT-2000

MOD

470-890 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
470-790 BROADCASTING S5.149 S5.291A S5.294 S5.296 S5.300 S5.302 S5.304 S5.306 S5.311 S5.312	**470-512** BROADCASTING Fixed Mobile S5.292 S5.293	**470-585** FIXED MOBILE BROADCASTING S5.291 S5.298
	512-608 BROADCASTING S5.297	**585-610** FIXED MOBILE BROADCASTING RADIONAVIGATION S5.149 S5.305 S5.306 S5.307
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	
	614-806 BROADCASTING Fixed Mobile S5.293 S5.309 S5.311	**610-890** FIXED MOBILE<u> ADD S5.XXX</u> BROADCASTING
790-862 FIXED BROADCASTING S5.312 S5.314 S5.315 S5.316 S5.319 S5.321	**806-890** FIXED MOBILE<u> ADD S5.XXX</u> BROADCASTING	
862-890 FIXED MOBILE except aeronautical mobile<u> ADD S5.XXX</u> BROADCASTING S5.322 S5.319 S5.323	S5.317 S5.318	S5.149 S5.305 S5.306 S5.307 S5.311 S5.320

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
890-942 FIXED MOBILE except aeronautical mobile_ ADD S5.XXX BROADCASTING S5.322 Radiolocation S5.323	**890-902** FIXED MOBILE except aeronautical mobile_ ADD S5.XXX Radiolocation S5.318 S5.325 **902-928** FIXED Amateur Mobile except aeronautical mobile Radiolocation S5.150 S5.325 S5.326 **928-942** FIXED MOBILE except aeronautical mobile ADD S5.XXX Radiolocation S5.325	**890-942** FIXED MOBILE_ ADD S5.XXX BROADCASTING Radiolocation S5.327
942-960 FIXED MOBILE except aeronautical mobile_ ADD S5.XXX BROADCASTING S5.322 S5.323	**942-960** FIXED MOBILE_ ADD S5.XXX	**942-960** FIXED MOBILE_ ADD S5.XXX BROADCASTING S5.320

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Earth exploration-satellite Mobile except aeronautical mobile S5.349 S5.341 S5.342 S5.350 S5.351 S5.352A S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Earth exploration-satellite Mobile S5.349 S5.341 S5.351 S5.352A S5.354
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A ADD S5.SSS Earth exploration-satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530-1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A ADD S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	
1 535-1 559	MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.356 S5.357 S5.357A S5.359 S5.362A	

MOD

1 610-1 660 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 610-1 610.6	**1 610-1 610.6**	**1 610-1 610.6**
MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
	RADIODETERMINATION-SATELLITE (Earth-to-space)	Radiodetermination-satellite (Earth-to-space)
S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 610.6-1 613.8	**1 610.6-1 613.8**	**1 610.6-1 613.8**
MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
	RADIODETERMINATION-SATELLITE (Earth-to-space)	Radiodetermination-satellite (Earth-to-space)
S5.149 S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	S5.149 S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	S5.149 S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 613.8-1 626.5	**1 613.8-1 626.5**	**1 613.8-1 626.5**
MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
Mobile-satellite (space-to-Earth)	RADIODETERMINATION-SATELLITE (Earth-to-space)	Mobile-satellite (space-to-Earth)
	Mobile-satellite (space-to-Earth)	Radiodetermination-satellite (Earth-to-space)
S5.341 S5.355 S5.359 S5.363 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	S5.341 S5.364 S5.365 S5.366 S5.367 S5.368 S5.370 S5.372	S5.341 S5.355 S5.359 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.372
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.357A S5.359 S5.362A S5.374 S5.375 S5.376	

MOD

1 660-1 710 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 660-1 660.5	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 S5.362A S5.376A	

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE S5.380 ADD S5.AAA S5.149 S5.341 S5.385 S5.386 S5.387 S5.388 MOD S5.388	
1 930-1 970 FIXED MOBILE MOD S5.388	**1 930-1 970** FIXED MOBILE Mobile-satellite (Earth-to-space) MOD S5.388	**1 930-1 970** FIXED MOBILE MOD S5.388
1 970-1 980	FIXED MOBILE MOD S5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389A S5.389B S5.389F	
2 010-2 025 FIXED MOBILE MOD S5.388	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 010-2 025** FIXED MOBILE MOD S5.388
2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) S5.392	
2 110-2 120	FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) MOD S5.388	
2 120-2 160 FIXED MOBILE MOD S5.388	**2 120-2 160** FIXED MOBILE Mobile-satellite (space-to-Earth) MOD S5.388	**2 120-2 160** FIXED MOBILE MOD S5.388
2 160-2 170 FIXED MOBILE MOD S5.388 S5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 160-2 170** FIXED MOBILE MOD S5.388

MOD

2 170-2 520 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 170-2 200	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) MOD S5.388 S5.389A S5.389F S5.392A	
2 200-2 290	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) S5.392	
2 290-2 300	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
2 300-2 450 FIXED MOBILE Amateur Radiolocation S5.150 S5.282 S5.395	**2 300-2 450** FIXED MOBILE RADIOLOCATION Amateur S5.150 S5.282 S5.393 S5.394 S5.396	
2 450-2 483.5 FIXED MOBILE Radiolocation S5.150 S5.397	**2 450-2 483.5** FIXED MOBILE RADIOLOCATION S5.150 S5.394	
2 483.5-2 500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Radiolocation S5.150 S5.371 S5.397 S5.398 S5.399 S5.400 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) S5.398 S5.150 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS RADIOLOCATION Radiodetermination-satellite (space-to-Earth) S5.398 S5.150 S5.400 S5.402
2 500-2 520 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) S5.403 ADD S5.SSS 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 ADD S5.SSS S5.404 S5.407 S5.414 S5.415A	

MOD

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 520-2 655 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403 S5.405 S5.408 S5.412 S5.417 S5.418	**2 520-2 655** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403	**2 520-2 535** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.403 S5.415A **2 535-2 655** FIXED S5.409 S5.411 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.418
2 655-2 670 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.412 S5.417 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420
2 670-2 690 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile ADD S5.AAA MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 ADD S5.AAA MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 ADD S5.AAA MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.419 S5.420 S5.420A

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) in accordance with Resolutions **212 (Rev.WRC-97)** and **[COM5/24](WRC-2000)**. ~~Such use~~This identification does not preclude the use of these bands by other services to which they are allocated. ~~The bands should be made available for IMT-2000 in accordance with Resolution **212 (Rev.WRC-97)**~~.

ADD

S5.XXX Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution **[COM5/25] (WRC-2000)**). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.AAA The bands, or portions of the bands, 1 710-1 885 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution **[COM5/24] (WRC-2000)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.SSS For the use of the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz and 2 483.5-2 500 MHz, 2 500-2 520 MHz, 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-97)** and **[COM5/26] (WRC-2000)**.

ADD

RESOLUTION [COM5/24] (WRC-2000)

Additional frequency bands identified for IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that IMT-2000 is the ITU vision of global mobile access and is scheduled to start service around the year 2000 subject to market and other considerations;

b) that IMT-2000 is an advanced mobile communication applications concept intended to provide telecommunication services on a worldwide scale regardless of location, network or terminal used;

c) that IMT-2000 will provide access to a wide range of telecommunication services supported by the fixed telecommunication networks (e.g. PSTN/ISDN), and to other services which are specific to mobile users;

d) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations including Recommendation ITU-R M.1457 which contains the detailed specifications of the radio interfaces of IMT-2000;

e) that the evolution of IMT-2000 is being studied within ITU-R;

f) that the review of IMT-2000 spectrum requirements at WRC-2000 concentrated on the bands below 3 GHz;

g) that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000 in No. MOD **S5.388** and under the provisions of Resolution **212 (Rev.WRC-97)**;

h) that since WARC-92 there has been a tremendous growth in mobile communications including an increasing demand for wideband multimedia capability;

i) that ITU-R studies forecasted that spectrum in the order of 160 MHz, in addition to that identified already for IMT-2000 in No. MOD **S5.388** and in addition to the spectrum used for the first- and second-generation mobile systems in all three ITU Regions, will be needed to meet the projected requirements of IMT-2000 in those areas where the traffic is the highest by 2010;

j) that WRC-2000 has identified additional frequency bands in No. **S5.AAA** for IMT-2000 in order to meet the ITU-R projected additional spectrum requirement;

k) that the bands identified for IMT-2000 are currently used by either first- or second-generation mobile systems or applications of other radiocommunication services;

l) that Recommendation ITU-R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000;

m) that harmonized worldwide bands for IMT-2000 are desirable to achieve global roaming and the benefits of economies of scale;

n) that the bands 1 710-1 885 MHz and 2 500-2 690 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;

o) that the existing applications in the bands identified for IMT-2000 require spectrum below 3 GHz for technical reasons;

p) that technological advancement and market demand will promote innovation and accelerate the delivery of advanced communication applications to consumers;

q) that changes in technology may lead to the further development of communication applications, including IMT-2000,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transitions plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services allocated in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met,

noting

a) that the sharing implications between services sharing in the bands identified for IMT-2000 in No. **S5.AAA** will need further study in ITU-R;

b) that studies regarding the availability of the 1 710-1 885 MHz and 2 500-2 690 MHz bands for IMT-2000 are being conducted in many countries, the results of which could have implications for the use of those bands in those countries;

c) that not all administrations may need, due to differing requirements, or be able to implement, due to the usage by and investment in the existing services, all of the IMT-2000 bands identified at this Conference;

d) that the amount of spectrum for IMT-2000 identified by WRC-2000 may not completely satisfy the expected requirements of all administrations;

e) that currently operating second-generation mobile communication systems may evolve to IMT-2000 in their existing bands;

f) that services such as fixed, mobile (second-generation systems), space operations, space research and aeronautical mobile are in operation, or planned in the band 1 710-1 885 MHz, or portions of this band;

g) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite and fixed, including multipoint distribution/communication systems, are in operation or planned, in the band 2 500-2 690 MHz, or in portions of this band;

h) that the identification of several bands for IMT-2000 allows administrations to choose the best band or parts of bands for their circumstances;

i) that ITU-R has identified additional work to address further developments in IMT-2000 applications and beyond;

j) that the IMT-2000 radio interfaces as defined in Recommendation ITU-R M.1457 are expected to evolve within the framework of ITU-R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation;

k) that the identification of a band for IMT-2000 does not establish any priority in the Radio Regulations and does not preclude the use of the band for any application of the service to which it is allocated;

l) that the provisions of Nos. MOD **S5.388** and **S5.AAA** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT-2000, based on national requirements,

recognizing

a) that some administrations are planning to use the band 2 300-2 400 MHz for IMT-2000;

b) that for some administrations the only way for implementation of IMT-2000 would be spectrum refarming requiring significant financial investment;

c) that spectrum for IMT-2000 is identified in Nos. MOD **S5.388** and **S5.AAA**. This identification does not preclude the use of other bands allocated to the mobile service for IMT-2000,

resolves

1 to invite administrations implementing IMT-2000 or planning to implement IMT-2000 to make available, based on market demand and other national considerations, additional bands or portions of the bands identified in Nos. MOD **S5.388** and **S5.AAA** for the terrestrial component of IMT-2000. Due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT-2000, taking into account the use and planned use of these bands by all services to which these bands are allocated;

2 that Nos. MOD **S5.388** and **S5.AAA** have equal regulatory status,

invites ITU-R

a) to study the implications of sharing of IMT-2000 with other applications and services in the bands 1 710-1 885 MHz and 2 500-2 690 MHz and the implementation, sharing and frequency arrangements of IMT-2000 in the bands 1 710-1 885 MHz and 2 500-2 690 MHz in accordance with Annex 1;

b) to develop harmonized frequency arrangements for operation of the terrestrial component of IMT-2000 in the spectrum mentioned in this Resolution, aiming to achieve compatibility with existing frequency arrangements used by the first- and second-generation systems;

c) to continue its studies on further enhancements of IMT-2000 including the provision of Internet Protocol (IP)-based applications that may require unbalanced radio resources between mobile and base station transmit;

d) to provide guidance to ensure that IMT-2000 can meet the telecommunication needs of the developing countries and rural areas in the context of the studies mentioned above;

e) to include these frequency arrangements and the results of these studies in one or more ITU-R Recommendations,

invites ITU-T

a) to complete its studies of signalling and communication protocols for IMT-2000;

b) to develop a common worldwide intersystem numbering plan and associated network capabilities that will facilitate worldwide roaming,

further invites ITU-R and ITU-T

to commence these studies forthwith,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies and to report the results of these studies within three years,

urges administrations and Sector Members

to submit the necessary contributions and to actively participate in ITU-R studies.

ANNEX 1

Request for studies by ITU-R

In response to Resolution [**COM5/24] (WRC-2000)**, studies that address the following should be conducted:

1 sharing implications and possibilities for all services allocated in the identified frequency bands;

2 harmonized frequency arrangements for the implementation of IMT-2000 in the bands mentioned in this Resolution that take into account the services currently using the bands or planning to use the bands and the required compatible frequency arrangements of second-generation systems using these bands taking into account the need to facilitate the evolution of current mobile systems to IMT-2000;

3 means to facilitate global roaming across different regional band plans within the bands identified for IMT-2000;

4 spectrum demand predictions related to traffic density and timing;

5 planning tools for adaptation of mobile radiocommunication technologies, including IMT-2000, for the needs of developing countries;

6 to maintain a database of national studies and decisions on selection of spectrum for IMT-2000;

7 to study the provision of a fixed wireless access interface using IMT-2000 technologies.

ADD

RESOLUTION [COM5/25] (WRC-2000)

Frequency bands for terrestrial component of IMT-2000 below 1 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that parts of the band 806-960 MHz are extensively used in the three Regions by first- and second-generation mobile systems;

b) that some administrations are planning to use part of the band 698-806 MHz for IMT-2000;

c) that in some countries, the band 698-806 MHz is allocated to the mobile services on a primary basis;

d) that first- and second-generation mobile systems in the three Regions operate using various frequency arrangements;

e) that where cost considerations warrant installation of fewer base stations, such as sparsely populated areas, bands below 1 GHz are generally suitable for implementing mobile systems including IMT-2000;

f) Recommendation ITU-R M.819 which describes the objectives to be met by IMT-2000 to meet the needs of developing countries,

recognizing

that the evolution of first- and second-generation cellular-based mobile systems can be facilitated if permitted to use their current frequency bands,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services allocated in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met,

resolves

to invite administrations which are implementing, or planning to implement IMT-2000, to consider the use of bands below 1 GHz and the possibility of evolution of first- and second-generation mobile systems to IMT-2000, in the frequency band identified in No. **S5.XXX**, based on market demands and other national considerations,

invites ITU-R

to study the compatibility between mobile systems with different technical characteristics and provide guidance on any impact on spectrum arrangements.

ADD

RESOLUTION [COM5/26] (WRC-2000)

Use of additional frequency bands for the satellite component of IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are identified for use by the satellite component of International Mobile Telecommunications 2000 (IMT-2000) through No. MOD **S5.388** and Resolution **212 (Rev.WRC-97)**;

b) Resolutions **212 (Rev.WRC-97)**, **[COM5/24] (WRC-2000)** and **[COM5/25] (WRC-2000)** on the implementation of the terrestrial and satellite components of IMT-2000;

c) that the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz are allocated on a co-primary basis to the mobile-satellite service and other services in accordance with the Radio Regulations;

d) that distress, urgency and safety communications of the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (route) service have priority over all other mobile-satellite service communications in accordance with Nos. **S5.353A** and **S5.357A**,

recognizing

a) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite, fixed (including point-to-multipoint distribution/communication systems) and mobile are in operation or planned in the band 2 500-2 690 MHz, or in portions of this band;

b) that other services such as mobile services and radiodetermination-satellite service are in operation or planned in the bands 1 525-1 559/1 626.5-1 660.5 MHz and 1 610-1 626.5/2 483.5-2 500 MHz, or in portions of these bands, and that these bands, or portions thereof, are intensively used in some countries by applications other than IMT-2000 satellite component, and the sharing studies within ITU-R are not finished;

c) that studies of potential sharing and coordination between the satellite component of IMT-2000 and the terrestrial component of IMT-2000, mobile-satellite services and other high-density applications in other services such as point-to-multipoint communication/distribution systems, in the bands 2 500-2 520 MHz and 2 670-2 690 MHz bands are not finished;

d) that the bands 2 520-2 535 MHz and 2 655-2 670 MHz are allocated to the mobile-satellite, except aeronautical mobile-satellite, service for operation limited to within national boundaries as per Nos. **S5.403** and **S5.420**;

e) Resolution ITU-R 47 on studies under way on satellite radio transmission technologies for IMT-2000,

resolves

1 that, in addition to the frequency bands indicated in *considering a)* and *resolves* 1, the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz on a worldwide basis, may be used by administrations wishing to implement the satellite component of IMT-2000, subject to the regulatory provisions related to the mobile-satellite service in these frequency bands;

2 that the bands 2 500-2 520 MHz and 2 670-2 690 MHz as identified for IMT-2000 in No. **S5.AAA** and allocated to the mobile-satellite service, may be used by administrations wishing to implement the satellite component of IMT-2000, however, depending on market developments, it may be possible in the longer term for bands 2 500-2 520 MHz and 2 670-2 690 MHz to be used by the terrestrial component of IMT-2000;

3 that this identification for the satellite component of IMT-2000 does not preclude the use of these bands by any applications of the services to which they are allocated and does not establish priority in the Radio Regulations,

invites ITU-R

1 to study the sharing and coordination issues in the above bands related to use of the mobile-satellite service allocations for the satellite component of IMT-2000 and the use of this spectrum by the other allocated services, including the radiodetermination-satellite service;

2 to report the results of these studies to a future WRC,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 423-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document DT/106 **COMMITTEE 6**

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

DRAFT NEW RESOLUTION [GT PLEN-1/1]

GT PLEN-1 has adopted, at its ninth meeting, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

This Resolution once adopted by the Conference, should be included in Article 59.

This Resolution has been brought to the attention of GT PLEN-2 as it may impact the agenda of the next WRC.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

DRAFT NEW RESOLUTION [GT PLEN-1/1]

Application and study of the regulatory procedures and associated sharing criteria contained in Appendices S30 and S30A and in the associated provisions of Articles S9 and S11

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 adopted a revision of the Regions 1 and 3 broadcasting-satellite service (BSS) and associated feeder-link Plans contained in Appendices **S30** and **S30A**, respectively;

b) that WRC-2000 adopted revisions to the sharing criteria to identify whether terrestrial services may be affected by BSS contained in Annex 1 of Appendix **S30**;

c) that WRC-2000 suppressed the method contained in section 3 of Annex 4 of Appendix **S30A** and applied in its place Appendix **S7**;

d) that WRC-2000 modified the criteria in section 1 of Annex 4 of Appendix **S30A** concerning the sharing between non-planned transmitting space stations and planned receiving BSS feeder-link space stations;

e) that WRC-2000 revised the orbital position limitations on Region 1 BSS in Section A3 of Annex 7 to Appendix **S30** to allow more flexibility for new and modified assignments in the Region 1 BSS List, while continuing to guarantee access to Region 2 fixed-satellite service (FSS) in the orbital arc from 37 W.L. to 10 E.L.;

f) that the power flux-density limits currently appearing in section 6 of Annex 1 to Appendix **S30** for BSS to protect FSS do not vary as a function of orbital separation between the FSS and BSS space stations, and therefore do not provide adequate protection to FSS networks at small orbital separations, and at large orbital separations, overly constrains implementation of BSS networks;

g) that the sharing criteria in Appendices **S30** and **S30A** should provide appropriate protection to the BSS, FSS and terrestrial services whilst not unduly constraining the services involved;

h) that worldwide, in various sub-bands of the frequency range 11.7-12.7 GHz, FSS networks as well as BSS networks are in operation, and others will be operated in the near future and, consequently, difficulties may be experienced in modifying their characteristics;

i) that WRC-2000 has also revised the regulatory procedures contained in Appendices **S30** and **S30A**, and the associated provisions in Articles **S9** and **S11** and associated Appendices,

recognizing

a) that there are differing geographic situations between the ITU Regions and that this may impact the sharing criteria and therefore should be taken into account in any revision to the sharing criteria in the relevant Annexes of Appendices **S30** and **S30A**;

b) the need to protect existing and future terrestrial and space services and systems,

further noting

that the Bureau was instructed by WRC-2000 to analyse the established new Regions 1 and 3 BSS and feeder-link Plans with respect to the compatibility with other services, having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan (Resolution **53 (Rev.WRC-2000)**),

resolves

1 that, until section 6 of Annex 1 to Appendix **S30** is modified by [WRC-02/03], the pfd limits appearing in the Annex to this Resolution shall be applied in place of the –138 dBW/m^2/27 MHz and –160 dBW/m^2/4kHz criteria appearing in paragraph 3 of section 6 of Annex 1 to Appendix **S30**;

2 to instruct the Radiocommunication Bureau to apply this Resolution as of [3 June 2000],

requests ITU-R

to undertake, as a matter of urgency additional studies and complete them by [WRC-02/03]:

1 the sharing criteria in Annexes 1, 3, 4 and 6 of Appendix **S30** and Annexes 1 and 4 of Appendix **S30A**, except the criteria referred to in *considering b)* and *c)*, taking into account *considering g)* and *h)* and *recognizing a)*;

2 review the changes made by WRC-2000 to the regulatory procedures contained in:

a) Articles 4 and 5 of Appendices **S30** and **S30A** to create a List of additional uses for Regions 1 and 3 and to provide for its implementation;

b) Articles 6 and 7 of Appendices **S30** and **S30A**, including related modifications to Articles **S9** and **S11** and the associated Appendix **S5**,

with a view to ensure consistency amongst these provisions as appropriate, taking into account *considering i)*;

3 the limitations of Section A3 of Annex 7 **(Rev.WRC-2000)** in the context of any changes to the sharing criteria studied by ITU-R,

instructs the Secretary-General

to bring this Resolution to the attention of the ITU Council to include in the agenda of the next WRC the consideration of the results of the ITU-R studies pursuant to *requests ITU-R* above.

ANNEX

Pfd limits to be applied in place of –138 dBW/m²/27 MHz and –160 dBW/m²/4 kHz in paragraph 3 of section 6 of Annex 1 to Appendix S30[1]

Instead of the flat pfd limits of –138 dB(W/m²/27 MHz) and –160 dB(W/m²/4 kHz), apply new pfd limits to protect FSS in all Regions from BSS in all Regions, as given below:

For Regions 1 and 3 BSS → Region 2 FSS (space-to-Earth in the band 11.7-12.2 GHz):

–160 dB(W/m²/27 MHz)	$0 \le \theta < 0.054°$
(–137.46 + 17.74 log θ) dB(W/m²/27 MHz)	$0.054° \le \theta < 3.67°$
(–141.56 + 25 log θ) dB(W/m²/27 MHz)	$3.67° \le \theta < 11.54°$
–115 dB(W/m²/27 MHz)	$11.54° \le \theta$

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered with FSS space station.

For Region 1 BSS → Region 3 FSS (space-to-Earth in the band 12.2-12.5 GHz):

–160 dB(W/m²/27 MHz)	$0 \le \theta < 0.054°$
(–137.46 + 17.74 log θ) dB(W/m²/27 MHz)	$0.054° \le \theta < 3.67°$
(–141.56 + 25 log θ) dB(W/m²/27 MHz)	$3.67° \le \theta < 16.69°$
–111 dB(W/m²/27 MHz)	$16.69° \le \theta$

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered with FSS space station.

For Region 2 BSS → Regions 1 and 3 FSS (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):

–160 dB(W/m²/27 MHz)	$0 \le \theta < 0.054°$
(–137.46 + 17.74 log θ) dB(W/m²/27 MHz)	$0.054° \le \theta < 3.67°$
(–141.56 + 25 log θ) dB(W/m²/27 MHz)	$3.67° \le \theta < 11.54°$
–115 dB(W/m²/27 MHz)	$11.54° \le \theta$

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered with FSS space station.

It is understood that in the implementation of these criteria, the Bureau should take into account the pertinent station-keeping accuracy of the BSS and FSS space stations as filed by the notifying administrations.

NOTE - In addition, the 0.25 dB allowed increase over the pfd resulting from the original plan assignments of all Regions should be maintained.

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[1] For those sharing situations not listed here, the provisions of Appendix **S30 (Rev.WRC-2000)** and Appendix **S30A (Rev.WRC-2000)** apply.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 1 to Document 424-E 26 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2 OF THE PLENARY

Note by the Chairperson of Working Group 1 of the Plenary to GT PLEN-2

DRAFT NEW RESOLUTION [GT PLEN-1/1]

With reference to the Resolution in the subject document, please add the following item to the agenda of WRC-03.

Review the ITU-R studies requested in Resolution [GT PLEN-1/1] [WRC-2000] and modify as appropriate the regulatory procedures and associated sharing criteria contained in Appendices **S30** and **S30A** and in the associated provisions of Articles **S9** and **S11**.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 424-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2
OF THE PLENARY

Note by the Chairperson of Working Group 1 of the Plenary to GT PLEN-2

DRAFT NEW RESOLUTION [GT PLEN-1/1]

The attention of GT PLEN-2 is brought to Document 423 draft new Resolution [GT PLEN-1/1]: Application and study of the regulatory procedures and associated sharing criteria contained in Appendices S30 and S30A and in the associated provisions of Articles S9 and S11, as it may impact the agenda of the next WRC.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 425-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2
OF THE PLENARY

Note from the Chairperson of Committee 4 to the Chairperson of Working Group 2 of the Plenary

POSSIBLE TEXT FOR THE WRC-03 AGENDA

At its sixth meeting, Committee 4 approved a new Resolution [COM4/3] inviting WRC-03 to assess, in the light of studies to be carried out, the provisions under which earth stations located on board vessels could operate in fixed-satellite service networks.

The following text is proposed for consideration by Working Group 2 of the Plenary as a potential agenda item for WRC-03:

> taking into account the ITU-R studies in response to Resolution [COM4/3], to consider the provisions under which earth stations located on board vessels operate in fixed-satellite service networks,

H. RAILTON
Chairperson of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 426-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document DT/105 **COMMITTEE 4**

Note by the Chairperson of GT PLEN-1 to Committee 4

WORKING GROUP 1 OF THE PLENARY

AGENDA ITEM 2
(Incorporation by reference)

This is to inform Committee 4 that GT PLEN-1, in reply to the Note given in Document 198, proposes to incorporate by reference Recommendation ITU-R BO.1293-1 in the Radio Regulations (Annex 3 of Appendix S30A and Annex 5 of Appendix S30), which is the updated version of Recommendation ITU-R BO.1293 referred to in the Note.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 427-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Chairperson, Working Group 5C

PROPOSALS FOR THE WORK OF THE CONFERENCE

(AGENDA ITEM 1.4)

ARTICLE S5

Frequency allocations

1 MOD

34.2-40.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
37-37.5	FIXED MOBILE SPACE RESEARCH (space-to-Earth) **MOD** S5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) **MOD** S5.547 **ADD** S5.NGSO	
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) MOD S5.547 ADD S5.NGSO	
39.5-40	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) MOD S5.547 ADD S5.NGSO	
40-40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth) [ADD S5.547Y]	

40.5-55.78 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
40.5-~~42.5~~41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile [Mobile-satellite (space-to-Earth)] ~~S5.551B~~S5.RAS ~~S5.551D~~ ADD S5.547	**40.5-~~42.5~~41** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B~~ADD S5.RAS ~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [Mobile-satellite (space-to-Earth)] ~~S5.551C S5.551F~~ ADD S5.547	**40.5-~~42.5~~41** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B~~ADD S5.RAS ~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [Mobile-satellite (space-to-Earth)] [S5.551C] S5.551F ADD S5.547
41-42 FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551D~~ [~~S5.551B~~] ADD S5.RAS BROADCASTING BROADCASTING-SATELLITE Mobile ADD S5.547	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) [~~S5.551B~~] ADD S5.RAS ~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile ~~S5.551C S5.551F~~ ADD S5.547	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) [~~S5.551B~~] ADD S5.RAS ~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [S5.551C] S5.551F ADD S5.547
~~42~~-42.5 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile ~~S5.551B~~ ADD S5.RAS ~~S5.551D~~ MOD S5.547 ADD S5.NGSO	**~~42~~-42.5** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B~~ ADD S5.RAS~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile ~~S5.551C S5.551F~~ MOD S5.547 ADD S5.NGSO	**~~42~~-42.5** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B~~ ADD S5.RAS ~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [S5.551C] S5.551F MOD S5.547 ADD S5.NGSO
42.5-43.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY S5.149 MOD S5.547	

2 MOD S5.547

The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59, and 64-66 GHz are available for high-density applications in the fixed service (see Resolutions ~~**726 (WRC-97)**~~[COM5/11] and [COM5/27]). Administrations should take this into account, when considering regulatory provisions in relation to these bands. Because of potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-[42.5] GHz, administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution [COM5/28]).

3 ADD S5.NGSO

S5.NGSO In the bands 37.5-40 GHz and 42.0-42.5 GHz, non-GSO fixed-satellite service systems should employ power control or other methods of downlink fade compensation on the order of 10 dB, such that the satellite transmissions are at power levels required to meet the desired link performance while reducing the level of interference to the fixed service. The use of downlink fade compensation methods are the subject of study by ITU-R (see Resolution [COM5/28]).

4 ADD S5.547Y

[The band 40-40.5 GHz is identified for high-density applications in the fixed-satellite service. Administrations should take this into account, when considering regulatory provisions in relation to this band.]

5 SUP S5.551B

S5.551B

6 ADD S5.RAS

S5.RAS In order to protect the radio astronomy service in the band 42.5-43.5 GHz, the aggregate power flux-density radiated in the 42.5-43.5 GHz band by all the space stations within any non-GSO fixed-satellite service (space-to-Earth) or broadcasting-satellite service (space-to-Earth) system operating in the 41.5-42.5 GHz band shall not exceed the level of –167 dB(W/m^2) in any 1 MHz bandwidth, which is consistent with Recommendation ITU-R RA.769-1, into any radio astronomy observatory site for more that 2% of the time. The power flux-density radiated in the band 42.5-43.5 GHz by any GSO fixed-satellite service (space-to-Earth) or broadcasting-satellite service (space-to-Earth) station operating in the band 42.0-42.5 GHz shall not exceed –167 dB(W/m^2) in any 1 MHz bandwidth [at the site of a radio astronomy station]. These limits are provisional and will be reviewed in accordance with Resolution **128 (Rev.WRC-2000)**.

7 SUP S5.551D

8 SUP S5.551E

9 SUP Resolution 133

RESOLUTION 133 (WRC-97)

Sharing between the fixed service and other services in the band 37-40 GHz

10 SUP Resolution 129

RESOLUTION 129 (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

11 SUP Resolution 134

RESOLUTION 134 (WRC-97)

Use of the frequency band 40.5-42.5 GHz by the fixed-satellite service

12 SUP Resolution 726

RESOLUTION 726 (WRC-97)

Frequency bands above 30 GHz available for high-density applications in the fixed service

13 ADD Additions to Table S21-4

Table S21-4 *(end)*

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°**	
37.5-40.0 GHz	Fixed-satellite (Non-geostationary) Mobile-satellite (Non-geostationary)	-120 [10, 16, FSS]	-120 + 0.75(δ-5) [10, 16, FSS]	-105 [10, 16, FSS]	1 MHz
37.5-40.0 GHz	Fixed-satellite (Geostationary) Mobile-satellite (Geostationary)	-127 [16, FSS]	**5° - 20°**: -127 + (4/3)(δ-5) [16, FSS] **20° - 25°**: -107 + 0.4(δ-20) [16, FSS]	-105 [16, FSS]	1 MHz
40-40.5 GHz	Fixed-satellite	-115	-115 + 0.5(δ-5)	-105	1 MHz
40.5-42.0 GHz	Fixed-satellite (Non-geostationary) [Broadcasting-satellite (Non-Geostationary)]	-115 [10, 16, FSS]	-115 + 0.5(δ-5) [10,16, FSS]	-105 [10, 16, FSS]	1 MHz
40.5-42.0 GHz	Fixed-satellite (Geostationary) [Broadcasting-satellite (Geostationary)]	-120 [16, FSS]	**5° - 15°**: -120+ (δ-5) [16, FSS] **15° - 25°**: -110+ 0.5(δ-15) [16, FSS]	-105 [16, FSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Geostationary) [Broadcasting-satellite (Geostationary)]	-120 [10, 16, FSS]	-120 + 0.75(δ-5) [10, 16, FSS]	-105 [10, 16, FSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Geostationary) [Broadcasting-satellite (Geostationary)]	-127 [16, FSS]	**5° - 20°**: -127 + (4/3)(δ-5) [16, FSS] **20° - 25°**: -107 + 0.4(δ-20) [16, FSS]	-105 [16, FSS]	1 MHz

14 MOD [10]S21.16.4

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[10] **S21.16.4** The values given in this ~~box shall apply until such a time as modified by a competent world radiocommunication conference.~~ table entry shall apply to emissions of space stations of non-geostationary satellites in networks operating with 99 or fewer satellites. Further study concerning the applicability of these values is necessary in order to apply them to networks operating with 100 or more satellites.

15 ADD [16]S21.16.10

[16] **S21.16.10** Except to the extent provided in footnote S21.16.FSS, these values are provisional and shall be applied subject to Resolution [COM5/28].

16 ADD S21.16.FSS

S21.16.FSS In the bands 37.5-40 and 40.5-42.5 GHz, notwithstanding any further studies, the power flux-density limits in this table shall be applied to stations in the fixed-satellite service for which complete coordination (GSO) or notification information (non-GSO), as appropriate, has been received by the Bureau before the end of WRC-03 and after WRC-2000.

17 ADD S5.NGSO

S5.NGSO In the bands 37.5-40 GHz and 42.0-42.5 GHz, non-GSO FSS systems should employ power control or other methods of downlink fade compensation on the order of 10 dB, such that the satellite transmissions are at power levels required to meet the desired link performance while reducing the level of interference to the fixed service. The use of downlink fade compensation methods are the subject of study by ITU-R (see Resolution [COM5/28]).

18 ADD RESOLUTION [COM5/28] (WRC-2000)

RESOLUTION [COM5/28] (WRC-2000)

Power flux-density limits in the bands 37.5-42.5 GHz for the fixed-satellite service, [broadcasting-satellite service,] and mobile-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this Conference established power flux-density limits in accordance with the provisions of footnotes S21.16.10 and S21.16.FSS for the fixed-satellite service (space-to-Earth) in the bands 37.5-40.0 GHz and 40.5-42.5 GHz, and the mobile-satellite service (space-to-Earth) in the band 39.5-40 GHz;

b) that in the band 37.5-42.5 GHz, Recommendation ITU-R SF.1484 recommends power flux-density limits for non-GSO fixed-satellite service systems;

c) that in the bands 37.5-40.0 GHz and 40.5-42.5 GHz, the power flux-density limits adopted by this Conference for GSO fixed-satellite service systems are based on ITU-R studies;

d) that this Conference harmonized the allocation to the fixed-satellite service in the band 40.5-42.5 GHz across all Regions;

e) that there exists an allocation to the broadcasting-satellite service on a co-primary basis in the band 40.5-42.5 GHz;

f) that there are no power flux-density limits for BSS in the range 40.5-42.5 GHz;

g) 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,

noting

a) that Recommendation ITU-R SF.1484 notes that some fixed service systems employing small net fade margins and which operate at elevation angles greater than 10 degrees in the band 37.5-40 GHz may not be fully protected from interference from fixed-satellite service systems without unduly constraining fixed-satellite service systems;

b) that the fixed service parameters for sharing studies are given in Recommendation ITU-R F.758;

c) that new studies taking account of high-density fixed service deployments with new characteristics (as documented in Recommendation ITU-R F.1498) in some countries have been presented and discussed during this Conference;

d) that the new studies submitted to this Conference, on which consensus has not been reached, identified high-density fixed service protection requirements from GSO and non-GSO fixed-satellite service systems, that indicate clear-sky pfd protection requirements that are about 13.5 dB more stringent at elevation angles above 25° than the table entries in Table **S21-4** for the band 37.5-40 GHz;

e) that footnote S5.NGSO may provide additional protection to the fixed service,

recognizing

a) that some downlink fade compensation techniques, such as adaptive power control, could reduce the operational power flux-density levels of satellite networks under normal operating conditions while enhancing the ability of fixed-satellite service networks to overcome rain fade;

b) that there is a need for further study to determine the percentage of time during which fade conditions will require downlink fade compensation techniques;

c) that in the band 39.5-42 GHz, some administrations plan to deploy fixed-satellite service systems using ubiquitous very small aperture terminals,

recognizing further

a) that the use of downlink fade compensation techniques by satellite systems may affect the performance of fixed service and fixed-satellite service links operating in unfaded conditions in the same frequency band;

b) that the use of downlink fade compensation techniques affects the design of fixed service links,

resolves

1 that the limits in Table **S21-4** for the bands 37.5-40.0 GHz and 40.5-42.5 GHz, as revised by this Conference, shall be applied for verification purposes by the Bureau and by administrations as of 2 June 2000 in accordance with the provisions of footnotes S21.16.10 and S21.16 fixed-satellite service;

2 that in the interim period before WRC-03, before an administration brings into use, in Region 2, a frequency assignment for a GSO fixed-satellite service network in the 37.5-40 GHz band, it shall seek the agreement of any administration where the power flux-density produced on the territory of that administration exceeds the values in Table **S21-4** minus 12 dB under clear-sky conditions,

urges administrations

to meet the requirements of footnote S5.NGSO,

invites ITU-R

1 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the bands 37.5-40 GHz and 42-42.5 GHz from space-to-Earth transmissions in the fixed-satellite and mobile-satellite services;

2 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the band 40.5-42.0 GHz from space-to-Earth transmissions in the fixed-satellite services, taking into account the requirements of the fixed-satellite service and *recognizing c)*;

3 to study technical and operational characteristics and power flux-density values for the broadcasting-satellite service in the range 40.5-42.5 GHz;

4 in conducting studies under *invites ITU-R* 1, 2 and 3 above, to take into account the need to ensure the proper balances of impacts on the fixed service and space services sharing the same band;

5 to conduct as a matter of urgency and taking into account the *considerings* above, studies on the mitigation techniques to improve sharing conditions between space services in the *considerings* above and the fixed service systems, taking account of the impact on these space services systems and the fixed service systems;

6 to undertake, as a matter of urgency, studies of the appropriate criteria and techniques for addressing interference from transmitters of the fixed service into earth station receivers in high-density applications in the fixed-satellite service with allocations in the bands 39.5-40 GHz and 40.5-42.5 GHz intended for operation in the same geographic area;

7 in the bands 37.5-40 GHz and 42-42.5 GHz, to study the nominal clear-sky power flux-density levels, and the percentage of time during which they may be exceeded to overcome fading conditions between the satellite and one or more geographically separated earth stations, in order to protect the fixed service while permitting operation of fixed-satellite service earth stations using, e.g., coordinated large antennas, taking into account the balance of constraints on fixed-satellite systems and the fixed service;

8 to report on the results of these studies in time for WRC-03,

requests

WRC-03 to take appropriate action based on the results of these studies.

19 MOD RESOLUTION 128 (WRC-97)

DRAFT REVISIONS OF RESOLUTION 128 (Rev.WRC-97~~7~~2000)

~~Allocation to the fixed fixed-satellite services (space-to-Earth) in the [41.5-42.5] [41.542-42.5] GHz band and p~~Protection of the radio astronomy service in the 42.5-43.5 GHz band

The World Radiocommunication Conference (~~Geneva 1997~~Istanbul 2000),

considering

a) that ~~this Conference~~ ~~this Conference has~~WRC-97 ~~has~~ added a primary allocation to the fixed-satellite service (space-to-Earth) in the band 40.5 - 42.5 GHz in Regions 2 and 3 and in certain countries in Region 1, that this Conference expanded this allocation to include all of 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 there is also a worldwide primary allocation to the broadcasting-satellite service in the 40.5-42.5 GHz band;

~~*b*~~*c)* that unwanted emissions from geostationary (GSO) space stations in the broadcasting-satellite service and fixed-satellite service (space-to-Earth) in the band [42 - 42.5] GHz may result in harmful interference to the radio astronomy service in the band 42.5-43.5 GHz;

d) that aggregate unwanted emissions from non-~~N~~GSO space stations in the broadcasting-satellite and fixed-satellite services (space-to-Earth) 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*~~*e)* that various technical and operational means may be used to reduce ~~these~~ unwanted emissions from these space stations ~~in the broadcasting-satellite and fixed-satellite service~~;

~~*d*~~*f)* that a limited number of radio astronomy stations worldwide require protection in the band 42.5-43.5 GHz, and that there may be means to limit the susceptibility of radio astronomy stations ~~receivers~~ to interference,

recognizing

a) that WRC-97 required that systems in the fixed-satellite service not be implemented in the band 41.5-42.5 GHz band 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;

b) that this conference established provisional power flux density limits for out of band emissions from stations in the broadcasting-satellite and fixed-satellite services in accordance with footnote S5.RAS,

~~*taking into account*~~

~~the relevant provisions of the Radio Regulations,~~

resolves

~~that administrations shall not implement broadcasting-satellite service systems where advanced publication materials are received by the Bureau after 2 June 2000 and fixed-satellite systems in the band [41.5-42.5][41.542-42.5] 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;~~

that, notwithstanding any further studies, the power flux-density limits in footnote S5.RAS shall be applied to stations in the broadcasting-satellite and fixed-satellite services for which complete coordination (GSO) or notification (non-GSO) information, as appropriate, has been received by the Bureau before the end of WRC-03 and after the end of WRC-2000,

invites ITU-R

~~1 to study, as a matter of urgency, the harmful interference that space stations in the broadcasting-satellite service where advanced publication materials are received by the Bureau after 2 June 2000 and fixed-satellite service (space-to-Earth) operating in the band [41.5-42.5][41.542-42.5] GHz may cause to stations in the radio astronomy service operating in the band 42.5-43.5 GHz;~~

1 to study, as a matter of urgency and in time for WRC-03, the provisional power flux-density limits given in footnote S5.RAS;

2 to identify technical and operational measures in the band 41.5-42.5 GHz, including possible mitigation techniques, that may be implemented ~~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 broadcasting-satellite service and fixed-satellite service~~s 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~~these studies ~~in~~ *invites* ~~1~~ and 2 ~~to the CPM Conference Preparatory Meeting of for WRC-99~~9902/03,~~;~~

~~4 to complete the ongoing ITU-R studies on aggregate unwanted emissions from non-geostationary fixed-satellite service systems operating in the band [41.5-42.5][41.5-42.0] GHz for protection of the radio astronomy service in the band 42.5-43.5 GHz,~~

urges administrations

1 to participate actively in the aforementioned studies by submitting contributions to ITU-R; and

2 when planning to implement space stations in~~ing~~ the ~~non-geostationary~~ broadcasting-satellite or fixed-satellite services in the band 41.5-42.5 GHz for which complete coordination (GSO) or notification (non-~~N~~GSO) has been received prior to this conference, to take into consideration the provisions of footnote S5.RAS in order to protect the radio astronomy service in the band 42.5-43.5 GHz,

requests

WRC-~~99~~03 to take appropriate action based on those studies.

20 ADD RESOLUTION [COM5/27]

RESOLUTION [COM5/27]

Development of the technical basis for coordination of radio astronomy stations with transmitting high-density fixed systems (HDFS) in the fixed service, in the band 42.5-43.5 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this Conference decided that the band 42.5-43.5 GHz, which is allocated to the fixed service, should become available for high-density applications;

b) that the 42.5-43.5 GHz band is also allocated to the radio astronomy service on a primary basis worldwide, and it is intensively used for both continuum and spectral line observations, at a limited number of sites;

c) that radio astronomy observatories operating in the band are generally located far from urban population centres, employ very high-gain antennas and very low-noise amplifiers to receive extremely weak cosmic radio emissions over which astronomers have no control;

d) that HDFS stations are expected to be deployed in large numbers over areas of large geographical extent in urban population centres;

e) that studies are being initiated to characterize short-term anomalous propagation from transmitting stations dispersed over a large geographical area to a single receiving earth station (area-to-point propagation);

f) that no studies are yet available on the coordination distance that may be required to protect a radio astronomy station from HDFS transmissions associated with a single urban population centre, but that based on preliminary studies made at lower frequencies a provisional coordination distance of 250 km may be appropriate,

resolves to request ITU-R

to conduct studies on the coordination distance between radio astronomy stations operating in the 42.5-43.5 GHz band and HDFS stations associated with a view to developing ITU-R Recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 428-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 206 and 223 **COMMITTEE 6**

FIFTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 has finished its consideration of agenda item 1.3 and parts of agenda item 4. Committee 4 also proposes corrections to some provisions of the Radio Regulations. As a result of these deliberations, it has unanimously adopted, at its fifth and sixth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairperson, Committee 4

Annex: 1

MOD

RESOLUTION 28 (Rev.WRC-~~95~~2000)

Revision of references to the text of ITU-R Recommendations incorporated by reference in the Radio Regulations

The World Radiocommunication Conference (~~Geneva, 1995~~Istanbul, 2000),

considering

a) that the Voluntary Group of Experts on simplification of the Radio Regulations (VGE) proposed the transfer of certain texts of the Radio Regulations to other documents, especially to ITU-R Recommendations, using the incorporation by reference procedure;

b) that, in some cases, the provisions of the Radio Regulations imply an obligation on Member States~~‡~~ to conform to the criteria or specifications incorporated by reference;

c) that references to incorporated texts shall be explicit and shall refer to a precisely identified provision (see Resolution **27 (Rev.WRC-2000)**);

d) that all texts of ITU-R Recommendations incorporated by reference are published in a volume of the Radio Regulations;

~~*d*~~*e)* that, taking into account the rapid evolution of technology, ITU-R may revise the ITU-R Recommendations containing text incorporated by reference at short intervals;

~~*e) that revised and approved Recommendations will not have the same legal force as the initial Recommendations, incorporated by reference until a competent world radiocommunication conference has so decided;*~~

f) that following revision of an ITU-R Recommendation containing text incorporated by reference, the reference in the Radio Regulations shall continue to apply to the earlier version until such time as a competent WRC agrees to incorporate the new version;

~~*f*~~*g)* that it would be desirable ~~to ensure,~~ that texts incorporated by reference ~~in the cases provided for in the Radio Regulations, that the provisions~~ reflect the most recent technical developments,

noting

that administrations need sufficient time to examine the potential consequences of changes to ITU-R Recommendations containing text incorporated by reference and would therefore benefit greatly from being advised, as early as possible, of which ITU-R Recommendations have been revised and approved during the elapsed study period,

resolves

1 that each Radiocommunication Assembly shall communicate to the following world radiocommunication conference a list of the ITU-R Recommendations containing text incorporated by reference in the Radio Regulations which have been revised and approved during the elapsed study period;

2 that, on this basis, the WRC ~~shall~~should examine those revised ITU-R Recommendations, and decide whether or not to update the corresponding references in the Radio Regulations;

3 that, if the WRC decides not to update the corresponding references, the current referenced version shall be maintained in the Radio Regulations~~ITU-R shall continue publishing the ITU-R Recommendations currently referenced in the Radio Regulations~~;

4 ~~that WRCs shall place the examination of Recommendations in conformity with *resolves* 1 and *resolves* 2 of this Resolution on the agenda of future WRCs,~~that recommended agendas for future world radiocommunication conferences should include a standing agenda item for the examination of the ITU-R Recommendations in application of this Resolution,

instructs the Director of the Radiocommunication Bureau

to provide the CPM immediately preceding each WRC with a list, for inclusion in the CPM Report, of those ITU-R Recommendations containing texts incorporated by reference that have been revised or approved since the previous WRC, or that may be revised in time for following WRC,

urges administrations

1 to participate actively in the work of the Radiocommunication Study Groups and the Radiocommunication Assembly in the revision of those Recommendations to which mandatory references are made in the Radio Regulations~~.~~;

2 to examine any indicated revisions of ITU-R Recommendations containing text incorporated by reference and to prepare proposals on possible updating of relevant references in the Radio Regulations.

ARTICLE S5

Frequency allocations

MOD

S5.50 5) The footnote references which appear in the Table below the allocated service or services apply to more than one of the allocated services, or to the whole of the allocation concerned.

SUP

S5.81

MOD

200-495 kHz

<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>415-435
MARITIME MOBILE S5.79
AERONAUTICAL RADIONAVIGATION
S5.72</td><td colspan="2" rowspan="2">415-495
MARITIME MOBILE S5.79 S5.79A
Aeronautical radionavigation S5.80

S5.77 S5.78 <s>S5.81</s> S5.82</td></tr>
<tr><td>435-495
MARITIME MOBILE S5.79 S5.79A
Aeronautical radionavigation
S5.72 <s>S5.81</s> S5.82</td></tr>
</table>

MOD

495-1 800 kHz

<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="3">505-526.5
MARITIME MOBILE S5.79 S5.79A S5.84
AERONAUTICAL RADIONAVIGATION

S5.72 <s>S5.81</s></td><td>505-510
MARITIME MOBILE S5.79

<s>S5.81</s></td><td rowspan="3">505-526.5
MARITIME MOBILE S5.79 S5.79A S5.84
AERONAUTICAL RADIONAVIGATION
Aeronautical mobile
Land mobile

<s>S5.81</s></td></tr>
<tr><td>510-525
MOBILE S5.79A S5.84
AERONAUTICAL RADIONAVIGATION</td></tr>
<tr><td>525-535</td></tr>
</table>

SUP

S5.120

MOD

3 230-5 003 kHz

<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>3 500-3 800
AMATEUR ~~S5.120~~
FIXED
MOBILE except aeronautical mobile

S5.92</td><td>3 500-3 750
AMATEUR ~~S5.120~~

S5.119</td><td rowspan="2">3 500-3 900
AMATEUR ~~S5.120~~
FIXED
MOBILE</td></tr>
<tr><td>3 800-3 900
FIXED
AERONAUTICAL MOBILE (OR)
LAND MOBILE</td><td rowspan="3">3 750-4 000
AMATEUR ~~S5.120~~
FIXED
MOBILE except aeronautical mobile (R)</td></tr>
<tr><td>3 900-3 950
AERONAUTICAL MOBILE (OR)
S5.123</td><td>3 900-3 950
AERONAUTICAL MOBILE
BROADCASTING</td></tr>
<tr><td>3 950-4 000
FIXED
BROADCASTING</td><td>3 950-4 000
FIXED
BROADCASTING
S5.126</td></tr>
<tr><td colspan="2">S5.122 S5.124 S5.125</td></tr>
</table>

MOD

5 003-7 350 kHz

<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>7 000-7 100</td><td colspan="2">AMATEUR ~~S5.120~~
AMATEUR-SATELLITE
S5.140 S5.141</td></tr>
<tr><td>7 100-7 300
BROADCASTING</td><td>7 100-7 300
AMATEUR ~~S5.120~~
S5.142</td><td>7 100-7 300
BROADCASTING</td></tr>
</table>

MOD

7 350-13 360 kHz

<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>10 100-10 150</td><td colspan="2">FIXED
Amateur ~~S5.120~~</td></tr>
</table>

MOD

13 360-18 030 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
14 000-14 250	AMATEUR ~~S5.120~~ AMATEUR-SATELLITE	
14 250-14 350	AMATEUR ~~S5.120~~ S5.152	

MOD

18 030-23 350 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18 068-18 168	AMATEUR ~~S5.120~~ AMATEUR-SATELLITE S5.154	
21 000-21 450	AMATEUR ~~S5.120~~ AMATEUR-SATELLITE	

MOD

23 350-27 500 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
24 890-24 990	AMATEUR ~~S5.120~~ AMATEUR-SATELLITE	

MOD

47-75.2 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
47-68 BROADCASTING	**47-50** FIXED MOBILE	**47-50** FIXED MOBILE BROADCASTING ADD S5.162A
	50-54 AMATEUR S5.166 S5.167 S5.168 S5.170 ADD S5.162A	
	54-68 BROADCASTING Fixed Mobile	**54-68** FIXED MOBILE BROADCASTING ADD S5.162A
S5.162A S5.163 S5.164 S5.165 S5.169 S5.171	S5.172	

MOD

137.175-148 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
144-146	AMATEUR ~~S5.120~~ AMATEUR-SATELLITE S5.216	

MOD

75.2-137.175 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
75.2-87.5 FIXED MOBILE except aeronautical mobile	**75.2-75.4** FIXED MOBILE S5.179	
	75.4-76 FIXED MOBILE	**75.4-87** FIXED MOBILE
	76-88 BROADCASTING Fixed Mobile	~~S5.149~~ S5.182 S5.183 S5.188
S5.175 S5.179 S5.184 S5.187		**87-100** FIXED MOBILE BROADCASTING
87.5-100 BROADCASTING	S5.185	
	88-100 BROADCASTING	
S5.190		

MOD

410-470 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
455-456 FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E	**455-456** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.286A S5.286B S5.286C S5.209 ~~S5.271~~	**455-456** FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E
459-460 FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E	**459-460** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.286A S5.286B S5.286C S5.209 ~~S5.271~~	**459-460** FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E

MOD

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 150-5 250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE ~~SERVICE~~ (Earth-to-space) S5.447A S5.446 S5.447 S5.447B S5.447C	

MOD

S5.536A Administrations installing earth exploration-satellite earth stations cannot claim protection from <u>stations in the</u> fixed and mobile ~~stations~~<u>services</u> operated by neighbouring administrations. In addition, earth stations operating in the earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

ARTICLE S14

Procedure for the review of a finding or other decision of the Bureau

MOD

S14.6 The decision of the Board on the review, to be taken in accordance with the Convention, shall be regarded as final in so far as the Bureau and the Board are concerned. That decision, together with the supporting information, shall be published as under No. **S14.4**. 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. However, if the administration which requested the review disagrees with the Board's decision it may raise the matter at a world radiocommunication conference.

ARTICLE S20

Service documents

SUP

S20.11

APPENDIX S13*

Distress and safety communications (non-GMDSS)

(see Article **S30**)

Part A1 – General provisions

MOD

§ 2 The procedure specified in this ~~Chapter~~ Appendix is obligatory in the maritime mobile-satellite service and for communications between stations on board aircraft and stations of the maritime mobile-satellite service, where this service or stations of this service are specifically mentioned. Paragraphs 1, 3 3), 6 of Part A3, and paragraphs 3 1), 3 4) and 14 1) of Part A4 are also applicable.

Part A6 – Special services relating to safety

Section IV – Narrow-band direct-printing telegraphy system for transmission of navigational and meteorological warnings and urgent information to ships (NAVTEX)

MOD

§ 11 In addition to existing methods, navigational and meteorological warnings and urgent information shall be transmitted by means of narrow-band direct-printing telegraphy, with forward error correction, by selected coast stations ~~and their operational details shall be indicated in the List~~

~~of Radiodetermination and Special Service Stations (see § 2 1), 4 1) and 6). Information is also published in a separate list in accordance with Resolution **339 (Rev.WRC-97)**~~.

MOD

APPENDIX S27*

Frequency allotment Plan for the aeronautical mobile (R) service and related information

(See Article **S43**)

Section II – Allotment of frequencies in the aeronautical mobile (R) service

ARTICLE 1

Area	Frequency bands (MHz)										
	3	**3.5**	**4.7**	**5.4 (Reg. 2)**	**5.6**	**6.6**	**9**	**10**	**11.3**	**13.3**	**18**
	kHz	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**
2	2 938 2 950		4 696	~~4 696~~	5 556	6 583 6 601	8 846 8 855 8 888	10 015 10 045	11 297 11 360 11 390	13 321 13 357	17 964

ARTICLE 2

S27/222 Band **5 450-5 480 kHz (Reg. 2)** **5.4 MHz**

Frequency (kHz)	Authorized area of use*	Remarks*
1	**2**	**3**
5 466	R l0B 13~~1~~I	

MOD

APPENDIX S42

Table of allocation of international call sign series

Call sign series	Allocated to
V~~R~~SA-VSZ	United Kingdom of Great Britain and Northern Ireland

MOD

RESOLUTION 25 (~~WRC-95~~Rev.WRC-2000)

Operation of global satellite systems for personal communications

The World Radiocommunication Conference (~~Geneva, 1995~~Istanbul, 2000),

considering

a) that, in accordance with No. 6 of its Constitution (Geneva, 1992), one of the purposes of the Union is "to promote the extension of the benefits of the new telecommunication technologies to all the world's inhabitants";

b) that, to this end, the Union is fostering the use of new technologies in telecommunications and is studying questions relating to this use in the Radiocommunication and the Telecommunication Standardization Sectors;

c) that the Telecommunication Development Sector is studying questions aimed at identifying the benefits that developing countries may derive from using new technologies;

d) that, among these new technologies, constellations of low-Earth orbit satellites may provide global coverage and facilitate low-cost communications;

e) that ~~the Council, at its 1995 session, resolved in its Resolution 1083 that~~ the theme "global mobile personal communications by satellite" ~~be~~(GMPCS) was discussed at the first World Telecommunication Policy Forum established by Resolution 2 of the Plenipotentiary Conference (Kyoto, 1994)~~,~~;

f) that Council Resolution 1116 instructs the Secretary-General to act as depositary of the GMPCS Memorandum of Understanding (MoU) and its Arrangements, to act as the registry for type-approval procedures and terminal types and to authorize the use of the abbreviation "ITU" as part of the GMPCS-MoU mark;

g) Recommendations ITU-R M.1343 and ITU-R M.1480 on the essential technical requirements of GMPCS earth stations that should be used by administrations as a common technical basis facilitating the global circulation and use of such GMPCS terminals in conformity with these Recommendations,

recognizing

a) that the spectrum available to global satellite systems for personal communications is limited;

b) that successful coordination does not in any way imply licensing authorization to provide a service within the territory of a Member State~~‡~~,

considering further

that other countries intending to use these systems should be guaranteed that they will be operated in accordance with the Constitution, the Convention and the Administrative Regulations,

noting

a) that the Constitution recognizes the sovereign right of each State to regulate its telecommunications;

b) that the International Telecommunication Regulations "recognize the right of any Member, subject to national law and should it decide to do so, to require that administrations and private operating agencies, which operate in its territory and provide an international telecommunication service to the public, be authorized by that Member", and specifies that "within the framework of the present Regulations, the provision and operation of international telecommunication services in each relation is pursuant to mutual agreement between administrations";

c) that Article **S18** specifies the authorities for licensing the operation of stations within any given territory;

d) the right of each Member State~~‡~~ to decide on its participation in these systems, and the obligations for entities and organizations providing international or national telecommunication services by means of these systems to comply with the legal, financial and regulatory requirements of the administrations in whose territory these services are authorized,

resolves

that administrations licensing global satellite systems and stations intended to provide public personal communications by means of fixed, mobile or transportable terminals shall ensure, when licensing these systems and stations, that they can be operated only from the territory or territories of administrations having authorized such service and stations in compliance with Articles **S17** and **S18**, in particular No. **S18.1**,

~~*urges administrations and other Members of the Sectors*~~

~~to participate in the first World Telecommunication Policy Forum dealing with global satellite systems for personal communications,~~

invites administrations

1 to ~~cooperate~~continue cooperating with worldwide satellite system operators in ~~establishing mutually beneficial~~improving the established arrangements for the provision of service within their territories~~,~~ and with the Secretary-General in implementing the GMPCS-MoU and its Arrangements;

2 to participate actively in the ITU-R studies in developing and improving relevant Recommendations,

reminds operators of such systems

to take account, when contracting agreements on the operation of their systems from the territory of a country, of any potential loss of revenue that the country may suffer from a possible reduction of its international traffic existing at the time such agreements are executed.

MOD

RESOLUTION 95 (Rev.WRC-~~97~~2000)

General review of the Resolutions and Recommendations of world administrative radio conferences and world radiocommunication conferences

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

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 Reports of the Director of the Radiocommunication Bureau submitted to ~~this~~ previous ~~C~~conferences provided a useful basis for a general review of the Resolutions and Recommendations of past conferences ~~which was conducted by this Conference,~~;

c) that some principles and guidelines are necessary for future conferences to treat the Resolutions and Recommendations of previous conferences which are not related to the agenda of the Conference,

resolves to invite~~s~~ future competent world radiocommunication conferences

1 to review the Resolutions and Recommendations of previous conferences that are related to the agenda of the Conference with a view to their possible revision, replacement or abrogation and to take appropriate action~~,~~;

2 to review the Resolutions and Recommendations of previous conferences that are not related to any agenda item of the Conference with a view to:

– abrogating those Resolutions and Recommendations that have served their purpose or have become no longer necessary;

– updating and modifying Resolutions and Recommendations, or parts thereof that have become out of date, and to correct obvious omissions, inconsistencies, consequential alignment, ambiguities or editorial errors;

3 at the beginning of the Conference, to determine which Committee within the Conference has the primary responsibility to review each of the Resolutions and Recommendations referred to in *resolves* 1 and 2 above,

instructs the Director of the Radiocommunication Bureau

1 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 and Vice 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~~ the second Conference Preparatory Meeting in respect of *resolves* 1 and *resolves* 2;~~.~~

2 if practicable, to include in the above Report, an indication of the agenda item, if appropriate, and possible responsible Committees within the Conference for each text, based on the available information as to the possible structure of the Conference,

invites

the Conference Preparatory Meeting to include, in its Report, the results of a general review of the Resolutions and Recommendations of previous conferences.

MOD

RESOLUTION 706 (~~Mob-87~~Rev.WRC-2000)

Operation of the fixed ~~and maritime mobile~~ services ~~in~~ the band 90-110 kHz

~~The World Administrative Radio Conference for the Mobile Services, Geneva, 1987,~~The World Radiocommunication Conference (Istanbul, 2000),

considering

a) the need to protect phased pulse hyperbolic radionavigation systems (Loran-C) operating in the band 90-110 kHz used as a safety service for both maritime and aeronautical services;

b) the studies made by the ITU-R in this band;

c) that harmful interference affecting safety of flight and ship navigation may be caused to this service by the operation of the fixed ~~and maritime mobile~~ service~~s~~ having a secondary allocation in this band;

d) that, ~~notwithstanding No. **S5.63**[1] of the Radio Regulations, this Conference has~~the 1987 World Administrative Radio Conference for the Mobile Services (Mob-87) removed the allocation for the maritime mobile service from this band,

noting

that ~~this Conference is~~Mob-87 was not competent to affect significantly the allocation of the fixed service,

resolves

to invite the next competent conference to review the fixed service allocation in this band~~, and No. **S5.63**[1],~~ with a view to ~~their~~ its possible deletion~~,~~.

~~*invites the Council*~~

~~to place this matter on the agenda of the next competent world radiocommunication conference.~~

~~[1] *Note by the Secretariat:* WRC-97 suppressed No. **S5.63**.~~

MOD

RESOLUTION 716 (~~WRC-95~~Rev.WRC-2000)

Use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the fixed and mobile-satellite services and associated transition arrangements

The World Radiocommunication Conference (~~Geneva, 1995~~Istanbul, 2000),

considering

a) that WARC-92 allocated the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the mobile-satellite service with a date of entry into force of 1 January 2005, these allocations being co-primary with fixed and mobile service allocations;

b) that the use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service (MSS), in accordance with the provisions of Nos. **S5.389A**, **S5.389C** and **S5.389D** of the Radio Regulations, as adopted by WRC-95 and WRC-97, is subject to a date of entry into force of 1 January 2000, 1 January 2002 (for Region 2) or 1 January 2005~~, in accordance with the provisions of Nos. **S5.389A**, **S5.389C**[1] and **S5.389D** of the Radio Regulations, as adopted by this Conference WRC-95~~;

c) that these bands are shared with the fixed and mobile~~2~~[21] services on a primary basis and that they are widely used by the fixed service in many countries;

d) that the studies made have shown that, while sharing of the MSS with the fixed service in the short to medium term would be generally feasible, in the long term sharing will be complex and difficult in both bands, so that it would be advisable to transfer the fixed service stations operating in the bands in question to other segments of the spectrum;

e) that for many developing countries, the use of the 2 GHz band offers a substantial advantage for their radiocommunication networks and that it is not attractive to transfer these systems to higher frequency bands because of the economic consequences that this would entail;

f) that ~~in response to Resolution **113 (WARC-92)**~~* the ITU-R has developed a new frequency plan for the fixed service in the 2 GHz band, set out in Recommendation ITU-R F.1098 which will facilitate the introduction of new fixed service systems in band segments that do not overlap with the above-mentioned MSS allocations at 2 GHz;

g) that sharing between fixed service systems using tropospheric scatter and Earth-to-space links in the MSS in the same frequency band segments is generally not feasible;

h) that some countries utilize these bands in application of Article 48 of the Constitution (Geneva, 1992),

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~~1 *Note by the Secretariat:* WRC-97 modified the date referred to in No. **S5.389C**.~~

~~2~~[21] This Resolution does not apply to the mobile service. In this respect, the use of these bands by the mobile-satellite service is subject to coordination with the mobile service under the provisions of Resolution **46 (Rev.WRC-97)**~~/~~ or No. **S9.11A**, as applicable.

~~* This Resolution was abrogated by WRC-97.~~

recognizing

a) that WARC-92 identified the bands 1 885-2 025 MHz and 2 110-2 200 MHz for worldwide use by ~~FPLMTS[3]~~the International Mobile Telecommunication-2000 (IMT-2000), the satellite component being limited to the frequencies 1 980-2 010 MHz and 2 170-2 200 MHz, and that the development of ~~FPLMTS[3]~~IMT-2000 can offer great potential in helping the developing countries develop more rapidly their telecommunications infrastructure;

b) that ~~in Resolution **22 (WARC-92)**[*], "Assistance to the Developing Countries to Facilitate the Implementation of Changes in Frequency Band Allocations Which Necessitate the Transfer of Existing Assignments",~~ WARC-92 resolved to request the Telecommunication Development Bureau (BDT), when formulating its immediate plans for assistance to the developing countries, to consider the introduction of specific modifications in the radiocommunication networks of the developing countries and that a future world development conference should examine the needs of developing countries and should assist them with the resources needed to implement the required modifications to their radiocommunication networks,

resolves

1 to request administrations to notify to the Radiocommunication Bureau the basic characteristics of frequency assignments to existing or planned fixed stations requiring protection, or those typical~~[4]~~[2] of existing and planned fixed stations brought into use before 1 January 2000 in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2;

2 that administrations proposing to bring an MSS system into service must take account of the fact that, when coordinating their system with administrations having terrestrial services, such administrations may have existing or planned installations covered by Article 48 of the Constitution;

3 that in respect of stations of the fixed service taken into account in the application of Resolution **46 (Rev.WRC-97)/S9.11A**, administrations responsible for MSS networks operating in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 shall ensure that unacceptable interference is not caused to fixed service stations notified and brought into use before 1 January 2000;

4 that to facilitate the introduction and future use of the 2 GHz bands by the MSS:

4.1 administrations are urged to ensure that frequency assignments to new fixed service systems, to be brought into operation after 1 January 2000, do not overlap with the 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 MSS allocations, for example by using the channel plans of Recommendation ITU-R F.1098;

~~[3] ITU-R replaced this term by the term "International Mobile Telecommunication-2000 (IMT-2000)".~~

~~[4]~~[2] With respect to the notification of frequency assignments to stations in the fixed and mobile services, it was possible to notify the characteristics of typical stations in the fixed service ~~may be notified~~ in accordance with No. **S11.17**/~~**1223**~~ without restriction up until 1 January 2000.

~~[*] This Resolution was abrogated by WRC-97.~~

4.2 administrations are urged to take all practicable steps to phase out troposcatter systems operating in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2 by 1 January 2000. New troposcatter systems shall not be brought into operation in these bands;

4.3 administrations are encouraged, where practicable, to draw up plans for the gradual transfer of the frequency assignments to their fixed service stations in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 to non-overlapping bands, giving priority to the transfer of their frequency assignments in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2, considering the technical, operational and economical aspects;

5 that administrations responsible for the introduction of mobile-satellite systems should take into account and address the concerns of affected countries, especially developing countries, to minimize the possible economic impact of transition measures in respect to existing systems;

6 to invite the Bureau to provide assistance to developing countries requesting it for the introduction of specific modifications to their radiocommunication networks that will facilitate their access to the new technologies being developed in the 2 GHz band as well as in all coordination activities;

7 that administrations responsible for the introduction of mobile-satellite systems urge their mobile-satellite system operators to participate in the protection of terrestrial fixed services especially in the least developed countries,

requests

1 the ITU-R to conduct, as a matter of urgency, further studies, in conjunction with the Bureau, to:

1.1 develop and provide to administrations the necessary tools in a timely manner and not later than WRC-02/03 to assess the impact of interference in the detailed coordination of mobile-satellite systems;

1.2 develop the necessary planning tools as soon as possible to assist those administrations considering a replanning of their terrestrial fixed networks in the 2 GHz range not later than WRC-02/03;

2 the Telecommunication Development Sector to evaluate, as a matter of urgency, the financial and economic impact on the developing countries of the transfer of fixed services, and to present its results to a future competent world radiocommunication conference and/or world telecommunication development conference,

invites

the Director of the Telecommunication Development Bureau to implement *requests* 2 by encouraging joint activities between the relevant study groups of both ITU-D and ITU-R,

instructs the Director of the Radiocommunication Bureau

to submit a report on the implementation of this Resolution to world radiocommunication conferences.

MOD

RESOLUTION 727 (~~WRC-97~~Rev.WRC-2000)

Use of the frequency band 420-470 MHz by the earth exploration-satellite (active) service

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that the United Nations Conference on Environment and Development (UNCED) (Rio de Janeiro, 1992) identified an urgent need for assessment and systematic observations of forest cover and rate of forest degradation in tropical and temperate regions;

b) that, during ~~this Conference~~WRC-97, many countries agreed to the principle that ITU should take action in response to the need identified by UNCED;

c) that frequencies around 450 MHz have been identified as having the unique capability to penetrate the canopy of forests and to determine the ground-trunk interaction;

d) that a bandwidth of about 6 MHz is considered necessary to provide the required resolution,

recognizing

a) that ~~this Conference~~WRC-97 considered a proposal for a secondary allocation for the earth exploration-satellite (active) service within the frequency band 432-438 MHz;

~~*b)* that the Report of the 1997 Conference Preparatory Meeting (CPM-97) stated that this Conference may deem it appropriate to defer consideration of this agenda item to WRC-99, by which time all relevant studies should be completed;~~

~~*c*~~*b)* that CPM-97 concluded that spaceborne sensors cannot be considered technically compatible with terrestrial tracking radars without restriction on the spaceborne sensors;

~~*d*~~*c)* that measures may be needed to minimize interference to fixed, mobile, mobile-satellite, amateur, amateur-satellite and space operation services,

resolves

1 to invite ITU-R to study, as a matter of urgency, emission criteria, specific sharing criteria and operational characteristics for active spaceborne sensors in the frequency band 420-470 MHz, and develop a relevant Recommendation;

2 to invite ITU-R to develop an ITU-R Report by the date of ~~the 1999~~a future Conference Preparatory Meeting ~~(CPM-99)~~ on the specific emission and operational characteristics used by the Earth exploration-satellite (active) service in order to minimize the potential interference to existing services, and in order to support the selection of a frequency band having the optimal sharing scenarios;

3 that, on the basis of proposals from administrations, and taking into account the results of the ITU-R studies, the ITU-R Report mentioned in *resolves* 2, and ~~the~~a future CPM~~-99~~ Report, ~~WRC-99~~a future competent world radiocommunication conference should consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite (active) service in the frequency band 420-470 MHz.

RESOLUTION [COM4/3] (WRC-2000)

Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that there is a demand for global wideband satellite communication services on vessels;

b) that the technology exists that permits the use of fixed-satellite service (FSS) networks by earth stations on board vessels (ESVs) operating in the 3 700-4 200 MHz and 5 925-6 425 MHz bands;

c) that ESVs have the potential to cause unacceptable interference to other services in the band 5 925-6 425 MHz;

d) that ESVs operating in these bands require considerably less than the full bandwidth in this FSS allocation and only a portion of the visible geostationary arc;

e) that there are a limited number of geostationary FSS systems that have global coverage;

f) that there may be a number of vessels using these ESVs which may cause a high coordination burden to some administrations, especially those in developing countries;

g) that in order to ensure the protection and future growth of other services, the ESV shall operate with needed technical and operational constraints;

h) that based on appropriate assumptions a minimum distance can be calculated beyond which the ESV will not have the potential to cause unacceptable interference to the other services in this band,

noting

a) that earth stations on board vessels may operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz under **S4.4** of the Radio Regulations and shall not claim protection from nor cause interference to other services allocated in the band;

b) that operation within the territorial waters is at the discretion of the administration with territorial authority, in which case the relevant procedures of that administration will apply;

c) that operation of earth stations on board vessels from specified fixed points at locations outside the territorial waters but for which an administration has jurisdiction is fully within the FSS,

recognizing

a) that progress has been made within ITU-R in determining the technical and operational provisions under which ESVs could operate;

b) that further studies are needed,

resolves

1 to request ITU-R to continue to study, as a matter of urgency, the regulatory, technical and operational constraints to be applied to ESV operations, considering the provisional guidelines for ESV use in Annex 1 and the provisional technical guidelines given in Annex 2 and, in particular, to determine the appropriate value for the minimum distance from the coast of any

administration beyond which ESVs are assumed not to have the potential to cause unacceptable interference to stations of other services of that administration and beyond which no coordination would be required;

2 to request ITU-R, as a matter of urgency:

– to develop recommendations on methods for coordination between terrestrial services and ESVs;

– to study the feasibility of mitigation techniques such as various frequency arrangements or dual-band systems as a way to avoid the need for detailed coordination of ESVs without constraining existing services;

– to study, as a complement to the 3 700-4 200 MHz and 5 925-6 425 MHz bands, the use of other FSS allocations for ESVs transmitting in the 6 GHz and 14 GHz bands;

3 to invite WRC-03 to assess, in the light of these studies, the provisions under which earth stations located on board vessels could operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz, without causing unacceptable interference to radiocommunication services operating in accordance with the Radio Regulations;

4 that until a decision is adopted for ESVs by WRC-03, agreement between the administrations licensing ESVs and affected administrations should be made on a bilateral or multilateral basis in accordance with the guidelines in Annexes 1 and 2;

5 that until a decision may be adopted for ESVs by WRC-03, administrations licensing ESVs that enter into bilateral or multilateral agreements under *resolves* 4 should ensure that as part of the licensing process ESVs operate in compliance with such agreements, taking into consideration the interest of concerned neighbouring countries,

encourages concerned administrations

to cooperate with administrations which license ESVs while seeking agreement under *resolves* 4,

encourages ESV licensing administrations

to consider registering their ESV frequency assignments in the Master International Frequency Register, for information purposes only,

urges all administrations

to participate actively in the above-mentioned studies by submitting contributions,

instructs the Secretary-General

to bring this Resolution to the attention of the Secretary-General of the International Maritime Organization and to invite this organization to participate in the work on this issue.

ANNEX 1 TO RESOLUTION [COM4/3] (WRC-2000)

Guidelines for ESV use

1 The administration that issues the radio licence for the use of ESVs in these bands (licensing administration) shall ensure that such stations do not cause unacceptable interference to other services of the concerned administration;

2 operators of ESVs shall comply with the technical guidelines listed in Annex 2 and/or those agreed by the licensing and concerned administrations;

3 ESVs shall not claim protection from transmissions of other services operating in accordance with the Radio Regulations;

4 any transmissions from ESVs within an agreed distance* of any given coast shall be based upon the prior agreement of the concerned administration;

5 administrations which issue ESV licences shall ensure that ESV operators endeavour to provide the necessary assistance to the concerned administrations in order to facilitate the agreement;

6 administrations, in determining the distance referred to in item 4 above, are encouraged to exclude those parts of their territory, such as remote small islands, where other services in the band 5 925-6 425 MHz are neither operating nor planned;

7 if an administration changes its actual or planned deployment of stations in other services, it may require revision of the agreement with the ESV licensing administration(s);

8 the ESV system should include means of identification and automatic mechanisms to terminate transmissions whenever the station operates outside its pre-authorized geographic (see item 4 above) or operational limits;

9 ESVs should be equipped so as to enable the licensing administration under the provisions of Article **S18** to verify earth station performance and to terminate ESV transmission immediately upon request by an administration whose services may be affected;

10 when ESVs operating beyond the territorial waters but within the distance (as referred to in item 4 above) of the coast of an administration fail to comply with the terms required by that administration pursuant to items 2 and 4, then that administration may:

– request the ESV to comply with such terms or cease operation immediately; or

– request the licensing administration to require such compliance or immediate cessation of the operation;

11 any licensing authority that licenses ESVs should maintain at all times a point of contact, that may be contacted by a concerned administration.

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* The distance is a minimum distance from the coast of an administration beyond which ESVs are assumed not to have the potential to cause unacceptable interference to fixed service stations of that administration and beyond which no coordination is required.

ANNEX 2 TO RESOLUTION [COM4/3] (WRC-2000)

Technical guidelines applicable to ESVs operating in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

Minimum diameter of ESV antenna:	2.4 m
Maximum half-power beamwidth of ESV antenna:	1.5 degrees
Minimum elevation angle of ESV antenna:	10°
Maximum necessary bandwidth per vessel:	2.346 MHz
Maximum necessary bandwidth in a single operating area:	36 MHz (see Note)
Maximum ESV transmitter power spectral density at the input to the antenna:	17 dB(W/MHz)
Tracking accuracy of ESV antenna:	0.2 degrees

NOTE - The actual bandwidth required in an operating area will depend on the number of ESVs that would be present simultaneously in that area, and in many areas the required bandwidth will be less than 36 MHz. In addition, because ESV stations are frequency agile, the necessary bandwidth per vessel (2.346 MHz) can be generally identified anywhere within the 4/6 GHz bands and does not have to be contiguous with bandwidth of other ESV stations.

MOD

S21.7 5) Transhorizon systems in the 1 700-1 710 MHz, ~~1 970~~1 980-2 010 MHz, 2 025-2 110 MHz and 2 200-2 290 MHz bands may exceed the limits given in Nos. **S21.3** and **S21.5**, but the provisions of Nos. **S21.2** and **S21.4** should be observed. Considering the difficult sharing conditions with other services, administrations are urged to keep the number of transhorizon systems in these bands to a minimum.

MOD

S1.171 *coordination area:* When determining the need for coordination, t~~T~~he area ~~associated with~~surrounding an *earth station* ~~outside of which a *terrestrial station* sharing the same frequency band neither causes nor is subject to interfering *emissions* greater than a permissible level~~sharing the same frequency band with *terrestrial stations*, or surrounding a transmitting *earth station* sharing the same bidirectionally allocated frequency band with *receiving earth stations*, beyond which the permissible level of interference will not be exceeded and coordination is therefore not required.

MOD

S1.173 *coordination distance:* When determining the need for coordination, the d~~D~~istance on a given azimuth from an *earth station* sharing the same frequency band with terrestrial stations, or from a transmitting earth station sharing the same bidirectionally allocated frequency band with receiving earth stations, beyond which ~~a *terrestrial station* sharing the same frequency band neither causes nor is subject to interfering *emissions* greater than a~~the permissible level of interference will not be exceeded and coordination is therefore not required.

MOD

S1.185 *inclination of an orbit* (of an earth satellite)*:* The angle determined by the plane containing the *orbit* and the plane of the Earth's equator measured in degrees between 0 and 180 and in counter-clockwise direction from the Earth’s equatorial plane at the ascending node of the orbit.

MOD

S5.43 1) Where it is indicated in these Regulations that a service or stations in a service may operate in a specific frequency band subject to not causing harmful interference to another service or to another station in the same service, this means also that ~~this~~the service which is subject to not causing harmful interference cannot claim protection from harmful interference caused by this other service~~s~~ or other stations in the same service~~to which the band is allocated under Chapter **SII** of these Regulations~~.

ADD

S5.43A 1*bis*) Where it is indicated in these Regulations that a service or stations in a service may operate in a specific frequency band subject to not claiming protection from another service or from another station in the same service, this means also that the service which is subject to not claiming protection cannot cause harmful interference to this other service or other stations in the same service.

MOD

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[1] **S8.1.1** 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 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 § A.4 of Annex 2A to Appendix **S4**, as relevant, and moreover wherever the expression relates to an earth station associated with a space station in the geostationary-satellite orbit or in non-geostationary orbit, it shall be associated with § A.4 *c)* of Annex 2A to Appendix S4, as relevant.

SUP

RESOLUTION 60

Relating to information on the propagation of radio waves used in the determination of the coordination area

SUP

RECOMMENDATION 105 (WRC-95)

Further work by ITU-R on determination of the coordination area around earth stations operating with geostationary-satellite networks in the fixed-satellite service and earth stations providing feeder links to non-geostationary-satellite networks in the mobile-satellite service operating in opposite directions of transmission

SUP

RECOMMENDATION 711

Relating to the coordination of earth stations

MOD

RESOLUTION 72 (Rev.WRC-~~97~~2000)

Regional preparations for World Radiocommunication Conferences

The World Radiocommunication Conference (~~Geneva~~Istanbul, ~~1997~~2000),

considering

a) that many regional telecommunication organizations have coordinated their preparations for WRC-~~97~~2000;

b) that ~~a number of~~many 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 Member States ‡ 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,

recognizing

a) *resolves* 2 of Resolution 80 (Minneapolis, 1998)

"to support the regional harmonization of common proposals, as stated in Resolution 72 (WRC-97), for submission to world radiocommunication conferences";

b) *resolves* 3 of Resolution 80 (Minneapolis, 1998)

"to encourage both formal and informal collaboration in the interval between conferences with a view to resolving differences on new, or conference agenda issues",

noting

a) that at the World Telecommunication Development Conference (~~Buenos Aires~~Valletta, 199~~4~~8) 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~~Minneapolis, 199~~4~~8) resolved that the Union should develop stronger relations with regional telecommunication organizations~~,~~;

c) that RA-2000 adopted Resolution ITU-R 48 which sought greater regional presence in ITU-R study group work including WRC-related studies,

further noting

that in some regions the relationship with the ITU-~~R~~RD regional offices has proved to be of great benefit,

resolves to instruct the Director of the Radiocommunication Bureau

a) to continue consulting 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:

– organization of regional preparatory meetings;

– information sessions preferably before and after the second conference preparatory meeting;

– development of coordination methods;

– identification of major issues to be resolved by the future world radiocommunication conference;

– facilitation of regional and interregional informal and formal meetings~~;~~, with the objective of reaching a

~~–~~convergence of interregional views on major issues;

b) to, pursuant to ITU Radiocommunication Assembly resolution on the CPM Resolution ITU-R 2-3, assist in ensuring that overview presentations by the CPM management of the chapters will be made at the early stages of the meeting as part of the regularly scheduled sessions, in order to facilitate the understanding by all participants of the contents of the next CPM Report;

~~*b*~~*c)* to submit a report on the results of ~~the~~ such consultations to both the next Plenipotentiary Conference and WRC-03~~for consideration~~,

invites ~~the Plenipotentiary Conference~~the Director of the Telecommunication Development Bureau (BDT)

to ~~consider the report submitted by the Directors of the Radiocommunication Bureau (BR) and the Telecommunications Development Bureau (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~~ collaborate with the Director of the Radiocommunication Bureau (BR) in implementing this Resolution.

ADD

RESOLUTION [COM4/1] (WRC-2000)

The process to keep the technical bases of Appendix S7 current

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that Appendix **S7** to the Radio Regulations provides the method for the determination of the coordination area of an earth station, and the assumed technical coordination parameters for the unknown terrestrial station or earth station;

b) that the technical coordination parameters are contained in Tables 1, 2 and 3 of Annex VII of Appendix **S7 (Rev.WRC-2000)**;

c) that the technical coordination parameter tables are based on Recommendation ITU-R SM.1448;

d) that ITU-R studies on methods for the determination of the coordination area of an earth station are continuing, and the conclusions of these studies could lead to the revision of Appendix **S7**. These methods under study are:

– methods considering the cumulative impact in determining the coordination areas for high-density earth stations (fixed and mobile);

– methods to address the modelling of VHF/UHF frequencies for percentages of time below 1%;

– methods to address propagation mode (2) water vapour density for both radio climatic Zones B and C;

– refinements to propagation mode (2) to address elevation angle dependency and the displacement of the centre of propagation mode (2) contour from the coordinating earth station;

e) that the technical coordination parameter tables may also need to be modified when changes are made to the Table of Frequency Allocations at future WRCs, or due to changes in technology, or due to changes in deployment of services;

f) that the technical coordination parameter tables do not include values for all the necessary parameters of certain space radiocommunication services and terrestrial radiocommunication services sharing frequency bands with equal rights,

recognizing

a) that Recommendation ITU-R SM.1448 was developed by ITU-R as a basis for the revision of Appendix **S7**;

b) that there is a need for future WRCs to keep Appendix **S7** current with the latest techniques and to ensure protection of other radiocommunication services sharing the same frequency bands with equal rights, particularly the revision of the tables of technical coordination parameters,

requests ITU-R

to continue its study, as required, of the technical bases used for the determination of the coordination area for an earth station, including recommended values for the missing entries in the tables of technical coordination parameters (Annex VII of Appendix **S7**), to maintain the relevant ITU-R texts in a format which would facilitate the future revision of Appendix **S7**, and to assess the significance of any changes to the technical bases,

resolves

1 that when ITU-R concludes, based on its studies of the methods in *considering d)* for the determination of the coordination area for an earth station and/or the values of technical coordination parameters, that a revision of Appendix **S7** is warranted, the matter shall be brought to the attention of the Radiocommunication Assembly;

2 that, if the Radiocommunication Assembly confirms improvements of the methods in *considering d)* for the determination of the coordination area for an earth station and/or the values of technical coordination parameters have been presented by ITU-R, the Director, Radiocommunication Bureau, shall identify the matter in the Director's Report to the upcoming WRC,

invites

1 WRCs presented with any significant changes through the Director's Report to consider the revision of Appendix **S7** in light of the recommendation of the Radiocommunication Assembly, pursuant to *resolves* 1 and 2 above; and

2 each WRC, when modifying the Table of Frequency Allocations, to consider any consequential changes to the technical coordination parameters of Annex VII of Appendix **S7**, and if necessary request ITU-R to study the matter.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 429(Rev.1)-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 378, 387

COMMITTEE 5
GT-PLEN-1

Note by the Chairperson of Committee 4 to the Chairpersons of Committee 5 and GT PLEN-1

ITU-R RECOMMENDATIONS CONTAINING TEXTS INCORPORATED BY REFERENCE IN THE RADIO REGULATIONS

DRAFT TABLE OF CONTENTS OF VOLUME 4 OF THE RADIO REGULATIONS (EDITION, 2000)

Attached is the draft table of contents of Volume 4 of the Radio Regulations (edition, 2000), which contains the provisional list of the ITU-R Recommendations containing texts incorporated by reference in the Radio Regulations.

The list will be completed on the basis of the decisions that may be taken in this regard by this conference.

Committee 5 and Working Group of the Plenary GT PLEN-1 are requested to inform Committee 4 on any decision which may lead to a change of the status of the ITU-R Recommendations containing texts incorporated by reference that are included in the attached list, as well as on the possible addition of new ITU-R Recommendations to this list. In accordance with the procedure in Document 201, the new ITU-R Recommendations containing texts that are proposed for incorporation by reference will be available for consultation in office 0/13 of the Rumeli building, level 0, opposite to Rumeli A Room (Mr W. Frank, Mrs L. Trarieux). In addition, one copy will be provided to each administration.

Following the conference, the Radiocommunication Bureau and the General Secretariat shall review the decisions taken by this conference with a view to completing the list in accordance with Resolution 27 (Rev.WRC-2000) and to publishing Volume 4 of the Radio Regulations accordingly.

H. RAILTON
Chairperson, Committee 4, Box 2895

VOLUME 4

ITU-R Recommendations incorporated by reference

Recommendation	Title	Provision No.[1]
ITU-R M.257-3	Sequential single frequency selective-calling system for use in the maritime mobile service	**S19.38**, S19.83, **S19.92**, **S19.96A**, S52.188, **S52.222.1**, **S52.235**, S54.2, AP S13, Part A5, § 11
ITU-R TF.460-5	Standard-frequency and time-signal emissions	**S1.14**
ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	**S19.83**, **S19.96A**, **S51.41**
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	**S51.77**, **S52.231**, **AP S13**, **Part A2, § 10 1)** AP S18, Note *e)*
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	**S52.27**, S56.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**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	S19.83, **S51.41**
ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	S19.83, **S51.41**
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	**AP S13, Part A5**, **§ 1 *b)*** and **4 2)** AP S15, Table S15-2, 121.5 MHz
[ITU-R RA.769-1[2]	Protection criteria used for radioastronomical measurements	S5.208A, **S5.511A**, S29.12]
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	AP S1, § 1 2) and **2 3.1)**
ITU-R SA.1154[3]	Provisions to protect the space research (SR), space operations (SO), and Earth-exploration satellite services (EES) and to facilitate sharing with the mobile service in the 2 025-2 110 MHz and 2 200-2 290 MHz bands	**S5.391**
ITU-R M.1169	Hours of service of ship stations	**S47.26**, **S47.27**, **S47.28**, **S47.29**, **S50.9**

[1] This column is provided only for convenience to delegates so that they may trace the process of incorporation by reference and will not appear in Volume 4.

[2] Committee 5 has indicated in Document 229 that this reference will be suppressed.

[3] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	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	S51.71, S52.192, **S52.195**, S52.213, **S52.224**, S52.234, **S52.240**, **S57.1**, **AP S13**, **Part A2, § 14A 1)**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	**S19.48**, S32.7, AP S13, Part A1, § 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	**S52.181**, **S52.229**, **AP S17**, **Part B, Section I**, **§ 2, 6** ***a)*** and ***b)***
ITU-R M.1174-1[4]	Characteristics of equipment used for on-board communications in the bands between 450 and 470 MHz	**S5.287**, **S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	**AP S13**, **Part A5**, **§ 9**
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	AP **S4**, **§ C.11** ***d)***
ITU-R BO.1213	Reference receiving earth station antenna patterns for replanning purposes to be used in the revision of the WARC BS-77 broadcasting-satellite service plans for Regions 1 and 3	**AP S30**, **§ 11.1** **AP S30**, **Annex 5**, **§ 3.7.2**
ITU-R S.1256[5]	Methodology for determining the maximum aggregate power flux-density at the geostationary-satellite orbit in the band 6 700-7 075 MHz from feeder links of non-geostationary satellite systems in the mobile-satellite service in the space-to-Earth direction	**S22.5A**
ITU-R BO.1293-1[6]	Protection masks and associated calculation methods for interference into broadcast satellite systems involving digital emissions	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**

[4] Committee 5 has indicated in Document 229 that the updated version of the subject ITU-R Recommendation should be included.

[5] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[6] GT PLEN-1, in Document 426 proposes to incorporate by reference Recommendation ITU-R BO.1293-1.

ITU-R BO.1295	Reference transmit earth station antenna off-axis e.i.r.p. patterns for planning purposes to be used in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.5.3**
ITU-R BO.1296	Reference receive space station antenna patterns for planning purposes to be used for elliptical beams in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.7.3**
ITU-R BO.1297	Protection ratios to be used for planning purposes in the revision of the Appendices 30 (Orb-85) and 30A (Orb-88) Plans of the Radio Regulations in Regions 1 and 3	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**
ITU-R S.1340[7]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the Earth-to-space direction in the band 15.4-15.7 GHz	**S5.511C**
ITU-R S.1341[8]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the space-to-Earth direction in the band 15.4-15.7 GHz and the protection of the radio astronomy service in the band 15.35-15.4 GHz	**S5.511A**

NOTE - Recommendations ITU-R IS.847-1, IS.848-1, IS.849-1 and M.1185-1, which appeared in Volume 4 of the Radio Regulations (1998 edition) will not appear in the forthcoming edition of Volume 4, bearing in mind the decisions of WRC-2000 related to Appendix S7.

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[7] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[8] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 429-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document DT/68 **COMMITTEE 4**

Note by the Chairperson of Committee 4 to the Chairpersons of Committee 5 and GT PLEN-1

ITU-R RECOMMENDATIONS CONTAINING TEXTS INCORPORATED BY REFERENCE IN THE RADIO REGULATIONS

DRAFT TABLE OF CONTENTS OF VOLUME 4 OF THE RADIO REGULATIONS (EDITION, 2000)

Attached is the draft table of contents of Volume 4 of the Radio Regulations (edition, 2000), which contains the provisional list of the ITU-R Recommendations containing texts incorporated by reference in the Radio Regulations.

The list will be completed on the basis of the decisions that may be taken in this regard by this conference.

Committee 5 and Working Group of the Plenary GT PLEN-1 are requested to inform Committee 4 on any decision which may lead to a change of the status of the ITU-R Recommendations containing texts incorporated by reference that are included in the attached list, as well as on the possible addition of new ITU-R Recommendations to this list. In accordance with the procedure in Document 201, the new ITU-R Recommendations containing texts that are proposed for incorporation by reference will be available for consultation in office 0/13 of the Rumeli building, level 0, opposite to Rumeli A Room (Mr W. Frank, Mrs L. Trarieux). In addition, one copy will be provided to each administration.

Following the conference, the Radiocommunication Bureau and the General Secretariat shall review the decisions taken by this conference with a view to completing the list in accordance with Resolution 27 (Rev.WRC-2000) and to publishing Volume 4 of the Radio Regulations accordingly.

H. RAILTON
Chairperson, Committee 4, Box 2895

VOLUME 4

ITU-R Recommendations incorporated by reference

Recommendation	Title	Provision No.[1]
ITU-R M.257-3	Sequential single frequency selective-calling system for use in the maritime mobile service	**S19.38**, S19.83, **S19.92**, **S19.96A**, S52.188, **S52.222.1**, **S52.235**, S54.2, AP S13, Part A5, § 11
ITU-R TF.460-5	Standard-frequency and time-signal emissions	**S1.14**
ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	**S19.83**, **S19.96A**, **S51.41**
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	**S51.77**, **S52.231**, **AP S13**, **Part A2, § 10 1)** AP S18, Note *e)*
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	**S52.27**, S56.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**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	S19.83, **S51.41**
ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	S19.83, **S51.41**
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	**AP S13, Part A5**, **§ 1 *b)*** and **4 2)** AP S15, Table S15-2, 121.5 MHz
[ITU-R RA.769-1[2]	Protection criteria used for radioastronomical measurements	S5.208A, **S5.511A**, S29.12]
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	AP S1, § 1 2) and **2 3.1)**
ITU-R SA.1154[3]	Provisions to protect the space research (SR), space operations (SO), and Earth-exploration satellite services (EES) and to facilitate sharing with the mobile service in the 2 025-2 110 MHz and 2 200-2 290 MHz bands	**S5.391**
ITU-R M.1169	Hours of service of ship stations	**S47.26**, **S47.27**, **S47.28**, **S47.29**, **S50.9**

[1] This column is provided only for convenience to delegates so that they may trace the process of incorporation by reference and will not appear in Volume 4.

[2] Committee 5 has indicated in Document 229 that this reference will be suppressed.

[3] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	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	S51.71, S52.192, **S52.195**, S52.213, **S52.224**, S52.234, **S52.240**, **S57.1**, **AP S13**, **Part A2, § 14A 1)**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	**S19.48**, S32.7, AP S13, Part A1, § 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	**S52.181**, **S52.229**, **AP S17**, **Part B, Section I**, **§ 2, 6** ***a)*** and ***b)***
ITU-R M.1174-1[4]	Characteristics of equipment used for on-board communications in the bands between 450 and 470 MHz	**S5.287**, **S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	**AP S13**, **Part A5**, **§ 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	**AP S5**, **Annex 1**, **§ 3.2**, **Table 1** Resolution 46 (Rev.WRC-97), 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	AP **S4**, **§ C.11** ***d)***
ITU-R BO.1213	Reference receiving earth station antenna patterns for replanning purposes to be used in the revision of the WARC BS-77 broadcasting-satellite service plans for Regions 1 and 3	**AP S30**, **§ 11.1** **AP S30**, **Annex 5**, **§ 3.7.2**
ITU-R S.1256[5]	Methodology for determining the maximum aggregate power flux-density at the geostationary-satellite orbit in the band 6 700-7 075 MHz from feeder links of non-geostationary satellite systems in the mobile-satellite service in the space-to-Earth direction	**S22.5A**
ITU-R BO.1293[-1][6]	Protection masks and associated calculation methods for interference into broadcast satellite systems involving digital emissions	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**

[4] Committee 5 has indicated in Document 229 that the updated version of the subject ITU-R Recommendation should be included.

[5] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[6] The updated version of this Recommendation is under consideration in GT PLEN-1; see Document 198.

ITU-R BO.1295	Reference transmit earth station antenna off-axis e.i.r.p. patterns for planning purposes to be used in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.5.3**
ITU-R BO.1296	Reference receive space station antenna patterns for planning purposes to be used for elliptical beams in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.7.3**
ITU-R BO.1297	Protection ratios to be used for planning purposes in the revision of the Appendices 30 (Orb-85) and 30A (Orb-88) Plans of the Radio Regulations in Regions 1 and 3	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**
ITU-R S.1340[7]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the Earth-to-space direction in the band 15.4-15.7 GHz	**S5.511C**
ITU-R S.1341[8]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the space-to-Earth direction in the band 15.4-15.7 GHz and the protection of the radio astronomy service in the band 15.35-15.4 GHz	**S5.511A**

NOTE - Recommendations ITU-R IS.847-1, IS.848-1 and IS.849-1, which appeared in Volume 4 of the Radio Regulations (1998 edition), were suppressed by the Radiocommunication Assembly (Istanbul, 2000) and will not appear in the forthcoming edition of Volume 4, bearing in mind the decisions of WRC-2000 related to Appendix S7.

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[7] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[8] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 430-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Note from Chairperson, Committee 5 Ad Hoc 1

In accordance with the instructions form Committee 5, a meeting of maritime experts was convened to review the maritime related Resolutions and Recommendations, which Working Group 4B has identified to be the responsibility of Committee5.

The proposal of this Ad Hoc Group is the following:

Res. 312	NOC
Res. 331	NOC
Res 347	NOC
Res. 602	NOC
Rec. 14	NOC
Rec. 316	NOC
Rec. 622	NOC

P. LANSMAN
Chairperson, Committee 5 Ad Hoc 1

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 431-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 355, 361, 392 and 391 **COMMITTEE 6**

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

Committee 5 has continued its consideration of its agenda items. As a result of these deliberations, it has adopted, at its fifth and sixth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to Plenary.

Chris Van DIEPENBEEK
Chairperson, Committee 5

SUP

RESOLUTION 219 (WRC-97)

Studies relating to consideration of the allocation to the non-geostationary mobile-satellite service in the meteorological aids band 405-406 MHz and the impact on primary services allocated in the adjacent bands

MOD

RESOLUTION 214 (Rev.WRC-~~97~~2000)

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~~Istanbul, 2000),

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 199~~7~~9 Conference Preparatory Meeting, 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~~,~~;

h) that the bands 410-430 MHz and 440-470 MHz are extensively used by existing services in Region 1, in many countries in Region 3, and in some countries in Region 2, and new terrestrial systems are planned to be introduced in these bands;

i) that studies of certain bands have not been completed,

noting

a) that additional studies may identify ~~other~~suitable bands below 1 GHz ~~which could also~~and appropriate sharing techniques to be considered ~~suitable~~ for ~~a~~ worldwide allocations 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~~b) 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~~c) 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~~d) 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;

e) that substantial progress has been made by recently completed ITU-R studies of sharing between the non-GSO MSS below 1 GHz in the Earth-to-space direction and existing specific services, however, studies on some important issues remain to be completed;

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,~~

g) that the use of some sharing techniques such as those referenced in *noting c)* results in non-GSO MSS systems which have significantly greater spectrum requirements in the Earth-to-space direction than in the space-to-Earth direction,

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 WRC-~~99~~02/03 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 WRC-99 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 on, as a matter of urgency, the performance requirements, sharing criteria and technical and operational issues relating to sharing between ~~both~~ existing and planned systems of allocated services and non-GSO MSS below 1 GHz;

2 as a matter of urgency, to carry out studies in preparation for WRC-~~99~~02/03, ~~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~~c)*;

3 as a matter of urgency, to carry out studies in preparation for WRC-~~99~~02/03 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~~4 to bring the results of these studies to the attention of WRC-~~99~~02/03 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~~.

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) MOD S5.353A Earth exploration-satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530-1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) MOD S5.353A Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	
1 535-1 559	MOBILE-SATELLITE (space-to-Earth) S5.341 S5.351 MOD S5.353A S5.354 S5.355 S5.356 S5.357 MOD S5.357A S5.359 S5.362A	

MOD

1 610-1 660 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) S5.341 S5.351 MOD S5.353A S5.354 S5.355 MOD S5.357A S5.359 S5.362A S5.374 S5.375 S5.376	

MOD

S5.353A In applying the procedures of ~~No. **S9.11A**~~Section II of Article **S9** 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~~The provisions of Resolution ~~**218**~~ **[COM5/22] (WRC-~~~~97~~~~2000)** shall apply.)

MOD

S5.357A In applying the procedures of ~~No. **S9.11A**~~Section II of Article **S9** 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 providing transmission of messages with priority 1 to 6 in Article **S44**. Aeronautical mobile-satellite (R) service 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, aeronautical mobile-satellite (R) service 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~~The provisions of Resolution ~~**218**~~**[COM5/22] (WRC-~~~~97~~~~2000)** shall apply.)

ADD

RESOLUTION [COM5/22] (WRC-2000)

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 (Istanbul, 2000),

considering

a) that prior to the World Radiocommunication Conference (Geneva, 1997) the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (route) service (AMS(R)S) in most countries;

b) that the World Radiocommunication Conference (Geneva, 1997) 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;

c) that the World Radiocommunication Conference (Geneva, 1997) adopted footnotes No. **S5.353A** giving priority to accommodating the spectrum requirements for distress, urgency and safety communications, and protection from unacceptable interference, to the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. **S5.357A** giving priority to accommodating the spectrum requirements, and protection from unacceptable interference, to the AMS(R)S providing transmission of messages with priority 1 to 6 in Article **S44** in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz,

further considering

a) that coordination between satellite networks is required on a bilateral basis in accordance with the ITU Radio Regulations. In the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space) coordination is partially assisted by regional multilateral meetings;

b) that in these bands GSO satellite system operators presently use a capacity planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements;

c) that the GMDSS and AMS(R)S spectrum requirements are currently satisfied through the capacity planning approach and that in the bands to which Nos. **S5.353A** or **S5.357A** applies, this approach, and other methods such as intra- and inter-system prioritization, pre-emption and interoperability may assist to accommodate the expected increase of spectrum requirements for GMDSS and AMS(R)S;

d) that the feasibility of prioritization, real-time pre-emptive access and the mechanism to transfer spectrum between different mobile-satellite systems that may or may not provide GMDSS and/or AMS(R)S has yet to be established,

recognizing

a) that priority access and immediate availability of spectrum for distress, urgency and safety communications of the GMDSS and AMS(R)S communications is of vital importance for the safety of life;

b) that the ICAO has adopted Standards and Recommended Practices (SARPs) addressing satellite communications with aircraft in accordance with the Convention on International Civil Aviation;

c) that all air traffic communications as defined in Annex 10 to the Convention on International Civil Aviation fall within categories 1 to 6 of Article **S44**;

d) that Table **S15-2** of Appendix **S15** to the Radio Regulations 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,

resolves

1 that in the frequency coordination of the mobile-satellite services in the bands 1 525-1 559 and 1 626.5-1 660.5 MHz, administrations shall ensure accommodation of the spectrum needed for distress, urgency and safety communications of GMDSS, as elaborated upon in Articles **S32** and **S33,** in the bands where No. **S5.353A** applies and AMS(R)S communications with priority 1 to 6 of Article **S44** in the bands where No. **S5.357A** applies;

2 that administrations shall ensure the use of the latest technical advances, which may include prioritization and real-time pre-emptive access between MSS systems, when necessary and where feasible, to achieve the most flexible and practical use of the generic allocations;

3 that administrations shall ensure that mobile-satellite service operators carrying non-safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements of the distress, urgency and safety communication of GMDSS communications, as elaborated upon in Articles **S32** and **S33,** and AMS(R)S communications with priority 1 to 6 of Article **S44**. This could be achieved in advance through the coordination process at *resolves* 1, and, when necessary and where feasible, through prioritization and real-time pre-emptive access,

requests ITU-R

to complete studies to determine the feasibility and practicality of prioritization and real-time pre-emptive access between different networks of mobile-satellite systems as referred to in *resolves* 2 above, whilst taking into account the latest technical advances in order to maximize spectral efficiency,

invites

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

SUP

RESOLUTION 218 (WRC-97)

Use of the bands 1525-1559 MHz and 1626.5-1660.5 MHz by the mobile-satellite service

ADD

RESOLUTION [COM5/23] (WRC-2000)

Development of procedures in case the operational or additional operational limits in Article S22 are exceeded

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 adopted in Article **S22** single-entry operational limits (see Tables **S22-4A** through **S22-4C**) and single-entry additional operational limits (see Table **S22-4A1**), applicable to non-geostationary-satellite systems in the fixed-satellite service in the space-to-Earth direction in certain parts of the frequency range 10.7-20.2 GHz;

b) that, taking into account **S22.5H** and **S22.5I**, any exceedence of the limits referred to in *considering a)* by a non-geostationary system in the fixed-satellite service to which the limits apply is a violation of No. **S22.2** of the Radio Regulations;

c) that ITU-R has identified the need for specific procedures that correct in the most expeditious manner any exceedence of the limits in *considering a)*, by the inclusion of appropriate procedures in the Radio Regulations;

d) that the growth in use of non-geostationary satellites is unlikely to lead to many cases of exceedence of the limits mentioned in *considering a)* before WRC-03,

resolves

that further study is needed to develop procedures suitable for application in the long term,

requests ITU-R

taking into consideration the guidelines in Annex 1, to conduct, as a matter of urgency, and complete in time for consideration by WRC-03, the appropriate regulatory studies to develop procedures, not limited to modification of Article **S15**, for application in cases where the power limits mentioned in *considering a)* are exceeded into an operational earth station.

ANNEX 1 TO RESOLUTION [COM5/23] (WRC-2000)

Guidelines for the development of procedures for assuring compliance with single-entry operational and additional operational limits in Section II of Article S22

1 It is essential that Member States ‡ exercise the utmost goodwill and mutual assistance in the application of the provisions of Article 45 of the Constitution and of these procedures to the settlement of problems stemming from $epfd_{down}$ interference from non-GSO fixed-satellite service systems in excess of the operational limits given in Tables **S22-4A, S22-4B,** and **S22-4C,** and/or the additional operational limits given in Table **S22-4A1** ("excess $epfd_{down}$ interference").

2 In the settlement of these problems, due consideration shall be given to all factors involved, including the relevant technical and operating factors.

3 For the purpose of these procedures, the term "administration" may include the centralizing office designated by the administration, in accordance with No. **S16.3**.

5 Administrations shall cooperate in the detection and elimination of excess $epfd_{down}$ interference.

6 Where practicable, and subject to agreement by administrations concerned, the case of excess $epfd_{down}$ interference may be dealt with directly between their operating organizations.

7 When a case of excess $epfd_{down}$ interference is reported by a receiving GSO earth station associated with a transmitting space station, which excess $epfd_{down}$ interference cannot be accepted by the affected administration, the affected administration should first attempt to identify the source of the excess $epfd_{down}$ interference.

8 If the administration having jurisdiction over the receiving earth station has difficulty in determining the source or characteristics of the excess $epfd_{down}$ interference:

a) It may send a request for cooperation to all administrations responsible for non-GSO FSS systems with overlapping frequency assignments that have been brought into use, providing all relevant details. A copy of any such request shall be sent to Bureau.

b) Upon receipt of such a request, each administration shall, as soon as possible, acknowledge receipt and send to the requesting administration within 15 days, with a copy to the Bureau, the information that may be used to identify the source of the problem. Such acknowledgement shall not constitute acceptance of responsibility.

c) If an administration fails to respond within 15 days, the affected administration may request the assistance of the Bureau, in which case Bureau shall immediately send a fax to the administration responsible for the non-GSO system, requesting action within an additional 15 days.

d) If the administration fails to respond to the Bureau within the time period established in § 8c) above, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the subject non-GSO FSS system to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess $epfd_{down}$ interference.

9 Once the administration having jurisdiction over the receiving GSO earth station identifies the source(s) of the excess epfd$_{down}$ interference, the affected administration may send a letter, by fax or other mutually agreed electronic means, to the administration(s) concerned and request immediate corrective action. It shall give all useful information in order that the responding administration(s) may take such steps as may be necessary to reduce the interference to the epfd$_{down}$ levels required in Table **S22-4A, S22-4A1, S22-4B,** or **S22-4C,** as appropriate, or to a higher level that is acceptable to the administration having jurisdiction over the receiving GSO earth station that is being interfered with.

10 Upon receipt of such a request, an administration shall acknowledge receipt to the requesting administration within 15 days, with a copy to the Bureau. Such acknowledgement shall not constitute acceptance of responsibility.

11 Within 15 days after receipt of a request for corrective action pursuant to § 8 above, the administration receiving the request shall either:

a) provide the requesting administration and the Bureau with information indicating that no non-geostationary FSS system for which it is responsible could have caused the excess epfd$_{down}$ interference experienced by the receiving GSO earth station; or

b) acknowledge responsibility for causing the excess epfd$_{down}$ interference and immediately reduce emissions of the interfering system into the affected receiving GSO earth station to the epfd$_{down}$ levels required in Table **S22-4A, S22-4A1, S22-4B,** or **S22-4C,** as appropriate.

In either case, a copy of the action taken shall be sent to the Bureau.

12 If an administration fails to respond within 15 days, the affected administration may request the assistance of the Bureau, in which case the Bureau shall immediately send a fax to the administration responsible for the non-GSO system, requesting action within an additional 15 days.

13 If the administration fails to respond to the Bureau within the time period established in § 12 above, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the subject non-GSO FSS system to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess epfd$_{down}$ interference.

14 If an administration acknowledges responsibility for causing the excess epfd$_{down}$ interference pursuant to § 11*b)* above, but fails to immediately reduce emissions of the interfering system as required:

a) The interfering administration shall have an additional 10 days to take the necessary action to correct the excess epfd$_{down}$ interference situation pursuant to No. **S15.21** of the Radio Regulations.

b) If, after the 10 day period, the interfering administration still has not reduced emissions of the interfering system as required, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the subject non-GSO FSS system to the effect that the use of the affected frequency bands by the interfering system is in violation of Nos. **S22.2** and **S22.5I** of the Radio Regulations. Notice of the entry of the remark shall be included in the Weekly Circular.

16 The Bureau shall retain any entry in the Remarks column of the Master Register made pursuant to § 8*d)*, § 13 or § 15 above shall remain in place until such time as the non-responding administration responds and/or remedies the excess epfd$_{down}$ interference, as appropriate.

17 If it is considered necessary, and particularly if the steps taken in accordance with the procedures described above have not produced satisfactory results, the administration concerned shall forward details of the case to the Bureau for its information.

18 In such a case, the administration concerned may also request the Bureau to act in accordance with the provisions of Section I of Article **S13**; but it shall then supply the Bureau with the full facts of the case, including all the technical and operational details and copies of the correspondence.

MOD-

S5.491 *Additional allocation:* in Region 3, the band 12.2-12.5 GHz is also allocated to the fixed-satellite (space-to-Earth) service on a primary basis~~, limited to national and sub-regional systems~~. The power flux-density limits in Article **S21**, Table **S21-4** shall apply to this frequency band. The introduction of the service in relation to the broadcasting-satellite service in Region 1 shall follow the procedures specified in Article 7 of Appendix **S30**, with the applicable frequency band extended to cover 12.2-12.5 GHz.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 432-E
25 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 1
OF THE PLENARY

NOTE FROM THE CHAIRPERSON OF WORKING GROUP 4A TO THE CHAIRPERSON OF GT PLEN-1

Working Group 4A adopted the attached modification to item A.2 *a)* of Annex 2A of Appendix S4 and item 1.4 of Annex 2 of Appendix S30B. In considering similar proposed modification to item 1.4 of Annex 2 of Appendix S30 and item 5 of Annex 2 of Appendix S30A, Working Group 4A is of the opinion that these proposals can be dealt by Working Group 1 to the Plenary more efficiently. Therefore, following proposals relating to item 1.4 of Annex 2 of Appendix S30 and item 5 of Annex 2 of Appendix S30A are forwarded to Working Group GT PLEN-1 for its consideration.

[MOD Appendix S30, Annex 2, item 5

5 Date of bringing into use. The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau.

MOD Appendix S30A, Annex 2, item 1.4

1.4 Date of bringing into use. The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau.]

N. KISRAWI
Chairperson, Working Group 4A

ATTACHMENT

MOD **Appendix S4 Annex 2A, item A.2 *a)***

a) The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation[1] to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau. Whenever the assignment is changed in any of its basic characteristics (except in the case of a change in § A.1 *a)*, the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

MOD **Appendix S30B, Annex 2, item 1.4**

1.4 *Dates* proposed for bringing into use. The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau.

_____

[1] Pending further studies by ITU-R on the applicability of the term “regular operation” to non-GSO networks, the condition of regular operation shall be limited to GSO networks.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 433-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Chairperson of Working Group 1 of the Plenary to Committee 4

ITU-R RECOMMENDATIONS CONTAINING TEXTS INCORPORATED BY REFERENCE

Following your request in Document 429 please be informed that there is no need to incorporate Recommendation ITU-R BO.1213 by reference since the relevant parts of this Recommendation have been directly incorporated in Annex 5 of Appendix S30 to be updated by WRC-2000.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 434-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Chairperson of Working Group 1 of the Plenary to Committee 4

NEED TO UPDATE APPENDIX S4

Following the decision of GT PLEN-1 to propose to the Plenary Meeting the use of Appendix S4 for the submission of the basic characteristics relating to space stations in the broadcasting-satellite service (Annex 2 of APS30) as well as for the basic characteristics to be furnished for feeder-link stations in the fixed-satellite service operating in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz (Annex 2 of APS30A), taking into consideration that the data elements contained in these Annexes were included in APS4 by WRC-97, Committee 4 is kindly requested to consider the review of the corresponding part of Appendix S4 and update it on the basis of Addendum 1 to Document 36.

Such an approach will allow the use of harmonized terminology, unify data structure and simplify data submission by administrations and data processing by the Bureau. It will then be possible to use common software for data capture, validation, technical examination and publication for non-planned and planned bands.

You may wish to consider the same action for Appendix 30B by way of a resolution.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 435-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Germany (Federal Republic of)

PROPOSAL FOR THE WORK OF THE CONFERENCE

The Administration of Germany has examined the footnotes to the Table of Frequency Allocations under agenda item 1.1 and concluded that the following footnote should be modified by deleting the name of Germany.

MOD D/435/1

S5.417 *Alternative allocation:* in ~~Germany and~~ Greece, the band 2 520-2 670 MHz is allocated to the fixed service on a primary basis.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 436-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 387 **COMMITTEE 3**

Chairperson, Committee 4

NOTE BY THE CHAIRPERSON OF COMMITTEE 4 TO THE CHAIRPERSON OF COMMITTEE 3

A proposal to republish all circulars and Special Sections of the past ten years on CD-ROM, was discussed within Committee 4 that decided that this request should be considered on the basis of cost recovery, i. e. that the cost should be born by those administrations interested in such a publication. In view of the resource implications (estimated cost by the Bureau is CHF 900 000), it was decided to inform Committee 3 of this issue for its consideration.

H. RAILTON
Chairperson, Committee 4
Box 2895

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 437-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2 OF THE PLENARY

Vatican City State

PROPOSAL FOR THE WORK OF THE CONFERENCE

Considering

a) the urgency to improve spectrum utilization in the HF bands attributed to broadcasting by the use of digital techniques;

b) the positive performance demonstrated in recent tests by HF systems proposed to ITU-R for inclusion in a relevant Recommendation;

c) that such a Recommendation is expected to be completed by the year 2000;

d) the need to start as soon as possible digital emissions to encourage industries to accelerate manufacturing and marketing of low-cost digital receivers;

e) that **S5.134** of the RR limits the use of certain HF bands to single-sideband emissions or to any other spectrum-efficient techniques recommended by ITU-R;

f) that the same **S5.134** stipulates that access to the above-mentioned bands shall be subject to the decision of a competent conference.

Proposes

CVA/437/1

That in the agenda of the forthcoming WRC-03, a specific item be included to allow immediate access to the band mentioned in **S5.134** to digital emissions whose characteristics are conforming with relevant ITU-R Recommendations.

Wishes to emphasize that

a) the inclusion of the above-mentioned agenda item is deemed to have no financial implication on post-conference work to be carried out by either the ITU-R study groups or BR.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 438-E
26 May 2000
Original: French

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Cameroon (Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

IMT-2000 FOR DEVELOPING COUNTRIES IN REGION 1

Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 to meet the needs of developing countries. Those objectives are, *inter alia*:

– that IMT-2000 provide, in both urban and rural areas, economical services of high quality and integrity comparable to those of the fixed network. The systems must be capable of serving a wide range of user densities and coverage areas, as well as remote regions;

– that IMT-2000 take account of the need to match, efficiently and economically, spectrum usage to local conditions where there are only a few users and where severe propagation conditions are encountered;

– that to allow a system to be introduced with minimum initial investment, IMT-2000 design should be modular (easily expandable), permitting flexible growth in terms of number of users, coverage areas and types of services;

– that IMT-2000 have the capability of providing an effective alternative to wired local loops in urban areas (which is to stress yet again that fixed wireless access is an important IMT-2000 application for developing countries).

Some key needs for developing countries such as Cameroon

It is important for developing countries such as Cameroon:

– as from 3 June 2000, to have spectrum below 1 GHz reserved for the development of IMT-2000 in the medium term (four to five years);

– from 2003 at the latest, to have fixed wireless access as one of the applications of IMT-2000;

– to aim for reducing costs and increasing the availability of equipment in the standardization of IMT-2000 hardware, which means that standardization must, *inter alia*, contemplate the manufacture of certain modules in developing countries. Simple, modular design should make that possible.

Some observations

It is worth noting that:

– with regard to the terrestrial component of IMT-2000, neither the bands identified in footnote S5.388 nor the additional spectrum now being identified by Working Group 5A will make it possible, given the current state of radiocommunication technology, to meet the needs of tropical African developing countries by 2010;

– ITU-R has no need today to do further studies to know that the frequency bands below 1 GHz are the bands best suited to the physical conditions, size and market characteristics of tropical countries in Region 1, among them Cameroon;

– so far as fixed wireless access and other objectives described in Recommendation ITU-R M.819 are concerned, no evaluation has been done by WRC-2000 thus far. Is this an oversight? We would be interested in hearing answers on that point;

– we do not understand why certain countries do not think it necessary to introduce IMT-2000 swiftly in certain developing countries in Region 1. They seem to have decided unilaterally that those African countries must wait until 2010 at least before they can become participate in IMT-2000, which is why they have conceded to identifying the band 862-960 MHz. In Cameroon's case in particular, that band is today widely used by second-generation mobiles.

Some questions

1 In view of the foregoing, can WRC-2000 reasonably, so far as IMT-2000 is concerned, ask ITU-R yet again to carry out studies for developing countries without evaluating the implementation of Recommendation ITU-R M.819? Would it be a matter of a revised Question ITU-R 77/8?

2 So far as IMT-2000 is concerned, what has been done to date for developing countries in Region 1?

Conclusions

In view of the foregoing, Cameroon proposes:

CME/438/1

that **additional** spectrum be identified below 1 GHz in Region 1, which would enable certain administrations in that Region to implement IMT-2000 in their countries as soon as possible. Those administrations too should be in a position, as from 3 June 2000, to be able to issue IMT-2000 licences in their countries;

CME/438/2

that existing frequency bands **already used** for second-generation mobiles not be included in the additional spectrum identified by WRC-2000 for the period 2000-2010;

CME/438/3

that the band 790-862 MHz must be explicitly identified for IMT-2000 in Region 1, taking into account the flexibility principle that has been reiterated several times and unanimously accepted. Cameroon, under footnote S5.316, has allocated the band 790-860 MHz to the mobile, except aeronautical mobile, service on a primary basis;

CME/438/4

that WRC-2000 request the Director of BR to evaluate the implementation of Recommendation ITU-R M.819 and report thereon to the Council not later than 2002;

CME/438/5

that no priority be accorded in the Radio Regulations to the bands identified for IMT-2000 with respect to the services to which they have been allocated on a primary basis;

CME/438/6

that the frequency bands (above and below 1 GHz) for IMT-2000 be identified by WRC-2000 using a single footnote, and that there be a single WRC-2000 resolution on the subject.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 439-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Chairperson, COM 5 ad hoc Group 2

REPORT TO COMMITTEE 5

(AGENDA ITEM 1.9)

Please find attached the results of the discussions of COM 5 ad hoc Group 2.

D. GREENSMITH
Chairperson, COM 5 ad hoc Group 2

RESOLUTION [COM5/29] (WRC-2000)

Sharing studies for the possible additional allocations to the mobile-satellite service (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 considered proposals for an allocation to the mobile-satellite service (space-to-Earth) in Regions 1 and 3 in the frequency band 1 518-1 525 MHz but these proposals were not accepted by the conference;

b) that ITU-R has established that in order to meet projected MSS requirements in the frequency range 1-3 GHz, the order of two times 123 MHz of spectrum will be required by 2005 and two times 145 MHz will be required by 2010;

c) that the frequency band 1 492-1 525 MHz is allocated to the mobile-satellite service (space-to-Earth) in Region 2 on a primary basis except in the United States;

d) that the frequency band 1 518-1 525 MHz is allocated to the fixed service on a primary basis in all three Regions, to the mobile service on a primary basis in Regions 2 and 3, and to the mobile service except aeronautical mobile on a primary basis in Region 1;

e) that in Belarus, the Russian Federation and Ukraine, the band 1 429-1 535 MHz is allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within the national territory by the provisions of **S5.342**;

f) that in Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service by the provisions of **S5.343**;

g) that, as an alternative allocation in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **S5.343**) under the provisions of **S5.344**;

h) that there has been further development of point-to-multipoint systems in the fixed service since the time of ITU-R studies that formed the basis for the power-flux-density (pfd) values for use as coordination thresholds for protection of fixed service systems in the band 1 492-1 525 MHz that are contained in Appendix **S5**;

i) that there is a need to review the pfd values in Appendix **S5** to ensure that they are adequate to protect these new point-to-multipoint systems operating in the fixed service;

j) that the proposed allocation to the mobile-satellite service (space-to-Earth) is intended for satellite downlink operations, which due to their potentially widespread emissions upon the Earth from either geostationary or non-geostationary systems, could have an impact upon the terrestrial mobile service, to include aeronautical mobile and aeronautical mobile telemetry, in all three Regions;

k) in response to Resolution **220 (WRC-97)** ITU-R studies concluded that sharing between the mobile-satellite service and the RNSS was not feasible in the band 1 559-1 610 MHz,

recognizing

a) that there remains an unsatisfied need for additional downlink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.5 GHz allocations;

b) that Recommendation ITU-R F.1338, for an adjacent frequency band, includes an allowance for consideration of pfd values other than those specified therein for use as coordination thresholds for the fixed service;

c) that Recommendation ITU-R M.1459 contains criteria for the protection of aeronautical mobile telemetry with respect to geostationary satellites in the mobile-satellite service;

d) that additional information on the characteristics of systems in both the mobile-satellite service and aeronautical mobile telemetry would facilitate studies on sharing between these services,

noting

that Resolution **[COM5/CD]** addresses sharing studies for the possible additional allocations to the mobile-satellite service (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz,

resolves to request ITU-R

1 as a matter of urgency, to study sharing between the mobile-satellite service and aeronautical mobile telemetry in all Regions in the band 1 518-1 525 MHz, whilst meeting the protection criteria for the latter service as given in Recommendation ITU-R M.1459;

2 as a matter of urgency, to review the pfd levels used as coordination thresholds for MSS (space-to-Earth) with respect to the protection of point-to-multipoint FS systems in the band 1 518-1 525 MHz in Regions 1 and 3, taking into account the work already done in ITU-R Recommendations M.1141 and M.1142 and the characteristics of FS systems contained in ITU-R Recommendations F.755-2 and F.758-1, and the sharing methodologies contained in ITU-R Recommendations F.758-1, F.1107 and F.1108;

3 should these studies of the specific frequency bands mentioned in this Resolution lead to an unsatisfactory conclusion, ITU-R should carry out sharing studies in order to recommend alternative mobile-satellite service (space-to-Earth) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to invite WRC-03 to consider making new allocations to the mobile-satellite service (space-to-Earth), on a global basis preferably in the vicinity of the existing allocation around 1.5 GHz,

urges administrations

to participate actively in these studies with the involvement of terrestrial and satellite interests.

RESOLUTION [COM5/30] (WRC-2000)

Sharing studies for the possible additional allocations to the mobile-satellite service (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that ITU-R has established that in order to meet projected MSS requirements in the frequency range 1-3 GHz, in the order of two times 123 MHz of spectrum will be required by 2005 and two times 145 MHz will be required by 2010;

b) that at WRC-2000 proposals were made for a worldwide allocation of 1 683-1 690 MHz to the MSS (Earth-to-space), but these proposals were not accepted;

c) that the frequency band 1 675-1 710 MHz is allocated to the MSS (Earth-to-space) in Region 2 on a primary basis;

d) that the band 1 683-1 690 MHz is mainly used by meteorological-satellite (MetSat) and meteorological aids (MetAids) services;

e) that while there are only a limited number of main MetSat earth stations operated in this band in all three Regions, there are a large number of meteorological-satellite earth stations operated in Regions 2 and 3 and the locations of many of these stations are unknown;

f) that there is an increase in use of these stations in Regions 2 and 3 by government, commercial and private users for public safety and enhancement of national economies;

g) that sharing between MetSat and MSS in the band 1 675-1 690 MHz is feasible if appropriate separation distances are maintained pursuant to coordination under **S9.11A**;

h) that sharing may not be feasible in those countries where a large number of MetSat stations are deployed;

i) that ITU-R Recommendation SA.1158-2 indicates that additional study is required to determine the criteria for coordination between MSS, and the MetSat service for GVAR/S-VISSR stations operated in the band 1 683-1 690 MHz in Regions 2 and 3;

j) that sharing of the band between MSS and MetSat in the band 1 690-1 710 MHz is not feasible;

k) that co-channel sharing between MSS and MetAids is not feasible;

l) that co-frequency sharing between MetAids and MetSat services is not feasible;

m) WMO identified future spectrum requirements for MetAids operations as 1 675-1 683 MHz in the band 1 675-1 700 MHz, however some administrations will continue to require spectrum in the range 1 683-1 690 MHz for MetAids operations;

n) that MSS operation should not constrain current and future development of the MetSat service as specified in **S5.377**;

[*o)* that at WRC-2000 new coordination parameters for MetSat earth stations were adopted which will require a review of assumptions made in earlier ITU-R studies,]

recognizing

that there remains an unsatisfied need for additional uplink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.6 GHz allocations,

noting

a) that further study is not required regarding sharing between the services identified in the *considerings* above and the MSS in the bands 1 675-1 683 MHz and 1 690-1 710 MHz;

b) that Resolution **[COM5/AB]** addresses sharing studies for the possible additional allocations to the mobile-satellite service (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz,

resolves to request ITU-R

1 as a matter of urgency, and in time for WRC-03, to complete the technical and operational studies on the feasibility of sharing between MSS and MetSat by determining appropriate separation distances between mobile earth stations and MetSat stations, including GVAR/S-VISSR stations, in the band 1 683-1 690 MHz as stated in Recommendation ITU-R SA.1158-2;

2 to assess, with the participation of WMO, the current and future spectrum requirements of the MetAids service taking into account improved characteristics, and of the MetSat service in the band 1 683-1 690 MHz taking into account future developments;

3 should these studies of the specific frequency bands mentioned in this Resolution lead to an unsatisfactory conclusion, ITU-R should carry out sharing studies in order to recommend alternative mobile-satellite service (Earth-to-space) frequency bands in the 1-3 GHz range for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to invite WRC-03 to consider making new allocations to the mobile-satellite service (Earth-to-space), on a global basis preferably in the vicinity of the existing allocation around 1.6 GHz,

urges

administrations and interested parties (e.g. WMO) to participate actively in such studies by submitting relevant contributions,

instructs the Secretary General

to bring this Resolution to the attention of WMO.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 440-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 351 and 386 **COMMITTEE 6**

SIXTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 has finished its consideration of agenda item 4. Committee 4 also proposes corrections to the terrestrial radiocommunications part of Appendix S4 to the Radio Regulations. No other group is proposing modifications to that part. On the other hand several groups are proposing modifications to the space radiocommunications part of Appendix S4 to the Radio Regulations. Consequently that part can be submitted only when all the proposals have been consolidated.

As a result of these deliberations, it has unanimously adopted, at its fifth and sixth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairperson, Committee 4

Annex: 1

(MOD)

RESOLUTION 703 (Rev.WARC-92)

Calculation methods and interference criteria recommended by the ITU-R for sharing frequency bands between space radiocommunication and terrestrial radiocommunication services or between space radiocommunication services[1]*

SUP RESOLUTION 8 (Rev.Mob-87)

SUP RESOLUTION 14

SUP RESOLUTION 23 (WRC-95)

SUP RESOLUTION 24 (WRC-95)

SUP RESOLUTION 30 (WRC-97)

NOC RESOLUTION 44 (Mob-87)

SUP RESOLUTION 50 (WRC-97)

SUP RESOLUTION 52 (WRC-97)

SUP RESOLUTION 54 (WRC-97)

NOC RESOLUTION 63

SUP RESOLUTION 70 (WARC-92)

NOC RESOLUTION 132 (WRC-97)

NOC RESOLUTION 209 (Mob-87)

SUP RESOLUTION 406

SUP RESOLUTION 411 (WARC-92)

SUP RESOLUTION 412 (WARC-92)

SUP RESOLUTION 500

SUP RESOLUTION 721 (WRC-97)

SUP RECOMMENDATION 32 (Orb-88)

SUP RECOMMENDATION 61

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* WRC-2000 reviewed this Resolution and decided that WRC-02/03 should be invited to review the need of this Resolution and until that time, the implementation of this Resolution should be suspended except for that once a year the Director will send a list of ITU-R Recommendations as identified according to *resolves* 1 to all administrations for information.

SUP RECOMMENDATION 405

SUP RECOMMENDATION 518 (HFBC-87)

NOC RECOMMENDATION 606 (Mob-87)

SUP RECOMMENDATION 720 (WRC-95)

APPENDIX S4

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter SIII

ANNEX 1A

List of characteristics of stations in the terrestrial services[1]

MOD

ITEM B – Notifying administration

~~Country s~~Symbol of the notifying administration.

MOD

ITEM SYNC – Synchronized network

Symbol followed by the identification ~~number~~ of the network, if the station concerned by the assignment pertains to a synchronized network.

ADD

ITEM 1AA – Usable frequency range

For MF/HF adaptive systems, the difference between the maximum and minimum assignable frequencies of a distinct frequency band.

SUP

ITEM 1D

MOD

ITEM 1E – Frequency offset, in terms of the line frequency

The carrier frequency offset expressed as a multiple of 1/12 of the line frequency of the television system concerned, expressed by a number ~~and a symbol (P or M)~~ (positive or negative).

ADD

ITEM 1E1 – Frequency offset, kHz

The carrier frequency offset, in kHz, expressed by a number (positive or negative).

SUP

ITEM 1H

MOD

ITEM 3A – Call sign or station identification

The call sign or other identification used in accordance with Article **S19**.

MOD

ITEM 4A – Name of the location of the transmitting station

The name of the locality by which the transmitting station is known or in which it is situated.

MOD

ITEM 4B – Country or geographical area

~~The country or~~Symbol of the geographical area in which the station is located.

SUP

ITEM 4F

MOD

ITEM 5A – Name of the location of the receiving station

The name of the locality by which the receiving station is known or in which it is situated.

MOD

ITEM 5B – Country or geographical area

~~The country or~~Symbol of the geographical area in which the receiving station is located.

ADD

ITEM 7A1 – Frequency stability

Frequency stability for analogue television (RELAXED, NORMAL or PRECISION).

MOD

ITEM 7AA – Type of modulation

~~The choice of modulation is needed in order to specify if the requirement is to~~For HF broadcasting stations in their exclusive bands, a symbol which specifies the use of DSB, SSB or any new broadcasting techniques recommended by ITU-R.

ADD

ITEM 7B1 – Adjacent channel protection ratio

For assignments to stations of the broadcasting service covered by the LF/MF Broadcasting Agreement (Regions 1 and 3) (Geneva, 1975), the protection ratio (dB) to be used for adjacent channel interference calculations.

MOD

ITEM 7D – Transmission system

Symbol corresponding to the transmission system for an assignment to a VHF sound broadcasting station.

MOD

ITEM 8A – Power delivered to the antenna ~~(dBW)~~

The power delivered to the antenna transmission line expressed in dBW with the exception of LF/MF sound broadcasting for which the power delivered to the antenna shall be expressed in kW.

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.~~

ADD

ITEM 8BA – Range of power control

In the case of systems where automatic power control is applied, the range of power control (dB) above the nominal power indicated in 8B.

MOD

ITEM 8BH – Maximum ~~E~~effective radiated power (dBW) – horizontal

The maximum effective radiated power of the horizontally ~~polarization~~polarized component (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments).

MOD

ITEM 8BV – Maximum ~~E~~effective radiated power (dBW) – vertical

The maximum effective radiated power of the vertically ~~polarization~~polarized component (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments).

MOD

ITEM 8D – Vision/sound power ratio

Vision/sound carrier power ratio for VHF/UHF analogue television broadcasting (BT) assignments.

MOD

ITEM 9A – Azimuth of maximum radiation

For a directional transmitting antenna, the azimuth of maximum radiation of the transmitting antenna in degrees (clockwise) from True North~~, or the symbol "ND" for a non-directional antenna~~.

MOD

ITEM 9AA – Central azimuth of augmentation

The central azimuth of the augmentation (centre of the span) in degrees for an assignment to an MF broadcasting station in Region 2.

MOD

ITEM 9CA – Total span of augmentation

The total span of the augmentation in degrees for an assignment to an MF broadcasting station in Region 2.

SUP

ITEM 9H

MOD

ITEM 9I – Maximum ~~agreed~~ radiation ~~in the sectors~~or r.m.s. value of radiation

The maximum ~~agreed~~ radiation ~~in the sector~~, in dB relative to a cymomotive force (c.m.f.) of 300 V or an effective monopole radiated power (e.m.r.p.) of 1 kW, determined from the nominal power of the transmitter and the theoretical gain of the antenna without allowing for miscellaneous losses.

For assignments to stations of the broadcasting service covered by the MF Broadcasting Agreement (Region 2) (Rio de Janeiro, 1981), the product of the r.m.s. characteristic field strength, calculated in the horizontal plane, and the square root of the power.

ADD

ITEM 9L – Maximum effective radiated power (dB(kW))

The maximum effective radiated power, expressed in dB relative to an e.r.p. of 1 kW on a short vertical antenna.

SUP

ITEM 9N

MOD

ITEM 9NH – Attenuation (dB) ~~in~~of the horizontally polarized component ~~plane~~ at different azimuths

The value of attenuation ~~in dB~~of the horizontally polarized component in the horizontal plane at different azimuths, with respect to the maximum e.r.p. ~~in the horizontal plane at different azimuths~~of this component, express in dB.

MOD

ITEM 9NV – Attenuation (dB) ~~in~~of the vertically polarized component ~~plane~~ at different azimuths

The value of attenuation ~~in dB~~of the vertically polarized component in the horizontal plane at different azimuths, with respect to the maximum e.r.p. ~~in the vertical plane at different azimuths~~of this component, expressed in dB.

MOD

ITEM 9Q – Type of antenna

Symbol designating a ~~S~~simple vertical antenna or ~~directional~~any other antenna.

MOD

ITEM 9R – Slew angle

For HF broadcasting stations in their exclusive bands, ~~T~~the slew angle represents the difference between the azimuth of maximum radiation and the direction of unslewed radiation.

MOD

ITEM 9T3 – Phase difference of the field

The positive or negative phase difference in the tower field with respect to the field of the reference tower, in degrees.

SUP

ITEM 9T6

MOD

ITEMS 9T9A to 9T9D – Description of top-loaded or sectionalized tower

Description of top-loaded or sectionalized towers, in ~~degrees~~ accordance with RJ81 Agreement.

SUP

ITEM 10A

MOD

ITEM 10CA – Start date

For HF broadcasting stations in their exclusive bands, ~~U~~used in the case that the requirement starts after the start of the schedule.

MOD

ITEM 10CB – Stop date

For HF broadcasting stations in their exclusive bands, ~~U~~used in the case that the requirement stops before the end of the schedule.

MOD

ITEM 10CC – Days of operation

For HF broadcasting stations in their exclusive bands, ~~U~~used when the station does not transmit every day of the week.

MOD

ITEM 11 – Coordination with other administrations

~~Country or geographical area~~ Symbol of the administration with which coordination ~~is to be~~ has been effected and the provision (No. of the Radio Regulations, regional agreement, or other arrangement) requiring such coordination.

SUP

ANNEX 1B

Table of characteristics to be submitted for stations in the terrestrial services

ADD

ANNEX 1B

Table of characteristics to be submitted for stations in the terrestrial services

Notice type	**T01**	**T02**	**T03**	**T04**	**T11**	**T12**			**T13**		**T14**	**T15**	**T16**	**T17**		**AR S12**	**Notice type**
Item No.	**BC**	**BT**	**BC**	**BC**	**FX**	**AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS**	**FD, FG, SM**	**NL**	**AM, MA, ML, MO, MR, MS, NR, OD, SA**	**RM**	**AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS**	**FC[4]**	**AL[5], FC[5]**	**FX**	**FA, FB, FC[2], FD[2], FG[2], FL, FP**	**BC**	**Item No.**
B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	B
SYNC			+	+													SYNC
1A	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1A
1AA														X	X		1AA
1B					+	+	+	+	+	+	+		+	+	+		1B
1C						+						*[6]				O	1C
1E		*[7,13]															1E
1E1		*[7, 13]															1E1
1G																O	1G
1X												*[6]	O				1X
1Y												O					1Y
1Z												+					1Z
2C	+	+	+	+	X	X	X	X	X	X	X	X		X	X		2C
3A	O	O	O	O	+	+	X	O						+	X	O	3A

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
4A	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		4B
4C	X	X	X	X	X	X	X	X	*[8]	X	*[8]	+	X	X	X	X	4C
4D									*[8]	X	*[8]						4D
4E									*[8]		*[8]	X					4E
4G			X														4G
5A					X[9]				X	X				X[9]			5A
5B					X[9]				X	X				X[9]			5B
5C					X[9]	*[10]	*[10]	*	X	X				X[9]	*[10]		5C
5D						*[10]	*[10]					X			*[10]	X	5D
5E						*[10]	*[10]	*					X		*[10]		5E
5F						*[10]	*[10]	*					X		*[10]		5F
5G					O	O	O	O				O		O	O		5G
6A					X	X	X	X	X	X	X	X	X	X	X		6A
6B					X	X	X	X	X	X	X	X	X	X	X		6B
7A	X[11]		X[11]	O	X	X	X	X	X	X	X	X	X	X	X		7A
7A1		+[7]															7A1
7AA																X	7AA
7B				X	+									+			7B
7B1			X														7B1
7C1		X															7C1
7C2		+[7]															7C2
7D	+																7D
7E					+[12]												7E

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	**BC**	**BT**	**BC**	**BC**	**FX**	**AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS**	**FD, FG, SM**	**NL**	**AM, MA, ML, MO, MR, MS, NR, OD, SA**	**RM**	**AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS**	**FC[4]**	**AL[5], FC[5]**	**FX**	**FA, FB, FC[2], FD[2], FG[2], FL, FP**	**BC**	**Item No.**
7F					+[12]												7F
8					X	X	X	X	X	X	X	X		X	X		8
8A			X	X	*	*	X	*	*	*	*	X		X	X	X	8A
8AB					+[12]												8AB
8B					*	*	*	*	*	*	*			+	+		8B
8BA														O	O		8BA
8BH	X	X															8BH
8BV	X	X															8BV
8D		+[7]															8D
9	X	X			X	X	X	X				X		X	X		9
9A					+	+	+	+				+		+	+	X	9A
9AA				+													9AA
9AB					+	+	+	+				+		+	+		9AB
9B					+	+	+	+									9B
9C					+	+	+	+				+		+	+		9C
9CA				+													9CA
9D	X	X			+												9D
9E	X	+	X		+	+	+	+									9E
9EA	X	+			+	+	+	+									9EA
9EB	X	X															9EB
9EC	+	+															9EC
9F				+													9F
9G					+	+	+	+			+	+		+	+		9G
9GH			+														9GH
9GV			+														9GV

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	**T01**	**T02**	**T03**	**T04**	**T11**	**T12**			**T13**		**T14**	**T15**	**T16**	**T17**		**AR S12**	**Notice type**
Item No.	**BC**	**BT**	**BC**	**BC**	**FX**	**AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS**	**FD, FG, SM**	**NL**	**AM, MA, ML, MO, MR, MS, NR, OD, SA**	**RM**	**AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS**	**FC[4]**	**AL[5], FC[5]**	**FX**	**FA, FB, FC[2], FD[2], FG[2], FL, FP**	**BC**	**Item No.**
9I				X													9I
9IA				+													9IA
9J					O	O	O	O						O	O	X	9J
9K					+[12]												9K
9L			X														9L
9NA				+													9NA
9NH	+	+															9NH
9NV	+	+															9NV
9O				+													9O
9P				O													9P
9Q			X	X													9Q
9R																X	9R
9T1				+													9T1
9T2				+													9T2
9T3				+													9T3
9T4				+													9T4
9T5				+													9T5
9T7				+													9T7
9T8				+													9T8
9T9A				+													9T9A
9T9B				+													9T9B
9T9C				+													9T9C
9T9D				+													9T9D
10B	+	+	X	X	X	X	X	X	X	X	X	X	X	X	X		10B
10CA																+	10CA

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(end)*

Notice type	**T01**	**T02**	**T03**	**T04**	**T11**	**T12**			**T13**		**T14**	**T15**	**T16**	**T17**		**AR S12**	**Notice type**
Item No.	**BC**	**BT**	**BC**	**BC**	**FX**	**AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS**	**FD, FG, SM**	**NL**	**AM, MA, ML, MO, MR, MS, NR, OD, SA**	**RM**	**AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS**	**FC[4]**	**AL[5], FC[5]**	**FX**	**FA, FB, FC[2], FD[2], FG[2], FL, FP**	**BC**	**Item No.**
10CB																+	10CB
10CC																+	10CC
10D												X					10D
10E												X					10E
11	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O		11
12A	O	O	O	O	O	O	O	O	O	O	O			O	O	+	12A
12B	+	+	+	+	X	X	X	X	X	X	X			X	X		12B

X Mandatory * One of the items + Required in specific cases O Optional

[1] Outside the planned LF/MF bands and the VHF/UHF bands (up to 960 MHz), the HF bands that are governed by Article **S12**.

[2] In the non-planned bands.

[3] Outside the bands governed by Regional Agreements GE85M and GE89.

[4] In the bands governed by Appendix **S25**.

[5] In the bands governed by Regional Agreement GE85.

[6] 1C or 1X.

[7] For analogue television only if the frequency stability is normal or precision.

[8] (4C and 4D) or (4E).

[9] (5A, 5B and 5C) or (minimum three sets of 5C).

[10] (Minimum three sets of 5C) or (5D) or (5E and 5F).

[11] The necessary bandwidth only.

[12] This information may be furnished for stations in the fixed service when the parameters are used as a basis to effect coordination with another administration.

[13] 1E or 1E1.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 441-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Chairperson, Working Group 4A

FIFTH AND FINAL REPORT OF WORKING GROUP 4A TO COMMITEE 4

Working Group 4A held 21 sessions to deal with the WRC-97 agenda items assigned in Document DT/6. In particular:

Agenda item 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

This matter was considered by a group (Sub-Working Group 4A-1) chaired by Mr J.C. Prevotat (France). After his departure Mr D. Bryant (United Kingdom) took the role of Acting Chairperson. The conclusion of the group was considered by Working Group 4A and is included in Documents 326, 387 and 410. Modifications to Resolution 712 proposed by this Sub-Working Group were forwarded to Working Group 5C (Document 278).

Agenda item PP Resolution 80 (World radiocommunication conference process)

Working Group 4A adopted modifications to Resolution 72 (WRC-97) proposed by a group (Sub-Working Group 4A-10) chaired by Mr N. Kisrawi (Syria) and it is included in Document 387.

Agenda item PP Resolution 84 (Working methods of the Radio Regulations Board)

A group (Sub-Working Group 4A-2) was established under the chairmanship of Mr G. Brooks (Luxembourg) to review Article S13 (Instructions to the Bureau). The conclusion of this group was discussed and is included in Document 410. However, some administrations reserved their right to discuss this matter at Committee 4.

Agenda item PP Resolution 85 (Evaluation of the administrative due diligence procedure for satellite networks adopted by the World Radiocommunication Conference)

Working Group 4A adopted modifications to Resolution 49 (WRC-97) proposed by a group (Sub-Working Group 4A-3) chaired by Mr A. Frederich (Sweden) and they are included in Document 410.

Sub-Working Group 4A-3 drafted also a report to the Plenipotentiary Conference on this issue in the form of a Resolution which is subsequently modified by Working Group 4A. Due to lack of time, Working Group 4A could not reach conclusions on *resolves* 2 of this Resolution. Therefore, Working Group 4A agreed to send this proposed Resolution to Committee 4 with square brackets. This proposed Resolution is attached to this report.

Agenda item PP Resolution 86 (Coordination and notification procedures for satellite networks)

Three Sub-Working Groups were established under this agenda item.

A group (Sub-Working Group 4A-4) chaired by Mr S. Kaltenmark (United States) dealt with coordination procedures for non-GSO/BSS (sound). A modification to S5.393 proposed by this group was sent to Committee 4 with square brackets pending agreement between the administrations concerned. This proposed modification is included in Document 410.

This group also proposed procedures for non-GSO/BSS (sound) in the band 2 630-2 655 MHz for Region 3. Due to lack of time and many oppositions to the proposal, Working Group 4A could not reach agreement and decided to send this proposal to Committee 4 with square brackets. However, the concerned parties chaired by Mr S. Kaltenmark (United States) continued to study the matter in order to alleviate oppositions and came to agreement. The agreed text is attached here to this report.

A group (Sub-Working Group 4A-5) chaired by Mr J.P. Albuquerque (Brazil) dealt with simplification of coordination procedure. Under this group, four drafting groups chaired by Mr G. Brooks (Luxembourg), Mr A. Vipond (Australia), Mr D. Leive (Luxembourg) and Mr G. Rappoport (United States) respectively were formed. This Sub-Working Group proposed two draft new Resolutions and various modifications to Article S9, Appendixes S4 and S5, and Appendix 30B. These proposals were discussed and the result is attached to this document.

During Working Group 4A, the majority supported the text of S9.36 and S9.36.2 proposed by the Sub-Working Group. However, it was decided that these two provisions would be submitted with square brackets. With respect to *resolves* 5 of draft Resolution [COM4/4], some administrations expressed their concerned on the date of application.

Proposed modifications to § 1.4 of Annex 2 of Appendix S30 and item 5 of Annex 2 of Appendix S30A were forwarded to Working Group 1 to the Plenary (Document 432).

Another group (Sub-Working Group 4A-6) chaired by Mr P. Mcgill (Australia) dealt with refinement of coordination procedure. Modifications to Articles S1, S5, S8, S9 and S11 and Appendix S5 proposed by this group were discussed and are included in Documents 387 and 410. With respect to the proposed modification to S9.17 advice, of Working Group 1 to the Plenary was sought (Document 382).

Agenda item PP Resolution 87 (Role of the notifying administration in the case of an administration notifying on behalf of a named group of administration)

A group (Sub-Working Group 4A-7) was established under the chairmanship of Mr M. Amero (Canada) to address the issue identified by this Resolution. The conclusion of this group was discussed by Working Group 4A and is included in Document 410, but due to lack of time it is proposed to be considered by Committee 4.

Agenda item PP Resolution 88 (Implementation of processing charges for satellite network filing and administrative procedures)

A group (Sub-Working Group 4A-8) was established under the chairmanship of Mr D. Spalt (United States) to address the issue. Working Group 4A discussed modifications to Article S9 and Appendixes S30, S30A and S30B proposed by this group. Due to lack of time, Working Group 4A could not reach conclusions on these modification which are included in Document 401 with square brackets.

Due to lack of time some parts of the report were not discussed during Working Group 4A. Therefore, they are included in this document as attachments for the consideration of Committee 4.

Agenda item Resolution 80 (WRC-97) (Due diligence in applying the principles embodied in the Constitution)

A group (Sub-Working Group 4A-9) was established under the chairmanship of Mr N.A. Calderon (Costa Rica) to address the issue. Due to lack of time Working Group 4A agreed to send the proposed modification to Resolution 80 (WRC-97) proposed by this Sub-Working Group to Committee 4. Therefore the proposed revision of this Resolution is attached to this document for consideration by Committee 4. The problem of interpretation between Spanish and English in Sub-Working Level was noted during Working Group 4A.

Agenda item 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

Working Group 4A considered some parts of the Director's report which were forwarded by WG 4B. Discussion on section 2.2 of Document 16 and section 3.2 (last item of Table 2 on Appendix S30B, §§ 8.3, 8.4) of Document 41 resulted in the proposed modifications to the Radio Regulations, which are included in Document 410. Section 2.4 of Document 16 was forwarded to Committee 5 through Committee 4 (Document 417). Section 7.2 of Document 41 was noted. Working Group 4A also agreed to replace references to the "Weekly Circular" with the "International Frequency Information Circular (IFIC)" in its proposed modifications to the Radio Regulations as requested by WG 4B. With respect to section 2.3 of Document 16 Working Group 4A endorsed the practice of the Bureau described in that section.

I would like to thank all the participating delegates, particularly those who undertook the chairmanship of the groups and the BR Secretariat for efficient work in achieving the results and conclusions.

N. KISRAWI
Chairperson, Working Group 4A
Box 50

ADD

RESOLUTION [COM4/2] (WRC-2000)

Evaluation of the administrative due diligence procedure for satellite networks

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the World Radiocommunication Conference (Geneva, 1997) (WRC-97) adopted Resolution **49** establishing administrative due diligence procedures applicable to some satellite communication services with effect from 22 November 1997;

b) that the Plenipotentiary Conference (Minneapolis, 1998) adopted Resolution **85** on the evaluation of the administrative due diligence procedure for satellite networks;

c) that Resolution **85** (Minneapolis, 1998) instructs the Director of the Radiocommunication Bureau to inform WRC-2000 about the effectiveness of the administrative due diligence procedure, in accordance with Resolution **49** (WRC-97);

d) that Resolution **85** (Minneapolis, 1998) resolves that WRC-2000 shall evaluate the results of the implementation of administrative due diligence and shall inform the following Plenipotentiary Conference, in 2002, of its conclusions in that regard;

e) the report of the Director of the Radiocommunication Bureau on administrative due diligence applicable to some satellite networks;

f) the proposal to this conference to strengthen the administrative due diligence and the proposal to adopt financial due diligence procedures,

noting

a) that the Bureau has not encountered any administrative difficulty in applying the provisions and in gathering and publishing information;

b) that the Bureau has taken action pursuant to *resolves* 6 of Resolution **49** to cancel and publish accordingly, the related Special Sections in respect of 36 satellite networks;

c) that all of these cancellations had reached the maximum (nine year) period for bringing into use pursuant to the application of *resolves* 1 and 2 of Resolution **51** (WRC-97) and **S11.44** of the Radio Regulations and hence would have been cancelled in any event;

d) that when requested to provide due diligence information (triggered by the original date of bringing into use of their satellite networks), administrations have generally requested, wherever it is possible, extension of the regulatory period for bringing their satellites into use up to the maximum limit authorized by the Radio Regulations;

e) that the effect of administrative due diligence may not, therefore, be fully apparent until at least 21 November 2003,

recognizing

that the administrative due diligence has not yet had any impact on the problem of reservation of orbit and spectrum capacity without actual use,

resolves

1 that further experience is needed in the application of the administrative due diligence procedures adopted by WRC-97, and that several years may be needed to see whether the procedure produces satisfactory results;

[2 that it is premature to consider the adoption of any financial due diligence procedures,]

instructs the Director of the Radiocommunication Bureau

to report to the 2002 Plenipotentiary Conference 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 2002 Plenipotentiary Conference.

MOD

APPENDIX S5

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article S9

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**
~~No. **S9.11** GSO /terrestrial~~	~~A space station in the BSS in any band shared on an equal primary basis with terrestrial services and where the BSS 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 (Region 3)~~ ~~17.7-17.8 GHz (Region 2)~~ ~~21.4-22 GHz (Region 1 and 3)~~ ~~40.5-42.5 GHz~~ ~~84-86 GHz~~	~~Condition: bandwidths overlap~~	~~Check by using the assigned frequencies and bandwidths~~	
No. **S9.19** Terrestrial/ GSO, non-GSO	A transmitting station in 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 BSS service area exceeds the permissible level	Check by using the assigned frequencies and bandwidths	

MOD

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
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** or **S9.12** 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	2 630-2 655 MHz 2 310-2 360 MHz See also Table S5-2 [S5.393] [S5.XXX2]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
No. **S9.12[A]** 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** or **S9.12[A]** 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	2 630-2 655 MHz 2 310-2 360 MHz See also Table S5-2 [S5.XXX1] [S5.393]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
No. **S9.13** GSO/non-GSO	A station in a satellite network using the GSO in the frequency bands for which a footnote refers to No. **S9.11A** or **S9.13** in respect of any other satellite network using a non-GSO, with the exception of coordination between earth stations operating in the opposite direction of transmission	2 630-2 655 MHz 2 310-2 360 MHz See also Table S5-2 [S5.XXX3] [S5.393]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	

MOD

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 520-2 655 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile BROADCASTING-SATELLITE S5.413 S5.416	**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	**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 S5.415A
		2 535-2 655 FIXED S5.409 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 ADD S5.[XXX2] ADD S5.[XXX3]	S5.339 S5.403 ADD S5.[XXX2] ADD S5.[XXX3]	S5.339 S5.418 ADD S5.[XXX1] ADD S5.[XXX2] ADD S5.[XXX3]

ADD

S5.[XXX1] Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) in certain Region 3 countries listed in **S5.418** for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **[S9.12A]**, in respect of geostationary satellite networks for which complete Appendix **S4** coordination information, or notification information, is considered to have been received after 2 June 2000, and **S22.2** does not apply in this case. **S22.2** shall continue to apply with respect to geostationary satellite networks for which complete Appendix **S4** coordination information, or notification information, is considered to have been received before 3 June 2000. Use of the band by non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to the provisions of Resolution **[COM4/6]**, and such systems shall be in accordance with Resolution **528**.

ADD

S5.[XXX2] Use of the band 2 630-2 655 MHz by non-geostationary satellite systems for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **[S9.12]**. Resolution **[COM4/6]** applies.

ADD

S5.[XXX3] Use of the band 2 630-2 655 MHz by geostationary satellite networks for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. **S9.13** with respect to non-geostationary satellite systems operating in the broadcasting-satellite service (sound), and **S22.2** does not apply. Resolution **[COM4/6]** applies.

MOD

S5.418 *Additional allocation:* in Bangladesh, Belarus, China, Rep. of Korea, India, Japan, Pakistan, Russian Federation, Singapore, Sri Lanka, Thailand and Ukraine the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to provisions of Resolution **528 (WARC-92)**. The provisions of No. **S5.416** and Article **S21**, Table **S21-4**, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution **[COM4/6]**.

ADD

RESOLUTION [COM 4/6] (WRC-2000)

Use of the band 2 630-2 655 MHz in certain Region 3 countries by non-GSO satellite systems in the broadcasting-satellite service (sound)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the band 2 535-2 655 MHz is allocated by No. **S5.418** to the broadcasting-satellite service (sound) in certain Region 3 countries;

b) that the provisions of Resolution **528** currently limit use of the band by systems in the broadcasting-satellite service (sound) to the upper 25 MHz of the band;

c) that, prior to WRC-2000, there were no coordination procedures applicable to non-GSO broadcasting-satellite (sound) systems in this band in relation to other non-GSO or GSO satellite networks;

d) that satellite technology has now advanced to the stage where non-GSO systems in the broadcasting-satellite service (sound) are technically and economically feasible when operated with high elevation angles;

e) that satellite systems in the broadcasting-satellite service as described in *considering d)* can be used for the delivery of high quality, spectrally efficient broadcasting-satellite (sound) service to portable and mobile terminals;

f) that non-GSO systems in the broadcasting-satellite service (sound) in the 2 630-2 655 MHz band in Region 3 have been communicated to ITU and are expected to be brought into use in the near future;

g) that the protection of existing terrestrial services is addressed through the coordination procedures of No. **S9.11**;

h) that the provision in *considering g)* may be inadequate to ensure the future deployment of terrestrial services in this band,

resolves

1 that any broadcasting-satellite service (sound) using non-GSO orbits brought into operation in the 2 630-2 655 MHz band in Region 3 shall be operated such that the minimum elevation angle over the service area is not less than 40° for sharing with terrestrial services;

2 that, before an administration notifies to the Bureau or brings into use a frequency assignment for a broadcasting-satellite service (sound) system using non-GSO satellites in the 2 630-2 655 MHz band, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, it shall seek the agreement of any administration having a primary allocation to terrestrial services in the same frequency band if the power flux-density on its territory exceeds the following thresholds:

−128	dB(W/m^2) in 1 MHz	for $0^o \le \theta \le 5^o$
−128 + 0.75 (θ − 5)	dB(W/m^2) in 1 MHz	for $5^o < \theta \le 25^o$
−113	dB(W/m^2) in 1 MHz	for $25^o < \theta \le 90^o$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees.[1]

3 that the elevation angle value in *resolves* 1 and the power flux-density threshold values in *resolves* 2 shall be applied provisionally until the end of WRC-02/03. Any broadcasting-satellite service (sound) system using non-GSO satellites in the 2 630-2 655 MHz band, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, shall be subject to the elevation angle and power flux-density threshold values determined by that conference unless Resolution **49** information has been supplied for that system by the beginning of that conference;

4 that systems in the broadcasting-satellite service (sound) using non-GSO satellites shall be limited to national services unless agreement has been reached to include the territories of other administrations in the service area;

5 that, as of 3 June 2000, the Bureau and administrations shall apply the provisions of footnotes Nos. **S5.[XXX1] (WRC-2000)**, **S5.[XXX2] (WRC-2000)** and **S5.[XXX3] (WRC-2000)**, as well as **S5.418**, as revised by this Conference,

invites ITU-R

1 to conduct the necessary studies to develop calculation methodologies and sharing criteria to be used by administrations when applying the provisions of footnotes Nos. **S5.[XXX1]**, **S5.[XXX2**] and **S5.[XXX3]**;

2 to conduct the necessary technical and regulatory studies relating to frequency sharing between systems in the broadcasting-satellite service (sound) and terrestrial services in the band 2 535-2 655 MHz with a view to not unduly constraining either service,

instructs the Radiocommunication Bureau

in its examination of requests for coordination for any broadcasting-satellite service (sound) system using non-GSO satellites in the 2 630-2 655 MHz band, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, to determine if the power flux-density thresholds given in *resolves* 2, and taking into account *resolves* 3, are exceeded on the territory of any administration other than the notifying administration and, if so, to notify both the notifying and the affected administrations.

[1] These values relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

ADD

DRAFT RESOLUTION [COM4/4] (WRC-2000)

Temporary procedures for improving the satellite network coordination and notification procedures

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **86** of the Plenipotentiary Conference (Minneapolis, 1998);

b) that there now exists a large backlog of satellite network coordination requests pending with the Radiocommunication Bureau such that elimination of this backlog at current processing rates and with no new filings could take the Bureau more than three years to accomplish;

c) that 95 per cent of this backlog consists of coordination requests for geostationary-satellite networks,

recognizing

a) in view of the processing delay, [an administration] may have to wait three years for the Bureau to publish the coordination request and, because of the five-year limit to place a network into operation, be faced with a reduced time window in which to accomplish coordination;

b) extraordinary measures are needed to enable the Bureau to eliminate the backlog in processing satellite network coordination requests;

c) that the current breakdown of ITU's satellite coordination process seriously compromises the ability of such networks to provide such services and compromises the role of ITU in this process;

d) that this Conference needs to take extraordinary measures to ensure the continued viability and credibility of the ITU satellite coordination process,

resolves

1 that for those networks whose complete coordination information is received by the Bureau on or after 3 June 2000, the Bureau and administrations shall apply the following provisions, as revised by this Conference:

a) Nos. [**S9.36**, **S9.36.2**,] **S9.41** and **S9.42**;

b) Section D of Annex 2A of Appendix **S4**;

c) No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5**;

2 that as of 3 June 2000 for those networks whose complete coordination information has been received by the Bureau prior to 3 June 2000 but not yet published in a Special Section of the International Frequency Information Circular (IFIC), the Bureau and administrations shall apply the following provisions, as revised by this Conference:

a) Nos. **S9.36**, **S9.36.2**, **S9.41** and **S9.42**;

b) Section D of Annex 2A of Appendix **S4**;

c) No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5**;

3 that when the Bureau, under No. **S11.32**, conducts its examination of notifications of satellite networks it shall base its findings on the requirements of coordination established by No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5**, as revised by this Conference, only for those networks published and coordinated pursuant to the provisions of this Resolution for compliance with the coordination procedure;

4 that an administration in need of assistance may inform the Bureau that it has previously filed systems which might be affected by the proposed satellite network, and may request the assistance of the Bureau in application of No. **S9.41** to determine the need for coordination by applying the provisions of No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5** (items 1, 2 and 3 of the frequency band column), as revised by this Conference. This request shall be considered as a disagreement, pending the results of the analysis by the Bureau of the need for coordination;

5 that starting from 3 June 2000 all notice forms (**APS4**/II and III), Radio Astronomy notification (**APS4**/IV) and API (**APS4**/V and VI) and Due Diligence Information (Resolution **49 (WRC-97)**) for satellite networks and earth stations submitted to the Radiocommunication Bureau pursuant to Articles **S9** and **S11** shall be submitted in electronic format which is compatible with the BR electronic notice form capture software (SpaceCap):

a) all notice forms submitted between 3 June and 3 September 2000 may initially be submitted in paper format if administrations deem it necessary;

b) these forms must be resubmitted in electronic format not later than 3 October 2000 without modification of the paper filing, in order to retain the date of receipt of the original filing. The Bureau will not compare the paper and electronic filing. However both filings will be made available to administrations who may report inconsistencies to the Bureau, until 1 March 2001;

c) if these notice forms are not resubmitted in electronic format by 3 October 2000, they shall be considered incomplete and returned to the administration;

d) all notice forms initially submitted after 3 September 2000 shall be submitted in electronic format. If the data for these notice forms is not received in electronic format the notice forms shall be considered incomplete and returned to the administration;

6 that starting from 3 June 2000 all graphical data associated with the submissions addressed in *resolves 5* should be submitted in the graphics data format which is compatible with the BR data capture software (GIMS). Submission of graphics in paper form will, however, continue to be accepted,

instructs the BR

1 to keep Members periodically informed of the results of these measures and report them to the next competent conference;

2 and administrations to monitor, in the interval until WRC-03, whether assistance to administrations in applying the provisions of this Resolution have been effective, or whether any further actions are necessary;

3 to make available coordination requests and notifications “as received” in its International Frequency Information Circular (IFIC) CD within 30 days of receipt, and also on its website;

4 to provide administrations with the latest versions of the capture and validation software and any necessary technical means, training and manuals, along with any assistance requested by administrations to enable them to comply with *resolves* 5 and 6 above;

5 to integrate the validation software with the capture software to the extent practicable,

urges administrations

1 to resubmit in electronic format notices previously submitted in paper format after consultation with the Bureau;

2 to, as soon as practicable, submit the graphical relating to their notices in a format compatible with the BR graphic data capture software.

ADD

DRAFT RESOLUTION [COM4/5] (WRC-2000)

Modification to the procedures and requirements for advance publication

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **86** of the Plenipotentiary Conference (Minneapolis 1998);

b) that there is concern among a number of administrations that some of the current procedures and requirements of advance publication may cause inequities in the satellite filing and coordination process,

resolves

1 that as of 3 June 2000, the Bureau and administrations shall apply the provisions of Nos. **S9.2** and **S9.5B**, as revised by this Conference;

2 that any request for coordination or modifications to a previously submitted API received by the Bureau after 3 June 2000 shall be examined in accordance with the provisions of No. **S9.2** as revised by this Conference.

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 or modification of the orbital location by more than ±12º for a space station using the geostationary satellite orbit will require the application of the advance publication procedure for this band or orbital location, as appropriate.

MOD

S9.5B If, upon receipt of the ~~Weekly Circular~~International Frequency Information Circular (IFIC) containing information published under No. **S9.2B**, any administration considers its existing or planned satellite systems or networks or terrestrial stations[7] 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~~may 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.

MOD

S9.36 *b)* identify in accordance with No. **S9.27** any administration with which coordination may need to be effected[14, 14*bis*];

ADD

14*bis* **S9.36.2** In the case of coordination under Nos. **S9.7**, **[S9.8** and **S9.9]**, the Bureau shall also identify the specific satellite networks with which coordination needs to be effected. The list of the networks identified by the Bureau under No. **S9.27** is only for information purposes, to help administrations comply with this procedure.

MOD

S9.41 Following receipt of the ~~Weekly Circular~~International Frequency Information Circular (IFIC) referring to requests for coordination under Nos. **S9.7** to **S9.9**, an administration believing that it should have been included in the request or the initiating administration believing that an administration identified under **S9.36** in accordance with the provisions of No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5** (items 1, 2 and 3 of the frequency band column) should not have been included in the request, shall, within four months of the date of publication of the relevant ~~Weekly Circular~~International Frequency Information Circular (IFIC), inform the initiating administration or the identified administration, as appropriate, and the Bureau, giving its technical reasons for doing so, and shall request that its name be included or that the name of the identified administration be excluded, as appropriate.

MOD

S9.42 The Bureau shall study this information on the basis of Appendix **S5** and shall inform both administrations of its conclusions. Should the Bureau agree to include or exclude, as appropriate, the administration in the request, it shall publish an addendum to the publication under No. **S9.38**.

MOD

APPENDIX S5

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
No. **S9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit (GSO), 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	1)3 400-4 200 MHz 5 725-5 850 MHz (Region 1) and 5 850-6 725 MHz	i) Bandwidth overlap; and ii) Any network in the fixed-satellite service with a space station within an orbital arc of ±10 degrees of the nominal orbital position of a proposed network in the fixed-satellite service		With respect to FSS in the bands in (1), (2) and (3) an administration may request, pursuant to **S9.41**, to be included in requests for coordination, indicating the networks for which the value of $\Delta T/T$ calculated by the method in sections 2.2.1.2 and 3.2 of Appendix **S8** exceeds 6%. When the Bureau, on request by an affected administration, studies this information pursuant to **S9.42**, the calculation method given in sections 2.2.1.2 and 3.2 of Appendix **S8** shall be used. With respect to FSS in the bands in (1), (2) and (3) an administration may request, pursuant to **S9.41**, that an administration be excluded in requests for coordination,
		2)10.95-11.2, 11.45-11.7, 11.7-12.2 (Region 2) 12.2-12.5 (Region 3) 12.5-12.75 (Regions 1 and 3) 12.7-12.75 (Region 2) and 13.75-14.5 GHz	i) Bandwidth overlap; and ii) Any network in the fixed-satellite service with a space station within an orbital arc of ±9 degrees of the nominal orbital position of a proposed network in the fixed-satellite service		

		3)17.7-20.2 GHz and 27.5-30 GHz	i) Bandwidth overlap; and ii) Any network in the fixed-satellite service with a space station within an orbital arc of ±8 degrees of the nominal orbital position of a proposed network in the fixed-satellite service		giving the reason that the network of this administration will not be affected because value of $\Delta T/T$ calculated by the method in sections 2.2.1.2 and 3.2 of Appendix **S8** do not exceed 6%. When the Bureau, on request by an administration, studies this information pursuant to **S9.42**, the calculation method given in sections 2.2.1.2 and 3.2 of Appendix **S8** shall be used.
		4)All~~Any~~ frequency bands, other than those in items 1, 2 and 3, allocated to a space service, ~~where this service is not subject to a Plan~~ and the bands in items 1), 2) and 3) where the radio service of the proposed network or affected networks is other than the fixed-satellite service or in the case of coordination of space stations operating in the opposite direction of transmission.	Value of $\Delta T/T$ exceeds 6%	4)Appendix **S8**	

MOD Appendix S4, Annex 2A, item A.2 *a)*

a) The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation[1] to provide the published Radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau. Whenever the assignment is changed in any of its basic characteristics (except in the case of a change in § A.1 *a)*, the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

MOD Appendix S4, Annex 2A, Section D

To be provided only when simple frequency-changing transponders are used on the space station onboard a geostationary satellite.

In the case of FSS networks using the frequency bands specified in No. **S9.7** (GSO/GSO) of Appendix **S5**, Table **S5-1** (items 1, 2 and 3 of the frequency band column), the data specified in this section of the Appendix is not mandatory and should not be submitted to the Bureau.

MOD Appendix S30B, Annex 2, item 1.4

1.4 *Dates* proposed for bringing into use. The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation to provide the published Radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau.

[1] Pending further studies by ITU-R on the applicability of the term “regular operation” to non-GSO networks, the condition of regular operation shall be limited to GSO networks.

A part of the Report of Sub-Working Group 4A-8

With respect to certain provisions in the United States proposal, the SWG agreed that transparency of the cost-recovery process was important to administrations and operators. The principles established in the United States proposals, i.e. posting invoice information on ITU's website and confirming there are no bookkeeping mistakes if payment is not received within six months of the date of the invoice, should be implemented in the Financial Regulations or internal procedures of ITU's Finance Department. These issues should be reported to the Plenary with a view to including them in the Plenary minutes as guidance for the Secretary-General regarding how to implement transparency at the upcoming Council meeting.

There were proposals from two administrations, Korea and Iran (Islamic Republic of), that addressed the free entitlement of publications for one satellite network per year under Council Decision 482. Iran (Islamic Republic of) proposed that a provision on this issue be included in the RR. After discussion, it was agreed that the provisions of Council Decision 482 were sufficient to guarantee the free entitlement and citing Decision 482 in the RR would be sufficient. Korea's proposal addressed the determination of the free entitlement but did not specifically address a modification to the RR. Since CL CR/139 addresses the determination of the free entitlement, the SWG agreed that it should consider Korea's proposal in the context of a possible modification to CL CR/139. There were views that CL CR/139 was prepared for the convenience of the BR and not the convenience of administrations and satellite-network operators. The view of the SWG was that the determination of the "free" network as set forth in the Korean proposal was in the best interests of administrations/operators and that it would be appropriate to instruct the Bureau to modify CL CR/139 to implement the Korean proposal: each administration may decide which of its satellite networks will be the "free" network at any point within the calendar year. If the "free" network is not identified prior to payment of the cost-recovery invoice, the administration/operator shall pay the cost-recovery fee. If the cost-recovery fee has been paid for a network that is later identified by the administration as the "free" network, the fee shall be refunded immediately to the administration/operator after identification of the "free" network. It is noted, however, that because of the processing of the "backlog" the need for a refund is only likely to arise occasionally as publication and invoice will usually occur some time after the decision on the "free" entitlement.

MOD

RESOLUTION 80 (Rev.WRC-~~97~~2000)

Due diligence in applying the principles embodied in the Constitution

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that Articles 12 and 44 of the ITU Constitution ~~(Geneva, 1992)~~ lay down the basic principles for the use of the radio-frequency spectrum and the geostationary-satellite and other satellite orbits;

b) that those principles have been ~~incorporated~~ included in the Radio Regulations [through No. **S0.3**];

[*b)bis* that Article I of the Agreement between the United Nations and the International Telecommunication Union provides that "the United Nations recognizes the International Telecommunication Union (hereinafter called "the Union") as the specialized agency responsible for taking such action as may be appropriate under its basic instrument for the accomplishment of the purposes set forth therein";]

c) that, in accordance with Nos. **S11.30**, **S11.31** and **S11.31.2**, notices shall be examined with respect to the provisions of the Radio Regulations, including the provision relating to the basic principles, appropriate rules of procedure being developed for the purpose~~,~~;

d) that WRC-97 instructed the Radio Regulations Board to develop, with the framework of Nos. **S11.30**, **S11.31** and **S11.31.2**, Rules of Procedure to follow in compliance with the principles in No. **S0.3**;

d)bis that the Board, after examining the Radio Regulations, concluded that there are no provisions currently in the Radio Regulations that link the formal notification or coordination procedures with the principles stated in No. **S0.3** of the Preamble to the Regulations;

OPTION 1:

[e) that the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space of the United Nations General Assembly has drawn up the following recommendations in this respect:

"(a) Where coordination is required between countries with a view to the utilization of satellite orbits, including the geostationary satellite orbit, the countries concerned should take into account the fact that access to that orbit must take place, *inter alia*, in an equitable manner and according to the ITU Radio Regulations. Consequently, in the case of comparable requests for access to the spectrum/orbit resource by a country already having access to the orbit/spectrum resource and a developing country or another country seeking it, the country already having such access should take all practicable steps to enable the developing country or other country to have equitable access to the requested orbit/spectrum resource;

(b) Countries wishing to use frequencies and satellite orbits, including the geostationary satellite orbit, in the above-mentioned cases file such requests according to the relevant provisions of the ITU Radio Regulations, taking into account Resolution 18 of the ITU Plenipotentiary Conference (Kyoto, 1994) and Resolution 49 of the ITU World

Radiocommunication Conference (Geneva, 1997) in order to guarantee effective use of the orbit/spectrum resource;"]

OPTION 2:

[e) that the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space of the United Nations General Assembly has drawn up recommendations in this respect,]

noting

a) that in accordance with the provisions of No. 127 of the Convention the Conference may give instructions to the Sectors of the Union;

b) that according to No. 160C of the Convention, the Radiocommunication Advisory Group shall review any matter as directed by a conference,

resolves

~~1 to instruct the Radio Regulations Board, as a matter of urgency and within the framework of Nos. **S11.30**, **S11.31** and **S11.31.2**, to develop the rules of procedure to be followed in examining due compliance with the principles reflected in No. **S0.3** in the process leading up to the recording of frequency assignments in the International Frequency Register. These rules shall be applied from a date to be decided by WRC-99;~~

OPTION 1:

[1 to instruct the Radiocommunication Advisory Group with a contribution from the Radio Regulations Board to carry out studies and consider possible draft provisions that link the formal notification, coordination and registration procedures related to frequency assignment and orbital positions of satellite services stated in No. **S0.3** of the Preamble to the Radio Regulations. The study should take into account the following:

– the "first come first served" concept restricts and sometimes prevents access and use of certain frequency bands and orbit positions;

– a relative disadvantage for developing countries in coordination negotiations due to various reasons such as a lack of resources and expertise;

– perceived differences in consistency of application of the Radio Regulations;

– the submitting of "paper" satellites that restricts access options;

– the growing use of the bands of the Plans of Appendices **S30** and **S30A** by regional, multichannel systems, which may modify the main purpose of these Plans to provide equitable access to all countries;

– the considerable processing delays in the Radiocommunication Bureau are due to the very complex procedures required and the large number of filings submitted. These delays contribute to a coordination backlog of 18 months which could extend to three years and creates uncertain regulatory situations, additional delay in the coordination process that cannot be overcome by administrations, and the possible loss of the assignment because the allotted time is exceeded;

– satellite systems may already be in orbit before completion of coordination;

– statutory time frames, such as in **S11.48**, may often be insufficient for developing countries to be able to complete the regulatory requirements as well as the design, construction and launch of satellite systems;

– no provisions for international monitoring to confirm the bringing into use of satellite networks (assignments and orbits),]

OPTION 2:

[1 to instruct the Radiocommunication Advisory Group to carry out studies and consider possible recommendations based on contributions of Sector Members to alleviate any differences in the application of Article 44 taking into account the recommendations of the Legal Subcommittee,]

invites

the Radio Regulations Board and the other organs of the Sector to make contributions to the Director of the Radiocommunication Bureau for inclusion in his report to WRC-03 under *instructs* 2,

instructs

OPTION 1:

[~~2~~1 ~~that the Board~~ Director of the Radiocommunication Bureau ~~shall~~ to draw the attention of ~~circulate the draft of these rules of procedure to~~ the A~~a~~dministrations to results of the consideration by the Radiocommunication Advisory Group by ~~31 October 1998~~ December 2001 with a view to receiving comments by 31 March ~~1999~~2002;

2~~3~~ ~~that the Board~~ Director of the Radiocommunication Bureau ~~shall~~ to submit to WRC-~~99~~03 a detailed report on the action taken on this Resolution~~.~~;

3 the Radio Regulations Board to review the results of the RAG in order to consider if such results are in accordance with the application of No. **S0.3** with regard to coordination procedures and notification of frequency assignments for the satellite services and if considered necessary, to propose additional modifications,]

OPTION 2:

[~~2~~1 ~~that the Board~~ Director of the Radiocommunication Bureau ~~shall~~ to draw the attention of ~~circulate the draft of these rules of procedure to~~ the A~~a~~dministrations to results of the consideration by the Radiocommunication Advisory Group by 31 ~~October 1998~~ December 2001 with a view to receiving comments by 31 March ~~1999~~2002;

2~~3~~ ~~that the Board~~ Director of the Radiocommunication Bureau ~~shall~~ to submit to WRC-~~99~~03 a detailed report on the action taken on this Resolution~~.~~;]

4 the Radio Regulations Board to report to the next WRC with regard to this Resolution.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 442-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2 OF THE PLENARY

Note from Chairperson, Committee 4

Committee 4 has approved a revisions of several resolutions as well as a new draft resolution which relate to items intended to be considered by WRC-03 or another future conference.

These resolutions are listed below along with the relevant document references.

Resolution	**Document**
MOD 124	397 (B.4)
MOD 127	397 (B.4)
MOD 728	397 (B.4)
MOD 216	351
MOD 706	428
MOD 727	428
[COM4/3]	428

H. RAILTON
Chairperson of Committee 4
Box 2895

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 443-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Note by the Secretary-General

FINAL DAYS OF THE CONFERENCE

The Steering Committee has established a programme for the termination of the conference on 2 June 2000. In this connection, attention is invited to the following:

1 Final Acts

Paper copies of the preliminary version of the Final Acts will be distributed on 2 June 2000 before the signing ceremony to Heads of delegations on the basis of up to a maximum of five copies per delegation and one copy for each Sector Member. A CD-ROM containing all the working documents of the conference and the preliminary version of the Final Acts will also be distributed to each delegate on the same day.

NOTE - Delegates who leave the conference before the signing ceremony are requested to inform the Delegate Registration Service to enable the secretariat to dispatch their CD-ROM 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 (Rumeli level 0/03) 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 one and a half 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 video monitors).

NOTE - Delegations (or members thereof) wishing to sign the Final Acts before the signing ceremony may do so by application to Mme S. Crawford (Rumeli level 1/13).

Yoshio UTSUMI
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 444-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

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 front of the Plenary room of Rumeli A and B.

2.2 In the files, delegations will find the following:

a) a sheet marked “ACTES FINALS” for signature of the Final Acts;

b) a sheet marked “DECLARATIONS/RESERVES” for signature of 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.

Yoshio UTSUMI
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 445-E
26 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 415, 304 and 403 **COMMITTEE 6**

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

Committee 5 has continued its consideration of its agenda items. As a result of these deliberations, it has adopted, at its fifth and sixth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

The texts of footnotes S5.355, S5.355A, S5.359 and S5.359A, which were considered by both Committee 4 and Committee 5 are not included in this document. It has been agreed that the texts of these footnotes, as eventually agreed by Committee 4, should be used in preparation of the final texts.

Please also note that the text in square brackets in the footnote to Table S22-4C awaits the results of work of GT PLEN-1.

Chris Van DIEPENBEEK
Chairperson, Committee 5

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 ADD S5.329A SPACE RESEARCH (active) S5.330 S5.331 S5.332	
1 240-1 260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 ADD S5.329A SPACE RESEARCH (active) Amateur S5.330 S5.331 S5.332 S5.334 S5.335	

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) ADD S5.329A S5.341 ~~S5.355 S5.359~~ S5.363 ADD S5.355A ADD S5.359A	

ADD

S5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 164-1 215 MHz, 1 215-1 260 MHz, 1 260-1 300 MHz, 1 559-1 610 MHz and 5 010-5 030 MHz is not intended to provide safety service application, and shall not impose any additional constraints on other systems or services operating in accordance with the Table of Frequency Allocations.

ARTICLE S5

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
960-1 215	AERONAUTICAL RADIONAVIGATION MOD S5.328 ~~S5.328~~ADD S5.328A	

MOD

S5.328 The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the ~~use~~operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

ADD

S5.328A *Additional allocation:* the band 1 164-1 215 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux-density produced by all the space stations within all radionavigation-satellite systems at the Earth's surface shall not exceed the provisional value of –115 dB(W/m^2) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause harmful interference to nor claim protection from stations of the aeronautical-radionavigation service. The provisions of Resolution **[COM5/19] (WRC-2000)** apply.

ADD

RESOLUTION [COM5/19] (WRC-2000)

Use of the frequency band between 1 164-1 215 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that in accordance with the Radio Regulations the band 960-1 215 MHz is allocated on a primary basis to the aeronautical-radionavigation service in all ITU regions;

b) that this Conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 164-1 215 MHz with a provisional limit to the aggregate power flux-density produced by all the space stations within all radionavigation-satellite systems at the Earth's surface of –115 dBW/m^2 in any 1 MHz band for all angles of arrival;

c) that it is likely that no radionavigation-satellite service systems will be fully operational in this band before the next WRC;

d) that only a few radionavigation-satellite service systems are expected to be deployed in this band;

e) that it is unlikely that more than two systems will have overlapping frequencies,

noting

a) that the studies conducted to date by ICAO to ensure protection of current operation of distance measuring equipments (DME) indicate that a provisional power flux-density value for radionavigation-satellite service allocation in this band should be in the range of –115 to –119 dBW/m^2 in any 1 MHz band for the aggregate interference from all space stations within all radionavigation-satellite service systems operating in the same band;

b) that no methodology is available to derive an aggregate power flux-density for all radionavigation-satellite service space stations of one system from the aggregate power flux-density for all systems in No. **S5.328A**,

resolves

1 that the provisional power flux-density limit stated in No. **S5.328A** shall be applied for all radionavigation-satellite service (space-to-Earth) systems as of 2 June 2000;

2 to invite WRC-03 to review the results of the studies in *requests ITU-R* 1 and take appropriate action;

3 that the administrations planning to implement radionavigation-satellite service systems in this band shall consult each other in order to ensure that the provisional aggregate power flux-density limit is not exceeded;

4 that, as of 3 June 2000, when notifying frequency assignments to a satellite network in the radionavigation-satellite service in the bands 1 164-1 215 MHz, the responsible administration shall provide the calculated values of the aggregate power flux-density, as defined in No. **S5.328A**, in addition to the relevant characteristics listed in Appendix **S4**,

requests ITU-R

1 to conduct, as a matter of urgency and in time for consideration by WRC-03, the appropriate technical, operational and regulatory studies on the overall compatibility between the radionavigation-satellite service and the aeronautical radionavigation service in the band 960-1 215 MHz, including the assessment of the need for an aggregate power flux-density limit, and the revision, if necessary, of the provisional pfd limit included in No. **S5.328A** concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 164-1 215 MHz;

2 to report to CPM before WRC-03 on the conclusions of these studies,

instructs the Radiocommunication Bureau

as of the end of WRC-03, to review and, if necessary, revise any finding previously made on the compliance with the limit of a radionavigation-satellite service (space-to-Earth) system for which notification information has been received before the end of WRC-03. This review shall be based on the values as revised, if necessary, by WRC-03,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Secretary-General

to communicate the contents of this Resolution to the ICAO for such actions as they may consider appropriate and to invite ICAO to actively participate in the study activity identified under *requests ITU-R* 1.

ARTICLE S5

MOD

890-1 350 MHz

1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) MOD S5.329 ADD S5.329A SPACE RESEARCH (active) S5.330 S5.331 MOD S5.332
1 240-1 260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) MOD S5.329 ADD S5.329A SPACE RESEARCH (active) Amateur S5.330 S5.331 MOD S5.332 S5.334 S5.335
1 260-1 300	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) MOD S5.329 ADD S5.329A SPACE RESEARCH (active) Amateur S5.282 S5.330 S5.331 ~~S5.332~~MOD S5.333 S5.334 S5.335

MOD

S5.329 Use of the radionavigation-satellite service in the band 1 215-~~1 260~~1 300 MHz shall be subject to the condition that no harmful interference is caused to and no protection is claimed from the radionavigation service authorized under No. **S5.331**. See also Resolution **[COM5/20] (WRC-2000)**.

ADD

S5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service application, and shall not impose any additional constraints on other systems or services operating in accordance with the Table of Frequency Allocations.

MOD

S5.332 In the band 1 215-~~1 300~~1 260 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.

MOD

S5.333 ~~(SUP - WRC-97)~~In the band 1 260-1 300 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 and other services allocated by footnotes on a primary basis.

ADD

RESOLUTION [COM5/20] (WRC-2000)

Use of the frequency band between 1 215-1 300 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this Conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 260-1 300 MHz;

b) that in the band 1 215-1 260 MHz radionavigation-satellite service (space-to-Earth) systems have been successfully operated for a considerable time in a band used by radars;

c) the importance of the radionavigation service authorized in certain countries in accordance with No. **S5.331** and the radiolocation service and the necessity for adequate protection and continued operation of these services throughout the band 1 215-1 300 MHz,

resolves

1 that no additional constraints shall be put on radionavigation-satellite service (space-to-Earth) systems operating in the band 1 215-1 260 MHz;

2 to invite WRC-03 to review the results of the studies in *requests ITU-R* 1 and take appropriate action,

requests ITU-R

1 to conduct, as a matter of urgency and in time for consideration by WRC-03, the appropriate technical, operational and regulatory studies, including the assessment of the need for a power flux-density limit concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 215-1 300 MHz in order to ensure that the RNSS (space-to-Earth) will not cause harmful interference to the radionavigation and the radiolocation services;

2 to report to CPM before WRC-03 on the conclusions of these studies,

instructs the Secretary-General

to communicate the contents of this Resolution to the ICAO for such actions as they may consider appropriate and to invite ICAO to actively participate in the study activity identified under *requests ITU-R* 1.

ARTICLE S5

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 300-1 350	AERONAUTICAL RADIONAVIGATION S5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) ~~Radiolocation~~ S5.149 ADD S5.337A	

ADD

S5.337A The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to nor constrain the operation and development of the aeronautical-radionavigation service.

ADD

RESOLUTION [COM5/21] (WRC-2000)

Studies on compatibility between stations of the radionavigation-satellite service (RNSS) (Earth to space) and the radiolocation service operating in the frequency band 1300-1350 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 added a primary allocation to the radionavigation-satellite service (Earth-to-space) in the 1 300-1 350 MHz band;

b) that WRC-2000 raised the status of the radiolocation service from secondary to primary in the 1 300-1 350 MHz band;

c) that studies to determine the compatibility between airborne radar systems operating in the radiolocation service and the radionavigation-satellite service have not been carried out;

d) that there is a potential for interference between ground-based beacons of the radionavigation-satellite service and airborne radiolocation systems;

e) that airborne radiolocation systems can be protected with the implementation of adequate separation distances, if necessary;

f) that a maximum of twenty ground-based beacons in the radionavigation satellite service are expected to be deployed globally,

resolves to request ITU-R

to conduct, as a matter of urgency, the appropriate studies to ensure that stations of the radionavigation-satellite service (Earth-to-space) in the band 1 300-1 350 MHz do not cause harmful interference to the operation of airborne radiolocation systems and to develop, if needed, appropriate recommendations,

urges administrations

to participate actively in these studies by submitting contributions to ITU-R.

MOD

TABLE **S21-4** *(continued)*

Frequency band	Service*	Limit 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 (space-to-Earth) geostationary-satellite orbit	–150 ~~–14~~	–150 + 0.5(δ – 5) ~~14~~	–140 ~~–14~~	4 kHz
10.7-11.7 GHz	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	–126	–126 + 0.5(δ – 5)	–116	1 MHz
11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. **S5.494** and **S5.496)** 11.7-12.~~2~~7 GHz (Region 2) 11.7-12.~~2~~75 GHz (Region 3) ~~12.2-12.7 GHz (Region 2)~~	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	~~–148~~ ~~15~~ –124	~~–148 + 0.5(δ – 5)~~ ~~15~~ –124 + 0.5(δ – 5)	~~–138~~ ~~15~~ –114	~~4 kHz~~ 1 MHz
12.2-12.~~5~~75 GHz[7] (Region 3) 12.5-12.75 GHz[7] (Region 1 ~~and Region 3~~ countries listed in Nos. **S5.494** and **S5.496**)	Fixed-satellite (space-to-Earth), geostationary-satellite orbit	–148 ~~–14~~	–148 + 0.5(δ – 5) ~~14~~	–138 ~~–14~~	4 kHz
15.43-15.63 GHz	Fixed-satellite (space-to-Earth)	–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
17.7-19.3 GHz[7, 8]	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth)	–115 *12bis* or ~~–125~~ ~~12~~ –115–X[12]	–115 + 0.5(δ – 5) *12bis* or ~~–125 + (δ – 5)~~ ~~12~~ –115 – X + ((10 + X)/20) (δ – 5)[12]	–105 *12bis* or –105 [12]	1 MHz
19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz	Fixed-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth) Inter-satellite	–115	–115 + 0.5(δ – 5)	–105	1 MHz

MOD

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[12] **S21.16.6** ~~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 **131 (WRC-97)**).~~The function X is defined as a function of the number, N, of satellites in the non-GSO FSS constellation as follows:

– for N ≤ 50 $X = 0$ (dB)

– for 50 < N ≤ 288 $X = \frac{5}{119}(N - 50)$ (dB)

– for N > 288 $X = \frac{1}{69}(N + 402)$ (dB)

In the band 18.8-19.3 GHz, these limits apply to emissions of any space station in a non-geostationary FSS system for which complete coordination or notification information, as appropriate, has been received by the Radiocommunication Bureau after 17 November 1995, and which was not operational by that date.

ADD

[12*bis*] **S21.16.6*bis*** These limits apply to emissions of a space station on a meteorological-satellite and on a geostationary FSS satellite. These limits also apply to emissions of any space station in a non-geostationary FSS system in the bands 18.8-19.3 GHz for which complete coordination or notification information has been received by the Radiocommunication Bureau by 17 November 1995, or was in operation by that date.

NOC

[13] **S21.16.7**

SUP

[14] **S21.16.8**

SUP

[15] **S21.16.9**

SUP

RESOLUTION 131 (WRC-97)

Power flux-density limits applicable to non-geostationary fixed-satellite service systems for protection of terrestrial services in the bands 10.7-12.75 GHz and 17.7-19.3 GHz

ARTICLE S22

Space services[1]

Section II – Control of interference to geostationary-satellite systems

NOC

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.

S22.3 2) Whenever the emissions from geostationary satellites in the inter-satellite service are directed towards space stations at distances from Earth greater than that of the geostationary-satellite orbit, the boresight of the antenna mainbeam of the geostationary satellite shall not be pointed within 15° of any point on the geostationary-satellite orbit.

S22.4 § 3 In the frequency band 29.95-30 GHz space stations in the earth exploration-satellite service on board geostationary satellites and operating with space stations in the same service on board non-geostationary satellites shall have the following restriction:

Whenever the emissions from the geostationary satellites are directed towards the geostationary-satellite orbit and cause unacceptable interference to any geostationary-satellite space system in the fixed-satellite service, these emissions shall be reduced to a level at or less than accepted interference.

S22.5 § 4 In the frequency band 8 025-8 400 MHz, which the Earth exploration-satellite service using non-geostationary satellites shares with the fixed-satellite service (Earth-to-space) or the meteorological-satellite service (Earth-to-space), the maximum power flux-density produced at the geostationary-satellite orbit by any Earth exploration-satellite service space station shall not exceed –174 dB(W/m^2) in any 4 kHz band.

S22.5A § 5 In the frequency band 6 700-7 075 MHz, the maximum aggregate power flux-density produced at the geostationary-satellite orbit and within ±5° of inclination around the geostationary-satellite orbit by a non-geostationary-satellite system in the fixed-satellite service shall not exceed –168 dB(W/m^2) in any 4 kHz band. The maximum aggregate power flux-density shall be calculated in accordance with Recommendation ITU-R S.1256.

SUP

S22.5B

MOD

S22.5C § ~~5~~6 1) The equivalent power flux-density[2], epfd$_{down}$ 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 in the fixed-satellite service in the frequency bands listed in Tables ~~**S22-1**~~**S22-1A** to **S22-1D**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Tables ~~**S22-1**~~ **S22-1A** to **S22-1D** 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 specified in Tables ~~**S22-1**~~**S22-1A** to **S22-1D**, for all pointing directions towards the geostationary-satellite orbit.

MOD

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[2] **S22.5C.1, D.1, F.1** The equivalent power flux-density is defined as the sum of the power flux-densities produced at a ~~point~~GSO receive station on the Earth's surface or in the geostationary orbit, as appropriate, by all ~~space~~the transmit 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~~in its nominal direction. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_s} 10^{pfd_i/10} \cdot \frac{G_r(\theta_i)}{G_{max}}\right]$$

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_a} 10^{\frac{P_i}{10}} \cdot \frac{G_t(\theta_i)}{4.\pi d_i^2} \cdot \frac{G_r(\phi_i)}{G_{r,\max}}\right]$$

where:

~~N_s: 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: index of the non-geostationary space station considered;~~

~~pfd_i: power flux-density produced at the point considered on the Earth's surface in dB(W/m^2) in the reference bandwidth;~~

~~θ_i: angle between the direction considered towards the geostationary-satellite orbit and the direction of the interfering space station in the non-geostationary-satellite system;~~

~~$G_r(\theta_i)$: gain (as a ratio) of the receive reference antenna to be considered as part of a geostationary-satellite network;~~

~~G_{max}: maximum gain (as a ratio) of the above receive reference antenna;~~

~~$epfd$: computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.~~

N_a: is the number of transmit stations in the non-geostationary-satellite system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i: is the index of the transmit station considered in the non-geostationary-satellite system;

P_i: is the RF power at the input of the antenna of the transmit station, considered in the non-geostationary satellite system in dBW in the reference bandwidth;

θ_i: is the off-axis angle between the boresight of the transmit station considered in the non-geostationary satellite system and the direction of the GSO receive station;

$G_t(\theta_i)$: is the transmit antenna gain (as a ratio) of the station considered in the non-geostationary satellite system in the direction of the GSO receive station;

d_i: is the distance in metres between the transmit station considered in the non-geostationary satellite system and the GSO receive station;

ϕ_i: is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the ith transmit station considered in the non-geostationary satellite system;

$G_r(\phi_i)$: is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the ith transmit station considered in the non-geostationary satellite system;

$G_{r,max}$: is the maximum gain (as a ratio) of the antenna of the GSO receive station;

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-geostationary fixed-satellite service system in the frequency bands to be applied in accordance with Resolutions **130 (WRC-97)** and **538 (WRC-97)**. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.~~

SUP

TABLE **S22-1**

ADD

TABLE **S22-1A**[3, 5, 6, 6*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	$epfd_{down}$ $dB(W/m^2)$	Percentage of time during which $epfd_{down}$ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[4]
10.7-11.7 in all Regions; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–175.4 –174 –170.8 –165.3 –160.4 –160 –160	0 90 99 99.73 99.991 99.997 100	40	60 cm Recommendation ITU-R S.1428
	–181.9 –178.4 –173.4 –173 –164 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.74 99.857 99.954 99.984 99.991 99.997 99.997 99.9993 100	40	1.2 m Recommendation ITU-R S.1428
	–190.45 –189.45 –187.45 –182.4 –182 –168 –164 –162 –160 –160	0 90 99.5 99.7 99.855 99.971 99.988 99.995 99.999 100	40	3 m Recommendation ITU-R S.1428
	–195.45 –195.45 –190 –190 –172.5 –160 –160	0 99 99.65 99.71 99.99 99.998 100	40	10 m Recommendation ITU-R S.1428

3 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

4 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

5 In addition to the limits shown in Table **S22-1A**, the following single-entry $epfd_{down}$ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **S22-1A**.

100% of the time $epfd_{down}$ ($dB(W/m^2)$ per 40 kHz)	**Latitude (North or South) (°)**
–160	0 < |Latitude| ≤ 57.5
–160 + 3.4 (57.5 – |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
–165.3	63.75 ≤ |Latitude|

6 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

6*bis* In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30B** will be fully protected.

ADD

TABLE **S22-1B**[7, 9, 9*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{down}$ $dB(W/m^2)$**	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[8]**
17.8-18.6	–175.4 –175.4 –172.5 –167 –164 –164	0 90 99 99.714 99.971 100	40	1 m Recommendation ITU-R S.1428
	–161.4 –161.4 –158.5 –153 –150 –150	0 90 99 99.714 99.971 100	1 000	
17.8-18.6	–178.4 –178.4 –171.4 –170.5 –166 –164 –164	0 99.4 99.9 99.913 99.971 99.977 100	40	2 m Recommendation ITU-R S.1428
	–164.4 –164.4 –157.4 –156.5 –152 –150 –150	0 99.4 99.9 99.913 99.971 99.977 100	1 000	

17.8-18.6	–185.4 –185.4 –180 –180 –172 –164 –164	0 99.8 99.8 99.943 99.943 99.998 100	40	5 m Recommendation ITU-R S.1428
	–171.4 –171.4 –166 –166 –158 –150 –150	0 99.8 99.8 99.943 99.943 99.998 100	1 000	

7 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

8 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

9 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

9*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidth.

ADD

TABLE **S22-1C**[10, 12, 12*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{down}$ dB(W/m^2)**	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[11]**
19.7-20.2	–187.4 –182 –172 –154 –154	0 71.429 97.143 99.983 100	40	70 cm Recommendation ITU-R S.1428
	–173.4 –168 –158 –140 –140	0 71.429 97.143 99.983 100	1 000	

19.7-20.2	–190.4 –181.4 –170.4 –168.6 –165 –160 –154 –154	0 91 99.8 99.8 99.943 99.943 99.997 100	40	90 cm Recommendation ITU-R S.1428
	–176.4 –167.4 –156.4 –154.6 –151 –146 –140 –140	0 91 99.8 99.8 99.943 99.943 99.997 100	1 000	
19.7-20.2	–196.4 –162 –154 –154	0 99.98 99.99943 100	40	2.5 m Recommendation ITU-R S.1428
	–182.4 –148 –140 –140	0 99.98 99.99943 100	1 000	
	–200.4 –189.4 –187.8 –184 –175 –164.2 –154.6 –154 –154	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	40	5 m Recommendation ITU-R S.1428
	–186.4 –175.4 –173.8 –170 –161 –150.2 –140.6 –140 –140	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	1 000	

10 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

11 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS networks.

12 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

12*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidth.

ADD

TABLE **S22-1D**[13, 15, 16, 16*bis*]

Limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	$epfd_{down}$ $dB(W/m^2)$	Percentage of time during which $epfd_{down}$ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[14]
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–165.841 –165.541 –164.041 –158.6 –158.6 –158.33 –158.33	0 25 96 98.857 99.429 99.429 100	40	30 cm Recommendation ITU-R BO.1443 Annex 1
	–175.441 –172.441 –169.441 –164 –160.75 –160 –160	0 66 97.75 99.357 99.809 99.986 100	40	45 cm Recommendation ITU-R BO.1443 Annex 1
	–176.441 –173.191 –167.75 –162 –161 –160.2 –160 –160	0 97.8 99.371 99.886 99.943 99.971 99.997 100	40	60 cm Recommendation ITU-R BO.1443 Annex 1
	–178.94 –178.44 –176.44 –171 –165.5 –163 –161 –160 –160	0 33 98 99.429 99.714 99.857 99.943 99.991 100	40	90 cm Recommendation ITU-R BO.1443 Annex 1
	–182.44 –180.69 –179.19 –178.44 –174.94 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.68 99.68 99.85 99.915 99.94 99.97 99.99 99.998 100	40	120 cm Recommendation ITU-R BO.1443 Annex 1

	–184.941 –184.101 –181.691 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.571 99.946 99.974 99.993 99.999 100	40	180 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–187.441 –186.341 –183.441 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.786 99.957 99.983 99.994 99.999 100	40	240 cm Recommendation ITU-R BO.1443 Annex 1
	–191.941 –189.441 –185.941 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.857 99.914 99.951 99.983 99.991 100	40	300 cm Recommendation ITU-R BO.1443 Annex 1

[13] For BSS antenna diameters 180 cm, 240 cm and 300 cm, in addition to the single-entry limits shown in Table **S22-1D**, the following single-entry 100% of the time $epfd_{down}$ limit also applies in the frequency bands listed in Table **S22-1D**:

100% of the time $epfd_{down}$ (dB(W/m^2) per 40 kHz)	**Latitude (North or South) (°)**
–160	$0 \le \lvert \text{Latitude} \rvert \le 57.5$
$-160 + 3.4 (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \le \lvert \text{Latitude} \rvert \le 63.75$
–165.3	$63.75 \le \lvert \text{Latitude} \rvert$

[14] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

[15] For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

[16] For BSS earth station antenna diameter of 240 cm, in addition to the single-entry 100% of the time $epfd_{down}$ limit specified in footnote 13 of this table, a single-entry 100% of the time operational $epfd_{down}$ limit is specified in Table **S22-4C**.

[16*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30** will be fully protected.

ADD

S22.5CA 2) The limits given in Tables **S22-1A** to **S22-1D** may be exceeded on the territory of any country whose administration has so agreed.

MOD

S22.5D ~~2~~3) The ~~aggregate~~ equivalent power flux-density~~3~~[2], epfd$_{up}$, produced at any point in the geostationary-satellite orbit by emissions from all the earth stations in a non-geostationary-satellite system in the fixed-satellite service in the frequency bands listed in Table **S22-2**, 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 equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth specified in Table **S22-2**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary-satellite orbit.

~~3~~ ~~**S22.5D.1** The aggregate power flux-density is defined as the sum 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:~~

$$apfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_e} 10^{P_i/10} \cdot \frac{G_t(\theta_i)}{4\,\pi\,{d_i}^2}\right]$$

where:

- N_e: 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: index of the earth station considered in the non-geostationary-satellite system;
- P_i: 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;
- θ_i: 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;
- $G_t(\theta_i)$: 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: distance in metres between the earth station considered in the non-geostationary-satellite system and the point considered in the geostationary-satellite orbit;
- $apfd$: aggregate 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-geostationary fixed-satellite service system in the frequency bands to be applied in accordance with Resolutions **130 (WRC-97)** and **538 (WRC-97)**. These provisional limits are subject to review by ITU-R and are subject to confirmation by WRC-99.

MOD

TABLE **S22-2**[17bis]

~~**Frequency band (GHz)**~~	~~**Aggregate pfd dB(W/m^2/4 kHz)**~~	~~**Percentage of time during which aggregate pfd level may not be exceeded**~~
~~17.3-18.1 in Regions 1 and 3 and 17.8-18.1 in Region 2~~	~~–163~~	~~100%~~

Limits to the $epfd_{up}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{up}$ dB(W/m^2)**	**Percentage of time $epfd_{up}$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[17]
12.50-12.75 12.75-13.25 13.75-14.5	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.3-18.1 (Regions 1 and 3) 17.8-18.1 (Region 2)*	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
27.5-28.6	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10
29.5-30.0	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10

[17] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. For the case of Ls = –10, the values a = 1.83 and b = 6.32 should be used in the equations in Annex 1 of Recommendation ITU-R S.672-4 for single-feed circular beams. In all cases of Ls, the parabolic main beam equation should start at zero.

* This $epfd_{up}$ level also applies to the frequency band 17.3-17.8 GHz to protect BSS feeder links in Region 2 from non-GSO FSS Earth-to-space transmissions in Regions 1 and 3.

[17*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30A** will be fully protected.

SUP

S22.5E

MOD

S22.5F 4) The ~~aggregate~~ equivalent power flux-density[5~~2~~], $epfd_{is}$ produced at any point in the geostationary-satellite orbit by emissions from all the ~~earth~~ space stations in a non-geostationary-satellite system in the fixed-satellite service in the frequency bands listed in

~~4 **S22.5E.1** See No. **S22.5C.1**.~~

~~5 **S22.5F.1** See No. **S22.5D.1**.~~

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 **S22-43** for ~~any~~ the specified percentages of time. These limits relate to the equivalent power flux-density which would be obtained under free-space propagation conditions into ~~the~~ a reference antenna and in the reference bandwidth specified in Table **S22-43**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary orbit.

MOD

TABLE **S22-3**[18*bis*]

Limits to the $epfd_{is}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{is}$ dB(W/m^2)**	**Percentage of time during which $epfd_{is}$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[18]
10.7-11.7 (Region 1) 12.5-12.75 (Region 1) 12.7-12.75 (Region 2)	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.8-18.4	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20

[18] Under this section, this reference pattern is to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. In applying the equations of Annex 1 of Recommendation ITU-R S.672-4, the parabolic main beam equation should start at zero.

[18*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30A** will be fully protected.

~~PART A~~

~~**Frequency band (GHz)**~~	~~**Equivalent pfd dB(W/m^2)**~~	~~**Percentage of time during which equivalent pfd level may not be exceeded**~~	~~**Reference bandwidth (kHz)**~~	~~**Reference antenna diameter, and reference radiation pattern**~~
~~10.7-11.7; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3~~	~~–179~~	~~99.7~~	~~4~~	~~60 cm, Rec. ITU-R S.465-5~~
	~~–192~~	~~99.9~~	~~4~~	~~3 m, Rec. ITU-R S.465-5~~
	~~–186~~	~~99.97~~	~~4~~	~~3 m, Rec. ITU-R S.465-5~~
	~~–195~~	~~99.97~~	~~4~~	~~10 m, Rec. ITU-R S.465-5~~
	~~–170~~	~~99.999~~	~~4~~	~~60 cm, Rec. ITU-R S.465-5~~
	~~–173~~	~~99.999~~	~~4~~	~~3 m, Rec. ITU-R S.465-5~~
	~~–178~~	~~99.999~~	~~4~~	~~10 m, Rec. ITU-R S.465-5~~
	~~–170~~	~~100~~	~~4~~	~~≥ 60 cm, Rec. ITU-R S.465-5~~

~~TABLE **S22-3**~~

~~**PART B**~~

~~**Frequency band (GHz)**~~	~~**Equivalent pfd dB(W/m^2)**~~	~~**Percentage of time during which equivalent pfd 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, Rec. ITU-R S.465-5~~
	~~–165~~ ~~–151~~	~~99.0~~	~~–40~~ ~~1000~~	~~70 cm, Rec. ITU-R S.465-5~~
	~~–165~~ ~~–151~~	~~99.5~~	~~–40~~ ~~1000~~	~~90 cm, Rec. ITU-R S.465-5~~
	~~–167~~ ~~–153~~	~~99.8~~	~~–40~~ ~~1000~~	~~1.5 m, Rec. ITU-R S.465-5~~
	~~–180~~ ~~–166~~	~~99.9~~	~~–40~~ ~~1000~~	~~5 m, Rec. ITU-R S.465-5~~
	~~–184~~ ~~–170~~	~~99.9~~	~~–40~~ ~~1000~~	~~7.5 m, Rec. ITU-R S.465-5~~
	~~–188~~ ~~–174~~	~~99.9~~	~~–40~~ ~~1000~~	~~12 m, Rec. ITU-R S.465-5~~
	~~–165~~ ~~–151~~	~~100~~	~~–40~~ ~~1000~~	~~30 cm to 12 m, Rec. ITU-R S.465-5~~
~~19.7-20.2~~	~~–154~~ ~~–140~~	~~99.0~~	~~–40~~ ~~1000~~	~~30 cm, Rec. ITU-R S.465-5~~
	~~–164~~ ~~–150~~	~~99.9~~	~~–40~~ ~~1000~~	~~90 cm, Rec. ITU-R S.465-5~~
	~~–167~~ ~~–153~~	~~99.8~~	~~–40~~ ~~1000~~	~~2 m, Rec. ITU-R S.465-5~~
	~~–174~~ ~~–160~~	~~99.9~~	~~–40~~ ~~1000~~	~~5 m, Rec. ITU-R S.465-5~~
	~~–154~~ ~~–140~~	~~100~~	~~–40~~ ~~1000~~	~~30 cm to 12 m, Rec. ITU-R S.465-5~~

SUP

S22.5G

ADD

S22.5H 5) The limits specified in Nos. **S22.5C** to **S22.5D** and **S22.5F** apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau after 22 November 1997. The limits in Tables **S22-4A**, **S22-4B** and **S22-4C** do not apply to non-GSO FSS systems for which complete coordination or notification, as appropriate, information has been received by the Bureau before 22 November 1997.

ADD

S22.5I 6) An administration operating a non-GSO FSS system which is in compliance with the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** 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 coordination or notification information, as appropriate, for the non-GSO system and of the complete coordination information for the GSO network, provided that the $epfd_{down}$ radiated by the non-GSO FSS system into any operating GSO FSS earth station does

not exceed the operational and additional operational limits given in Tables **S22-4A**, **S22-4B** and **S22-4C**, when the diameter of the earth station is equal to the values given in Table **S22-4A** or **S22-4C** or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite. Except as otherwise agreed between concerned administrations, an administration operating a non-GSO FSS system that is subject to the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** and which radiates $epfd_{down}$ into any operating GSO FSS earth station at levels in excess of the operational or additional operational limits given in Tables **S22-4A**, **S22-4B** and **S22-4C**, when the diameter of the earth station is equal to the values given in Table **S22-4A** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite, shall be considered to be in violation of its obligations under No. **S22.2**.

SUP

TABLE **S22-4**

PART A

PART B

ADD

TABLE **S22-4A**[20, 22, 22*bis*]

Operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{down}$ dB(W/m^2)**	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Reference bandwidth (kHz)**	**Receive GSO earth station antenna diameter[21] (m)**	**Orbital inclination of GSO satellite (degrees)**
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (prior to 31 December 2005)	–163 –166 –167.5 –169.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–160 –163 –164.5 –166.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (from 31 December 2005)	–161.25 –164 –165.5 –167.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–158.25 –161 –162.5 –164.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5

20 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

21 For antenna diameters between the tabulated values, the limits are given by linear interpolation using a linear scale for $epfd_{down}$ in decibels and a logarithmic scale for antenna diameter in metres.

22 In addition to the operational limits shown in Table **S22-4A**, the additional operational limits in Table **S22-4A1** apply to certain GSO FSS earth station antenna sizes in the frequency bands listed in Table **S22-4A**.

22*bis* The operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems shall be the values given in footnote 5 to Table **S22-1A** or Table **S22-4A**, whichever are the more stringent.

ADD

TABLE **S22-4A1**

Additional operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems into 3 m and 10 m GSO FSS earth station antennas

$epfd_{down}$ (dB(W/m^2) per 40 kHz)	**Percentage of time during which $epfd_{down}$ may not be exceeded**	**Receive GSO earth station antenna diameter (m)**
–182	99.9	3
–179	99.94	
–176	99.97	
–171	99.98	
–168	99.984	
–165	99.993	
–163	99.999	
–161.25	99.99975	
–161.25	100	
–185	99.97	10
–183	99.98	
–179	99.99	
–175	99.996	
–171	99.998	
–168	99.999	
–166	99.9998	
–166	100	

ADD

TABLE **S22-4B**[23]

Operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	$epfd_{down}$ dB(W/m^2)	Percentage of time during which $epfd_{down}$ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna gain (dBi)	Orbital inclination of GSO satellite (degrees)
19.7-20.2	–157 –157 –155	100 100 100	40 40 40	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
19.7-20.2	–143 –143 –141	100 100 100	1 000 1 000 1 000	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–164 –162	100 100	40 40	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–150 –148	100 100	1 000 1 000	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5

23 For certain GSO FSS receive earth stations, see also ADD **S9.7A** and ADD **S9.7B**.

24 The operational limit applies to non-GSO systems operating at altitudes of 7 000 km or above in order to protect GSO FSS systems employing adaptive coding.

ADD

TABLE **S22-4C**[25]

Operational limits to the $epfd_{down}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	$epfd_{down}$ dB(W/m^2)	Percentage of time during which $epfd_{down}$ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna diameter (m)	Orbital inclination of GSO satellite (degrees)
12.2-12.7 GHz in Region 2	–167	100	40	2.4	≤ 0.5

25 These limits apply into GSO earth stations located in Region 2 west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.]

ADD

S22.5J 7) In case of *force majeure*, telecommand and ranging carriers transmitted to non-geostationary satellites in the fixed-satellite service are not subject to the limits given in Table **S22-2**.

ADD

S22.5K 8) Administrations operating or planning to operate non-GSO FSS systems in the bands listed in Tables **S22-1A** through **S22-1D** of No. **S22.5C** will apply the provisions of Resolution **[COM5/6] (WRC-2000)** to ensure that the actual aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables **[COM5/6]-1A** through **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**. In the event that an administration operating a GSO network in conformity with the Radio Regulations identifies epfd levels from non-GSO FSS systems which may be in excess of the aggregate limits contained in Tables **[COM5/6]-1A** through **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**, the administrations responsible for the non-GSO FSS systems will apply the provisions contained in *resolves* 2 of Resolution **[COM5/6] (WRC-2000)**.

ARTICLE S9

Sub-Section IIA – Requirement and request for coordination

ADD

S9.7A *a1)* [11*bis*, 11*ter*] for a specific earth station within a geostationary-satellite network in the fixed-satellite service in certain frequency bands in respect of a non-geostationary-satellite system in the fixed-satellite service;

ADD

S9.7B *a2)* [11*bis*, 11*ter*] for a non-geostationary-satellite system in the fixed-satellite service in certain frequency bands in respect of a specific earth station within a geostationary-satellite network in the fixed-satellite service;

ADD

_____

[11*bis*] **S9.7A.1** and **S9.7B.1** The coordination of a specific earth station under **S9.7A** or **S9.7B** shall remain within the authority of the administration having this station located on its territory.

ADD

_____

[11*ter*] **S9.7A.2** and **S9.7B.2** Coordination information relating to a specific earth station received by the Bureau prior to 30 June 2000 is considered as complete **S9.7A** or **S9.7B** information from the date of receipt of complete information of the associated satellite network under **S9.7** provided that the maximum isotropic antenna gain, the lowest total receiving system noise temperature of the earth station and the necessary bandwidth of the emission received by the earth station are equal to the ones of any typical earth station included in the GSO FSS network coordination request.

MODIFICATIONS TO APPENDIX **S4**

ANNEX 2A

Characteristics of satellite networks or earth or radio astronomy stations[2]

A General characteristics to be provided for the satellite network or the earth or radio astronomy station

Add in section A.4 *b)*

In addition, if the stations operate in a frequency band subject to **S22.5C**, D or F.

6) new data elements required to characterize properly the orbital operation of the non-GSO satellite systems:

a) for each range of latitudes provide:

– the maximum number of non-GSO satellites transmitting with overlapping frequencies to a given location; and

– the associated latitude range;

b) the minimum altitude of the space station above the surface of the Earth at which any satellite transmit;

bbis) an indicator identifying if the space station uses station keeping to maintain a repeating ground track;

c) where the space station uses station-keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same location with respect to the Earth and each other;

d) an indicator identifying if the space station should be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term;

e) for a space station that is to be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term, the precession rate in degrees/day, measured counter-clockwise in the equatorial plane;

f) the longitude of the ascending node for the *j*-th orbital plane, measured counter-clockwise in the equatorial plane from the Greenwich meridian to the point where the satellite orbit makes its south-to-north crossing of the equatorial plane ($0° \le \Omega_j < 360°$) (NOTE 1);

g) the time at which the satellite is at the location defined by Ω_j (NOTE 1);

h) the longitudinal tolerance of the longitude of the ascending node.

NOC

2

NOTE 1 - Currently non-GSO space stations are referenced by the "right ascension of ascending node" (A.4b5 Ω_j) to the first point of Aries. However, for the evaluation of epfd a reference to a point on the Earth is used and hence the "longitude of the ascending node" is required. All satellites in the constellation should use the same reference time.

Add in section A.4 *b)*

7) new data elements required to characterize properly the performance of the non-GSO satellite systems:

a) the maximum number of non-GSO satellites receiving simultaneously with overlapping frequencies from the associated earth stations within a given cell;

b) the average number of associated earth stations with overlapping frequencies per square kilometre within a cell;

c) the average distance between co-frequency cells;

d) for the exclusion zone about the geostationary orbit provide:

– the type of zone;

– the width of the zone in degrees.

Add new section A.14

A.14 Spectrum masks

For stations operating in a frequency band subject to **S22.5C**, D or F.

a) for each e.i.r.p. mask used by the non-GSO space station provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

b) for each associated earth station e.i.r.p. mask provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

– the minimum elevation angle at which any associated earth station can transmit to a non-GSO satellite;

– the minimum separation angle between the GSO arc and the associated earth station main beam-axis at which the associated earth station can transmit towards a non-GSO satellite;

c) for each pfd mask used by the non-GSO space station provide:

– the type of mask;

– the mask identification code;

– the mask pattern of the power flux-density defined in three dimensions;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid.

(The space-station pfd mask is defined by the maximum power flux-density generated by any space station in the interfering non-GSO system as seen from any point on the surface of the Earth.)

Add new section A.15

A.15 Commitment regarding compliance with additional operational $epfd_{down}$ limits

For non-geostationary satellite systems operating in the fixed-satellite service in the bands 10.7-11.7 GHz (in all Regions), 11.7-12.2 GHz (Region 2), 12.2-12.5 GHz (Region 3), and 12.5-12.75 GHz (Regions 1 and 3), a commitment that the filed for system will meet the additional operational $epfd_{down}$ limits that are specified in Table **S22-4A** under No. **S22.5I**.

Add in section C.9

d) For stations operating in a frequency band subject to **S22.5C**, D or F, provide:

– the type of mask;

– the mask identification code.

ANNEX 2B

Table of characteristics to be submitted for space and radio astronomy services

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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[11]	X	X	X	A.5	
A.6				X	X	X[11]	X	X	X	A.6	
A.7.a						X[11]		X		A.7.a	
A.7.b						X[11]		X		A.7.b	
A.7.c						X[11]				A.7.c	
A.7.d						X[11]		X		A.7.d	
A.8							X			A.8	

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.

A – General characteristics of the satellite network or the earth station *(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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service under Appendix S30B	Items in Appendix	Radio astronomy
A.9							X			A.9	
A.10						X[11]				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				X	X	X				A.13	
A.14					X					A.14	
A.15					X					A.15	
A.16				X							

[11] Not required for coordination under No. **S9.7A or S9.7B**.

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]			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 – Characteristics to be provided for each satellite antenna beam and for each earth station antenna *(end)*

B.5.b						X[11]				B.5.b	
B.5.c						X[12]				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.

11 Not required for coordination under No. **S9.7A** or **S9.7B**.

12 In the case of coordination under **S9.7A**, the reference radiation pattern is to be provided.

* The application of this column is suspended pending the decision of WRC-99.

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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[11]				C.8.b	
C.8.c			O	X[6]	X[6]	X[6, 11]				C.8.c	
C.8.d				X[2]	X[2]					C.8.d	
C.8.e			O	X[6]	X[6]	X[6, 11]				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	
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 – Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna *(end)*

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

[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**.

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

[11] Not required for coordination under No. **S9.7A or S9.7B**.

* The application of this column is suspended pending the decision of WRC-99.

APPENDIX S5

ADD

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.7A** GSO earth station/ non-GSO system	A specific earth station in a geostationary-satellite network in the fixed-satellite service in respect of a non-geostationary-satellite system in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meet all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency bands 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher; c) emission bandwidth of 250 MHz or higher for the frequency bands below12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination does not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
			iii) the $epfd_{down}$ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency band 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/ (m^2 · 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude; b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude	iii) use the $epfd_{down}$ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.7B** non-GSO system/ GSO earth station	A non-geostationary-satellite system in the fixed-satellite service in respect of a specific earth station in a geostationary-satellite network in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meets all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency bands 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher; c) emission bandwidth of 250 MHz or higher for the frequency bands below 12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination do not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit

TABLE S5-1 (*end*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
			iii) the $epfd_{down}$ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency bands 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/(m^2· 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude; b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m^2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude	iii) use the $epfd_{down}$ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 446-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Report by Committee 2 to the Plenary Meeting

CREDENTIALS

1 Terms of reference

To verify the credentials of delegations, in conformity with Article 31 of the ITU Convention, and to report on its conclusions to the Plenary Meeting within the time specified by the latter (Document 2).

2 Meetings

The Committee met twice, on 11 and 26 May 2000.

The delegates from Australia, Brazil, Bulgaria, Cameroon, Canada, France, Japan, Indonesia, Israel, Libya, Morocco, the Netherlands, Nigeria, Poland, Russia, Spain and the United States have verified the credentials of delegations, in accordance with Article 31 of the ITU Convention.

3 Credentials

The situation is as follows:

– 129 credentials have been deposited to date with the secretariat of Committee 2;

– 129 credentials were found to be in order, of which two received clarification by fax according to CV338 and were found to be in order.

4 Transfer of powers

In accordance with the provisions of Article 31 of the ITU Convention, the Committee verified and approved the transfer of powers as follows:

– from Eritrea to the Kingdom of Saudi Arabia;

– from the Federated States of Micronesia to the United States of America.

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 to the Plenary to authorize the Chairperson of Committee 2 to verify any credentials received after the date of this report and that he submit his conclusions in that respect to the Plenary Meeting.

A.M.T. ABU
Chairperson

Annex: 1

ANNEX

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

ALBANIA
ALGERIA
GERMANY
ANDORRA
SAUDI ARABIA
ARGENTINA
ARMENIA
AUSTRALIA
AUSTRIA
BAHRAIN
BELARUS
BELGIUM
BENIN
BHUTAN
BOTSWANA
BRAZIL
BRUNEI DARUSSALAM
BULGARIA
BURKINA FASO
BURUNDI
CAMEROON
CANADA
CENTRAL AFRICAN REP.
CHILE
CHINA
CYPRUS
VATICAN
COLOMBIA
COMOROS
KOREA (REP. OF)
CÔTE D'IVOIRE
CROATIA
CUBA
DENMARK
EGYPT
EL SALVADOR
UNITED ARAB EMIRATES
ECUADOR
ERITREA
SPAIN
ESTONIA
UNITED STATES
ETHIOPIA
FINLAND
FRANCE
GABON
GHANA
GREECE
GUATEMALA
GUYANA
HUNGARY
INDIA
IRAN (ISLAMIC REPUBLIC OF)
IRELAND
ICELAND
ISRAEL
ITALY
JAPAN
JORDAN
KENYA
LAO P.D.R.
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA
LEBANON
LIECHTENSTEIN
LITHUANIA
LUXEMBOURG
MADAGASCAR
MALAYSIA
MALI
MALTA
MOROCCO
MAURITIUS
MEXICO
MOLDOVA
MONACO
MONGOLIA
MOZAMBIQUE
NAMIBIA
NIGERIA
NORWAY
NEW ZEALAND
OMAN
UGANDA
PAKISTAN
PAPUA NEW GUINEA
PARAGUAY
NETHERLANDS
PERU
PHILIPPINES
POLAND

PORTUGAL	SWEDEN
QATAR	SWITZERLAND
SYRIA	SURINAME
KYRGYZSTAN	TANZANIA
DEM. PEOPLE'S REP. OF KOREA	THAILAND
SLOVAKIA	TONGA
CZECH REP.	TRINIDAD AND TOBAGO
UNITED KINGDOM	TUNISIA
RUSSIA	TURKEY
SAN MARINO	UKRAINE
SENEGAL	URUGUAY
SEYCHELLES	VENEZUELA
SINGAPORE	VIET NAM
SLOVENIA	YEMEN
SRI LANKA	ZAMBIA
SOUTH AFRICA	

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 (Document 132(Rev.1))

AZERBAIJAN	LATVIA
CONGO	LIBYA
DOMINICAN REP.	CHAD
LESOTHO	UZBEKISTAN

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 (CV335) and found to be in order (Documents 215 and 416(Rev.1))

FROM	**TO**
ERITREA	KINGDOM OF SAUDI ARABIA
FEDERATED STATES OF MICRONESIA	UNITED STATES OF AMERICA

Conclusion

The delegation of the Kingdom of Saudi Arabia is entitled to vote and to sign on behalf of Eritrea. The delegation of the United States of America 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

BOSNIA AND HERZEGOVINA	NEPAL
CAMBODIA*	NIGER
COSTA RICA*	DEM. REP. OF THE CONGO*
DJIBOUTI	ROMANIA
INDONESIA	RWANDA*
KUWAIT	SUDAN
LIBERIA	ZIMBABWE

Conclusion

The delegations of the above countries are not entitled to vote or to sign the Final Acts until the situation has been rectified.

_____

* These countries have lost their right to vote (Document 132(Rev.1)).

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 2 to Document 447-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Algeria (People's Democratic Republic of), Saudi Arabia (Kingdom of), Bahrain (State of), Egypt (Arab Republic of), United Arab Emirates, Indonesia (Republic of), Jordan (Hashemite Kingdom of), Lebanon, Libya (Socialist People's Libyan Arab Jamahiriya), Malaysia, Mali (Republic of), Morocco (Kingdom of), Oman (Sultanate of), Pakistan (Islamic Republic of), Qatar (State of), Sudan (Republic of the), Chad (Republic of), Tunisia, Yemen (Republic of), Palestine

Add the name of Pakistan to the list of countries co-sponsoring this document.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 447-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Algeria (People's Democratic Republic of), Saudi Arabia (Kingdom of), Bahrain (State of), Egypt (Arab Republic of), United Arab Emirates, Indonesia (Republic of), Jordan (Hashemite Kingdom of), Lebanon, Libya (Socialist People's Libyan Arab Jamahiriya), Malaysia, Mali (Republic of), Morocco (Kingdom of), Oman (Sultanate of), Qatar (State of), Sudan (Republic of the), Chad (Republic of), Tunisia, Yemen (Republic of), Palestine

Add the names of Bahrain, Sudan and Chad to the list of countries co-sponsoring this document.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 447(Rev.1)-F/E/S
31 mai 2000
Original: français
anglais
espagnol

ISTANBUL, 8 MAY – 2 JUNE 2000

Ce document est annulé.

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This document is withdrawn.

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Este documento se ha anulado an.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 447-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Algeria (People's Democratic Republic of), Saudi Arabia (Kingdom of), Egypt (Arab Republic of), United Arab Emirates, Indonesia (Republic of), Jordan (Hashemite Kingdom of), Lebanon, Libya (Socialist People's Libyan Arab Jamahiriya), Malaysia, Mali (Republic of), Morocco (Kingdom of), Oman (Sultanate of), Qatar (State of), Tunisia, Yemen (Republic of), Palestine

ADD ALG/ARS/EGY/UAE/INS/JOR/LBN/LBY/MLA/MLI/MRC/OMA/QAT/TUN/YEM/PALESTINE/447/1

DRAFT RESOLUTION

Relating to the implementation of Resolution 99 of the Plenipotentiary Conference, Minneapolis 1998

The World Radiocommunication Conference (Istanbul, 2000),

referring

to Resolution 99 of the Plenipotentiary Conference, Minneapolis 1998, relating to the status of Palestine in ITU,

noting

a) that *resolves* 1 of the above Resolution states that "the provisions of the Administrative Regulations and related resolutions and recommendations, shall be applied to the Palestinian Authority in the same manner as they applied to administrations as defined in No. 1002 of the Constitution, and the General Secretariat and the three Bureaux shall act accordingly, in particular in relation to the international access code, call signs and the processing of frequency notification assignment";

b) Resolution 1 of the World Radiocommunication Conference, Geneva, 1997,

considering

a) that the recording of frequency assignments in the MIFR needs the indication of the address of the administration to which communications on cases of harmful interference shall be communicated;

b) that, the Palestinian Authority cannot be involved in the resolution of possible interference cases relating to frequency assignments to stations under its jurisdiction which are recorded in the Master International Frequency Register (MIFR) if these assignments do not appear under its name and address,

resolves

to urge Israel to apply the above *resolves* 1 of Resolution 99 to the assignments recorded in the MIFR, which are under the Jurisdiction of the Palestinian Authority.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 448-E
27 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

B.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 **first reading**:

Source	Document	Title
COM 5	340C1	**RESOLUTION [COM5/5] (WRC-2000)**
COM 5	408	**ARTICLE S15** – S15.8 – S15.28 – S15.35 – S15.37 **ARTICLE S52** – S52.220A – S52.220B – S52.220C – S52.220D – S52.221 – S52.221A – S52.222 – S52.222A – S52.224 **APPENDIX S17** – Section I, § 5 – Sub-Section A (Notes) – Sub-Section B (Table) **RESOLUTION 207 (Rev.WRC-2000)** **RESOLUTION 712 (Rev.WRC-95)** **RESOLUTION 723 (Rev.WRC-2000)** **RESOLUTION [COM5/2] (WRC-2000)** **RESOLUTION [COM5/3] (WRC-2000)** **RESOLUTION [COM5/7] (WRC-2000)** **RESOLUTION [COM5/10] (WRC-2000)**

BLUE PAGES

		RESOLUTION [COM5/12] (WRC-2000)
		RESOLUTION [COM5/15] (WRC-2000)
		RESOLUTION [COM5/16] (WRC-2000)
		RESOLUTION [COM5/18] (WRC-2000)
GT PLEN-1	423	**RESOLUTION [GT PLEN-1/1] (WRC-2000)**
COM 5	431	**RESOLUTION 214 (Rev.WRC-2000)**
		RESOLUTION 218 (WRC-97)
		RESOLUTION 219 (WRC-97)
		RESOLUTION [COM5/22] (WRC-2000)
		RESOLUTION [COM5/23] (WRC-2000)

Annex: 39 pages

ADD

RESOLUTION [COM5/5] (WRC-2000)

Consideration by a future competent world radiocommunication conference of issues dealing with sharing between active services above 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has made changes to the Table of Frequency Allocations above 71 GHz, following consideration of science service issues;

b) that there are several co-primary active services in some bands above 71 GHz in the Table of Frequency Allocations as revised by this conference;

c) that there is limited knowledge of characteristics of active services that may be developed to operate in bands above 71 GHz;

d) that sharing criteria for sharing between active services in bands above 71 GHz have not yet been fully developed within ITU-R;

e) that sharing between multiple co-primary active services may hinder the development of each active service in bands above 71 GHz;

f) that the technology for some active services may be commercially available earlier than for some other active services;

g) that adequate spectrum should be available for the active services for which the technology is available at a later time,

noting

that sharing criteria need to be developed, to be used by a future competent conference, for determining to what extent sharing between multiple co-primary active services is possible in each of the bands,

resolves

1 that appropriate measures should be taken to meet the spectrum requirements for active services for which the technology will be commercially available at a later time;

2 that sharing criteria be developed for co-primary active services in bands above 71 GHz;

3 that the sharing criteria developed should form the basis for a review of active service allocations above 71 GHz at a future competent conference, if necessary,

urges administrations

to note the possibility of changes to Article **S5** to accommodate emerging requirements for active services, as indicated in this resolution, and to take this into account in the development of national policies and regulations,

invites ITU-R

to complete the necessary studies with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of a future competent conference,

instructs the Secretary-General

to bring this resolution to the attention of the international and regional organizations concerned.

ARTICLE S15

Interferences

Section I – Interference from radio stations

MOD

S15.8 § 4 Special consideration shall be given to avoiding interference on distress and safety frequencies, those related to distress and safety identified in Article **S31** and Appendix **S13**, and those related to safety and regularity of flight identified in Appendix **S27**.

Section VI – Procedure in a case of harmful interference

MOD

S15.28 § 20 Recognizing that transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article **S31**, Appendix **S13** and Appendix **S27**) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference.

MOD

S15.35 § 27 On being informed that a station over which it has jurisdiction is believed to have been the cause of harmful interference, an administration shall, as soon as possible, acknowledge receipt of that information by the quickest means available. Such acknowledgement shall not constitute an acceptance of responsibility.

MOD

S15.37 § 29 An administration receiving a communication to the effect that one of its stations is causing harmful interference to a safety service shall promptly investigate the matter and take any necessary remedial action and respond in a timely manner.

ARTICLE S52

Special rules relating to the use of frequencies

Section VI – Use of frequencies for radiotelephony

C2 – Call and reply

ADD

S52.220A Administrations should encourage the coast stations and ship stations under their jurisdiction to use digital selective calling techniques for call and reply.

ADD

S52.220B When calling by radiotelephony is necessary, it should be done (in order of preference):

ADD

S52.220C 1) on the working frequencies assigned to the coast stations; or

ADD

S52.220D 2) when this is not possible, on the calling frequencies listed under No. **S52.221** or **S52.221A** below.

MOD

S52.221 § 97 1) Ship stations may use the following carrier frequencies for calling in radiotelephony:

4 125 kHz[3, 4, 5]
6 215 kHz[4, 5]
8 255 kHz
12 290 kHz[5] (see also No. **S52.221A**)
16 420 kHz[5] (see also No. **S52.221A**)
18 795 kHz
22 060 kHz
25 097 kHz

ADD

S52.221A Calling on the carrier frequencies 12 290 kHz and 16 420 kHz shall cease as soon as possible and no later than 31 December 2003. The alternative carrier frequencies 12 359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis, provided that the peak envelope power does not exceed 1 kW.

MOD

S52.222 2) Coast stations may use the following carrier frequencies for calling in radiotelephony[6]:

4 417 kHz[7]
6 516 kHz[7]
8 779 kHz
13 137 kHz (see No. **S52.222A**)
17 302 kHz (see No. **S52.222A**)
19 770 kHz
22 756 kHz
26 172 kHz

ADD

S52.222A The carrier frequencies 13 137 kHz and 17 302 kHz shall not be used as calling frequencies after 31 December 2003. The alternative carrier frequencies 12 359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis, provided that the peak envelope power does not exceed 1 kW.

MOD

S52.224 § 99 1) Before transmitting on the carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz or 16 420 kHz a station shall listen on the frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **S52.221A** and Recommendation ITU-R M.1171).

APPENDIX S17

Frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service

PART B – Channelling arrangements

Section I – Radiotelephony

MOD

5 The following frequencies in Sub-Section A are allocated for calling purposes:

– Channel No. 421 in the 4 MHz band;

– Channel No. 606 in the 6 MHz band;

– Channel No. 821 in the 8 MHz band;

– Channel No. 1221 in the 12 MHz band;

– Channel No. 1621 in the 16 MHz band;

– Channel No. 1806 in the 18 MHz band;

– Channel No. 2221 in the 22 MHz band;

– Channel No. 2510 in the 25 MHz band.

The use of channels 1221 and 1621 for calling purposes shall cease as soon as possible and no later than 31 December 2003 (see Nos. **S52.221A** and **S52.222A**).

The remaining frequencies in Sub-Sections A, B, C-1 and C-2 are working frequencies.

Sub-Section A

Table of single-sideband transmitting frequencies (kHz) for duplex (two-frequency) operation

MOD

2 (Not used)

8 For the conditions of use of the carrier frequency 12 290 kHz, see Nos. **S52.221A** and **S52.222A** and Appendix **S15**.

9 For the conditions of use of the carrier frequency 16 420 kHz, see Nos. **S52.221A** and **S52.222A** and Appendix **S15**.

Sub-Section B

Table of single-sideband transmitting frequencies (kHz) for simplex (single-frequency) operation and for intership cross-band (two-frequency) operation

(See § 4 of Section I of this Appendix)

MOD

4 MHz band[1]		6 MHz band		8 MHz band[2]		12 MHz band	
Carrier frequency	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**
4 146	4 147.4	6 224	6 225.4	8 294	8 295.4	12 353	12 354.4
4 149	4 150.4	6 227	6 228.4	8 297	8 298.4	12 356	12 357.4
		6 230	6 231.4			12 362	12 363.4
						12 365	12 366.4

MOD

16 MHz band		18/19 MHz band		22 MHz band		25/26 MHz band	
Carrier frequency	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**
16 528	16 529.4	18 825	18 826.4	22 159	22 160.4	25 100	25 101.4
16 531	16 532.4	18 828	18 829.4	22 162	22 163.4	25 103	25 104.4
16 534	16 535.4	18 831	18 832.4	22 165	22 166.4	25 106	25 107.4
		18 834	18 835.4	22 168	22 169.4	25 109	25 110.4
16 540	16 541.4	18 837	18 838.4	22 171	22 172.4	25 112	25 113.4
16 543	16 544.4	18 840	18 841.4	22 174	22 175.4	25 115	25 116.4
16 546	16 547.4	18 843	18 844.4	22 177	22 178.4	25 118	25 119.4

For use of frequencies 12 359 kHz and 16 537 kHz, see Nos. **S52.221A** and **S52.222A**.

MOD

RESOLUTION 207 (Rev.WRC-2000)

Measures to address unauthorized use of and interference to frequencies in the bands allocated to the maritime mobile service and to the aeronautical mobile (R) service

The World Radiocommunication Conference, (Istanbul, 2000),

considering

a) that the HF frequencies currently used by the aeronautical and maritime mobile services for distress, safety and other communications, including allotted operational frequencies, suffer from harmful interference and are often subject to difficult propagation conditions;

b) that WRC-97 considered some aspects of the use of the HF bands for distress and safety communications in the context of the Global Maritime Distress and Safety System (GMDSS), especially with regard to regulatory measures;

c) that unauthorized operations using maritime and aeronautical frequencies in the HF bands are continuing to increase and are already a serious risk to HF distress, safety and other communications;

d) that some administrations have resorted to, for example, transmitting warning messages on operational HF channels as a means of deterring unauthorized users;

e) that provisions of the Radio Regulations prohibit the unauthorized use of certain safety frequencies for communications other than those related to safety;

f) that enforcing compliance with these regulatory provisions is becoming increasingly difficult with the availability of low-cost HF SSB transceivers;

g) that monitoring observations of the use of frequencies in the band 2 170-2 194 kHz and in the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 27 500 kHz and to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz show that a number of frequencies in these bands are still being used by stations of other services, many of which are operating in contravention of No. **S23.2**;

h) that, in certain situations, HF radio is the sole means of communication for the maritime mobile service and that certain frequencies in the bands mentioned in *considering g)* are reserved for distress and safety purposes;

i) that, in certain situations, HF radio is the sole means of communication for the aeronautical mobile (R) service and that this is a safety service;

j) that this conference has reviewed the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view to protecting operational, distress and safety communications,

considering in particular

a) that it is of paramount importance that the distress and safety channels of the maritime mobile service be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

b) that it is also of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the safety of life and property,

resolves to invite ITU-R and ITU-D, as appropriate

1 to study possible technical and regulatory solutions to assist in the mitigation of interference to operational distress and safety communications in the maritime mobile service and aeronautical mobile (R) service;

2 to increase regional awareness of appropriate practices in order to help mitigate interference in the HF bands, especially on distress and safety channels;

3 to report the results of the above studies to the next competent conference,

urges administrations

1 to ensure that stations of services other than the maritime mobile service abstain from using frequencies in distress and safety channels and their guard bands and in the bands allocated exclusively to that service, except under the conditions expressly specified in Nos. **S4.4**, **S5.128**, **S5.129**, **S5.137** and **S4.13** to **S4.15**; and to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies allocated to that service except under the conditions expressly specified in Nos. **S4.4** and **S4.13**;

2 to make every effort to identify and locate the source of any unauthorized emission capable of endangering human life or property and the safe and regular conduct of aircraft operations, and to communicate their findings to the Radiocommunication Bureau;

3 to participate in the monitoring programmes that the Radiocommunication Bureau may organize pursuant to this resolution;

4 to make every effort to prevent unauthorized transmissions in bands allocated to the maritime mobile service and the aeronautical mobile (R) service;

5 to request their competent authorities to take, within their respective jurisdiction, such legislative or regulatory measures which they consider necessary or appropriate in order to prevent stations from unauthorized use of distress and safety channels or from operating in contravention of No. **S23.2**;

6 to take all necessary steps in such cases of contravention of No. **S23.2** to ensure the cessation of any transmissions contravening the provisions of the Radio Regulations on the frequencies or in the bands referred to in this resolution;

7 to participate actively in the studies requested by this resolution,

instructs the Radiocommunication Bureau

1 to continue to organize monitoring programmes, at regular intervals, in the maritime distress and safety channels and their guard bands and in the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 27 500 kHz and to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz, with a view to ensuring the timely distribution of monitoring data and identifying the stations of other services operating on these channels or in these bands;

2 to seek the cooperation of administrations in identifying the sources of those emissions by all available means and in securing the cessation of those emissions;

3 when the station of another service transmitting in a band allocated to the maritime mobile service or to the aeronautical mobile (R) service has been identified, to inform the administration concerned;

4 to include the problem of interference to maritime and aeronautical distress and safety channels on the agenda of relevant regional radiocommunication seminars,

instructs the Secretary-General

to bring this resolution to the attention of the International Maritime Organization and the International Civil Aviation Organization and to invite them to participate in these studies.

SUP

RESOLUTION 712 (Rev.WRC-95)

Consideration by a future competent World Radiocommunication Conference of issues dealing with allocations to space services

MOD

RESOLUTION 723 (Rev.WRC-2000)

Consideration by a future competent world radiocommunication conference of issues dealing with allocations to science services

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference recognized the importance of proper consideration of science service issues based on technical and operational criteria developed in radiocommunication study groups;

b) that circumstances did not enable the completion of all necessary studies relating to a number of proposals concerning science services;

c) that a deficiency in telecommand (uplink) frequency allocations exists, compared to available telemetry (downlink) allocations in the 100 MHz to 1 GHz range;

d) that certain existing allocations may provide the means to satisfy requirements for space research applications without the need for additional frequency allocations, subject to the determination of the appropriate allocation status and/or sharing conditions,

resolves

that, on the basis of proposals from administrations and taking into account the results of studies in radiocommunication study groups and the Conference Preparatory Meeting for WRC-03, WRC-03 should consider the following matters:

1) provision of up to 3 MHz of frequency spectrum for the implementation of telecommand links in the space research and space operations services in the frequency range 100 MHz to 1 GHz;

2) to consider incorporating in the Table of Frequency Allocations the existing primary allocation to the space research service in the band 7 145-7 235 MHz under No. **S5.460**;

3) to review the allocations to the space research service (deep space) (space-to-Earth) and the inter-satellite service, taking into account the coexistence of these two services in the frequency range 32-32.3 GHz, with a view to facilitating satisfactory operation of these services;

4) to review existing allocations to space science services near 15 GHz and 26 GHz, with a view to accommodating wideband space-to-Earth space research applications,

invites ITU-R

to complete the necessary studies, as a matter of urgency, taking into account the present use of allocated bands, with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of the conference,

instructs the Secretary-General

to bring this resolution to the attention of the international and regional organizations concerned.

ADD

RESOLUTION [COM5/2] (WRC-2000)

Criteria and process for the resolution of possible cases of misapplication of non-GSO FSS single-entry limits in Article S22 [Rev.WRC-2000]

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the non-GSO FSS single-entry limits are based on certain assumptions;

b) that these single-entry limits can be misapplied and that any misapplication of single-entry limits should be avoided,

noting

that avoiding misapplication of the single-entry limits is of interest to all administrations,

recognizing

a) that misapplication of single-entry limits can reduce the number of competing non-GSO FSS systems;

b) that misapplication of single-entry limits can lead to differing regulatory effect for non-GSO FSS systems which meet the limits and those which misapply the limits in Article **S22**;

c) that misapplication of single-entry limits can disadvantage non-GSO FSS systems meeting, and intending to always meet, the single-entry limits in Article **S22** [Rev.WRC-2000],

resolves

that misapplication of single-entry limits shall not be permitted,

instructs the Secretary-General of ITU

to note this resolution in the context of Article 1 of the ITU Convention;

invites ITU-R

as a matter of urgency, and in time for consideration by WRC-03, to conduct technical studies and develop regulatory procedures to avoid misapplication of the single-entry limits included in Tables **S22-1**, **S22-2** and **S22-3** of Article **S22**,

instructs the Director of the Radiocommunication Bureau

1 as of the end of WRC-03, to review and, if appropriate, revise any finding previously made in respect of compliance with the limits contained in Article S22 for a non-GSO FSS system for which notification information has been received on or after 22 November 1997; this review and revision shall be based on the result of the studies under *invites ITU-R*;

2 to determine if and when misapplication of single-entry limits has occurred or will occur based on the process described in Annex 1;

3 to assist in the development of procedures to verify compliance with the intent of this resolution.

ANNEX 1 TO RESOLUTION [COM5/2] (WRC-2000)

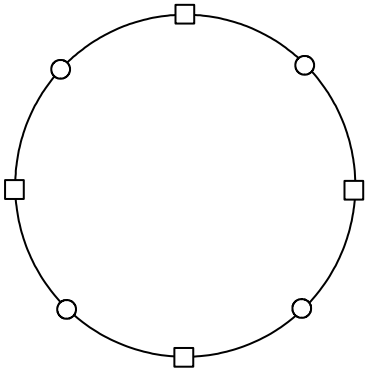
Process to be followed by BR in developing and implementing procedures to avoid misapplication of non-GSO FSS single-entry limits in Article S22 [Rev.WRC-2000]

1 In following the process described below, BR will take all information available to it, or made available to it, into account in arriving at a decision or at a course of action to ensure that the requirements of this resolution are met.

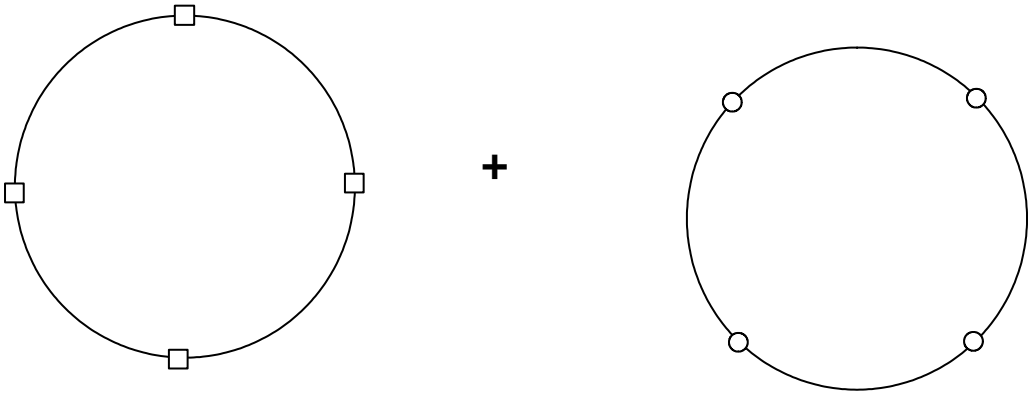
2 For the purpose of determining if misapplication of non-GSO FSS single-entry limits has occurred or will occur, it is necessary for the regulatory solutions to focus not just on “the splitting of networks”, but on the “combining of networks” as well. While it is necessary to avoid the misapplication of single-entry limits through the “splitting or combining of networks”, reasonable allowance needs to be made for the fact that some applications will use two or more different networks at certain times. The key then is to define certain limits in a way that will allow single-entry criteria to work effectively in practice, while at the same time allowing certain practical combinations of networks up to a point, from time to time.

Example of splitting

Before splitting: The whole network - as a single network - does not meet single-entry limits.

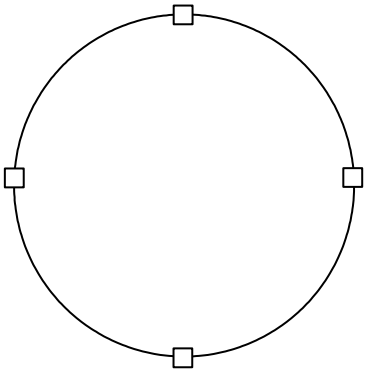


After splitting: When broken into two (or more) parts, each part network meets single-entry limits.

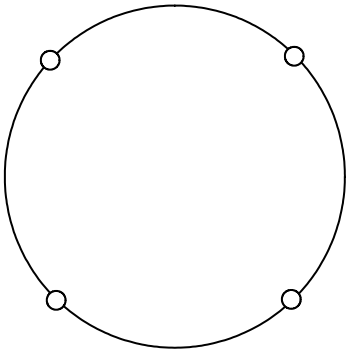


Example of combining

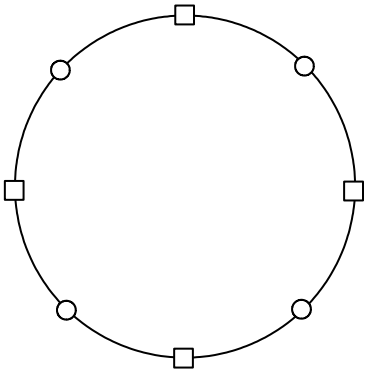
At filing stage (before combining): XYZ Ltd. owns network A. Network A meets single-entry limits.



At filing stage (before combining): ABC Ltd. owns network B. Network B meets single-entry limits.



At implementation stage (after combining): XYZ Ltd. and ABC Ltd. combine networks A and B to implement round-the-clock end-to-end non-GSO services (if filed as such, the total of networks A and B would fail to meet the single-entry limits).



ADD

RESOLUTION [COM5/3] (WRC-2000)

Frequency sharing in the range 37.5-50.2 GHz between GSO FSS networks and non-GSO FSS systems

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has made provisions for the operation of GSO FSS networks and non-GSO FSS systems in the 10-30 GHz frequency range;

b) that there is an emerging interest in operating GSO FSS networks and non-GSO FSS systems in the 37.5-50.2 GHz frequency range;

c) that there is a need to provide for the orderly development and implementation of new satellite technologies in the 37.5-50.2 GHz frequency range;

d) that systems based on the use of new technologies associated with both GSO FSS networks and non-GSO FSS systems are capable of providing the most isolated regions of the world with high-capacity and low-cost means of communication;

e) 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;

f) that the Radio Regulations should be sufficiently flexible to accommodate the introduction and implementation of innovative technologies as they evolve;

g) that the CPM Report to WRC-2000 stated that in the bands 37.5-50.2 GHz where there has been little or no deployment of satellite systems to date, both GSO FSS and non-GSO FSS operators should be expected to exhibit flexibility in achieving the appropriate balance in the sharing environment,

resolves to urge administrations

in the application of Article **S22** to their GSO FSS networks and non-GSO FSS systems in the 37.5-50.2 GHz frequency range prior to WRC-03, to seek balanced sharing arrangements between these systems,

invites ITU-R

1 to undertake, as a matter of urgency, the appropriate technical, operational and regulatory studies on sharing arrangements which achieve an appropriate balance between GSO FSS networks and non-GSO FSS systems in the frequency range 37.5-50.2 GHz;

2 to report the results of these studies to WRC-03.

ADD

RESOLUTION [COM5/7] (WRC-2000)

Further studies on the sharing conditions between GSO FSS networks and non-GSO FSS systems and between non-GSO FSS systems

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted, in Article **S22**, epfd limits to be met by non-GSO FSS systems in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30.0 GHz;

b) that Article **S22** includes single-entry validation (Tables **S22-1A** to **S22-1D**, **S22-2** and **S22-3**), single-entry operational (Tables **S22-4A**, **S22-4B** and **S22-4C**) and, for certain antenna sizes, single-entry additional operational (Table **S22-4A1**) epfd↓ limits which apply to non-GSO FSS systems for the protection of GSO networks;

c) that compliance of a proposed non-GSO FSS system with the single-entry validation limits will be checked by the Bureau, under Nos. **S9.35** and **S11.31**;

d) that compliance of a proposed non-GSO FSS system with the single-entry operational and, for certain antenna sizes, single-entry additional operational epfd↓ limits is not subject to verification by the Bureau;

e) that Appendix **S4**, as modified by this conference, requires an administration responsible for a non-GSO FSS system to commit to meeting the single-entry additional operational epfd↓ limits;

f) that administrations with assignments to GSO FSS and/or BSS networks that have been brought into use, as well as administrations with assignments to non-GSO FSS systems that have been brought into use, in frequency bands where operational epfd↓ limits have been established, require reliable means of ascertaining that non-GSO FSS systems with overlapping frequency assignments that have been brought into use are in compliance with the single-entry operational limits referred to in *considering b)*;

g) that administrations with assignments to non-GSO FSS systems in frequency bands where additional operational epfd limits have been established require reliable means of ascertaining whether their non-GSO FSS systems would be in compliance with the single-entry additional operational limits referred to in *considering b)*;

h) that administrations with assignments to GSO FSS networks that have been brought into use in bands where additional operational epfd limits have been established require reliable means of ascertaining whether a particular non-GSO FSS system is in compliance with the single-entry additional operational limits referred to in *considering b)*,

recognizing

a) that assignments to GSO FSS and/or GSO BSS networks have already been brought into use or will be brought into use in the frequency bands where operational epfd↓ limits and additional operational epfd↓ limits apply, and that assignments to non-GSO FSS systems subject to the limits have been submitted to the Bureau in the same bands;

b) that ITU-R has developed a recommendation containing the functional specifications for the software to be used by BR to verify the compliance of proposed non-GSO FSS systems with the single-entry validation limits included in Tables **S22-1A**, **S22-1B**, **S22-1C**, **S22-1D**, **S22-2** and **S22-3**;

c) that ITU-R has indicated that administrations will be able to check compliance of a proposed non-GSO FSS system with the single-entry operational limits by measurements at GSO earth stations and has confirmed the feasibility of such measurements;

d) that ITU-R has indicated it is not practicable for administrations to verify compliance with the single-entry additional operational epfd↓ limits by measurements at GSO earth stations;

e) that, in the light of *recognizing d)*, ITU-R is revising an existing recommendation to enable accurate prediction of the levels produced by a proposed non-GSO FSS system;

f) that ITU-R has initiated studies on the sharing criteria to be applied during 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,

recognizing further

that, taking into account Nos. **S22.5H** and **S22.5I**, it is important to discourage violations of the operational epfd↓ limits and additional operational epfd↓ limits by a non-GSO FSS system, but that if a violation nevertheless occurs, it should be corrected in the most expeditious manner,

resolves to invite ITU-R

1 to develop, in time for WRC-03, methodologies to assess the interference levels (through measurement for operational limits or simulation for additional operational limits) that would be produced by a non-GSO FSS system in the frequency bands specified in Tables **S22-4A** to **S22-4C** which may be used by administrations to verify compliance of an individual non-GSO FSS system with the operational limits and additional operational limits contained in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**;

2 to develop, by 2003, an appropriate recommendation or recommendations describing suitable formats for administrations operating or planning to operate non-GSO FSS systems to make available all necessary information to be used by administrations when checking compliance with the operational limits and/or the additional operational limits;

3 to develop a methodology for the generation of continuous curves of epfd↓ versus percentage time for a range of antenna diameters of the GSO FSS earth station to be protected, in order for designers of GSO FSS satellite networks to determine the expected single-entry validation and additional operational interference levels for antenna sizes other than those given in Tables **S22-1A** to **S22-1D** and **S22-4A1**;

4 to develop a methodology for the generation of values of epfd↑ for different antenna beamwidths of the GSO FSS space station to be protected, in order for designers of GSO FSS satellite networks to determine the expected single-entry interference level for antenna beamwidths other than those given in Table **S22-2**;

5 to conduct, in time for WRC-03, the studies relating to the sharing criteria to be applied during 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,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

ADD

RESOLUTION [COM5/10] (WRC-2000)

Review of sharing conditions between services in the band 13.75-14 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WARC-92 (Malaga-Torremolinos, 1992) added an allocation to the fixed-satellite service (FSS) (Earth-to-space) in the band 13.75-14 GHz;

b) that this band is shared with the radiolocation and radionavigation services and certain limitations have been placed on the fixed-satellite, radiolocation and radionavigation services under No. **S5.502**;

c) that the services operating in this band are evolving and may have new technical requirements;

d) that the band 13.772-13.778 GHz is also shared with the space research service under the conditions set out in No. **S5.503**;

e) that, in some countries, the band is also allocated to the fixed service and the mobile service (Nos. **S5.499** and **S5.500**) and to the radionavigation service (No. **S5.501**);

f) that the GSO FSS operators have expressed interest in operating earth station antennas with a diameter of less than 4.5 m in the band 13.75-14 GHz;

g) that there is a need to determine the sharing conditions affecting the radiolocation, space research and fixed-satellite services and to maintain the delicate balance between these services,

resolves to invite ITU-R

1 to conduct studies, as a matter of urgency and in time for consideration by WRC-03, on the sharing conditions indicated in Nos. **S5.502** and **S5.503**, with a view to reviewing the constraints in No. **S5.502** regarding the minimum antenna diameter of GSO FSS earth stations and the constraints on the e.i.r.p. of the radiolocation service;

2 to identify and study, in time for consideration by WRC-03, possible alternative sharing conditions to those indicated in Nos. **S5.502** and **S5.503**.

ADD

RESOLUTION [COM5/12] (WRC-2000)

Study on interference caused to the distress and safety frequencies 12 290 kHz and 16 420 kHz by routine calling

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the distress and safety frequencies 12 290 kHz and 16 420 kHz are the ship station transmitting frequencies of the maritime radiotelephony channels 1221 and 1621;

b) that, at the date of this conference, some coast stations are still using channels 1221 and 1621 for calling purposes and have indicated a wish to continue calling on these channels in the future;

c) that this conference decided that calling on channels 1221 and 1621 shall cease on 31 December 2003 at the latest;

d) that replacement channels may need to be made available for the coast stations mentioned under *considering b)*;

e) that there are differing opinions on whether calling on channels 1221 and 1621 causes significant interference to distress and safety communications;

f) that this issue can be resolved by analysing the results of an ITU-R study;

g) that this conference has adopted additional measures that may significantly reduce this interference;

h) that IMO and several Member States have requested that the distress and safety frequencies 12 290 kHz and 16 420 kHz be reserved solely for distress and safety communications;

i) that the full implementation of the cessation of calling on 31 December 2003 on the distress and safety frequencies 12 290 kHz and 16 420 kHz will allow this issue to be reconsidered by the next world radiocommunication conference,

resolves

1 to invite ITU-R to study the interference to the distress and safety frequencies 12 290 kHz and 16 420 kHz caused by routine calling on channels 1221 and 1621;

2 to instruct the Radiocommunication Bureau, in consultation with administrations, to organize monitoring programmes for the support of these studies;

3 to urge administrations to participate actively in these studies;

4 to invite ITU-R to complete these studies in time for consideration by WRC-03;

5 to invite WRC-03 to consider this issue,

instructs the Secretary-General

to communicate this resolution to the International Maritime Organization.

ADD

RESOLUTION [COM5/15] (WRC-2000)

Studies on compatibility between stations of the radionavigation-satellite service (Earth-to-space) operating in the frequency band 5 000-5 010 MHz and the international standard system (microwave landing system) operating in the band 5 030-5 150 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the band 5 000-5 250 MHz is allocated to the aeronautical radionavigation service on a primary basis;

b) that this conference added a primary allocation to the radionavigation-satellite service (RNSS) (Earth-to-space) in the 5 000-5 010 MHz band;

c) that the band 5 030-5 150 MHz is to be used for the operation of the international standard microwave landing system (MLS) for precision approach and landing; the requirements for this system shall take precedence over other uses of this band in accordance with No. **S5.444**;

d) that unwanted emissions from RNSS stations may fall into the frequency band used by the MLS;

e) that studies have not been carried out to determine the compatibility between such RNSS transmitters and the MLS receivers operated on board aircraft used during approach and landing;

f) that the MLS can be well protected through the implementation of an adequate separation distance between RNSS (Earth-to-space) transmitters and MLS receivers, and other mitigation techniques,

resolves to invite ITU-R

to conduct, as a matter of urgency, the appropriate technical, operational and regulatory studies to ensure that stations of the RNSS (Earth-to-space) do not cause harmful interference to the operation of the international standard MLS, and to develop, if needed, appropriate recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Secretary-General

to bring this resolution to the attention of ICAO.

ADD

RESOLUTION [COM5/16] (WRC-2000)

Studies on compatibility between the radionavigation-satellite service (space-to-Earth) operating in the frequency band 5 010-5 030 MHz and the radio astronomy service operating in the band 4 990-5 000 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that new radiocommunication services are developing, many of which require satellite transmitters, and need to be allocated sufficient spectrum;

b) that research in radio astronomy depends critically upon the ability to make observations at the extreme limits of sensitivity and/or precision;

c) that transmissions from space stations of the radionavigation-satellite service (RNSS) in the frequency band 5 010-5 030 MHz near the radio astronomy service operating in the band 4 990-5 000 MHz may cause interference harmful to the radio astronomy service (RAS);

d) that Recommendation ITU-R RA.769-1 recommends, *inter alia*, that all practicable steps be taken to reduce to the absolute minimum all unwanted emissions falling into RAS bands, particularly emissions from aircraft, spacecraft and balloons;

e) that protection requirements for RAS are explained and interference threshold values detailed in the Annex to Recommendation ITU-R RA.769-1;

f) that different coupling mechanisms apply to interfering emissions from terrestrial transmitters or from transmitters on board GSO or non-GSO satellites;

g) that this conference has revised Recommendation 66, which calls for study of those frequency bands and instances where, for technical or operational reasons, out-of-band emission limits may be required in order to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;

h) that administrations may require criteria to protect RAS from interference detrimental to radio astronomy observations caused by space-to-Earth transmissions of space stations,

noting

a) that this conference has adopted No. **S5.444C** specifying a provisional pfd limit in the band 4 990-5 000 MHz for out-of-band space-to-Earth emissions of the RNSS operating in the band 5 010-5 030 MHz;

b) that the general problem of protection of radio astronomy and passive services is under study in ITU-R, *inter alia* in response to Recommendation 66,

resolves

1 to invite WRC-03 to review the provisional pfd limit on the RNSS in the band 4 990-5 000 MHz for out-of-band space-to-Earth emissions of the RNSS operating in the band 5 010-5 030 MHz;

2 that the limits indicated in No. **S5.444C** shall be applied provisionally for systems for which complete notification information has been received by the Bureau after 2 June 2000;

3 that, as of 3 June 2000, when notifying frequency assignments to a satellite network in the radionavigation-satellite service in the bands 5 010-5 030 MHz, the responsible administration shall provide the calculated values of the aggregate power flux-density in the bands above 5 030 MHz and in the band 4 990-5 000 MHz, as defined in No. **S5.444C**, in addition to the relevant characteristics listed in Appendix **S4**,

invites ITU-R

1 to conduct, or continue to conduct, as a matter of urgency and in time for consideration by WRC-03, the appropriate technical, operational and regulatory studies to review the provisional pfd limit concerning the operation of space stations, including the development of a methodology for calculating the aggregate power levels in order to ensure that the RNSS (space-to-Earth) in the band 5 010-5 030 MHz will not cause interference detrimental to the RAS in the band 4 990-5 000 MHz;

2 to report to CPM-03 on the conclusions of these studies,

urges administrations

1 to participate actively in the aforementioned studies by submitting contributions to ITU-R;

2 to ensure that, to the extent feasible, systems designed to operate in the RNSS frequency band 5 010-5 030 MHz incorporate interference avoidance techniques, such as filtering,

instructs the Radiocommunication Bureau

as of the end of WRC-03, to review and, if appropriate, revise any finding previously made in respect of the compliance with the out-of-band emission limits contained in No. **S5.444C** of an RNSS (space-to-Earth) system for which notification information has been received before the end of WRC-03; this review shall be based on the values, as revised, if appropriate, by WRC-03.

ADD

RESOLUTION [COM5/18] (WRC-2000)

Protection of terrestrial services in all Regions from geostationary-satellite networks in the fixed-satellite service in Region 2 using the frequency band 11.7-12.2 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in Regions 1 and 3, the band 11.7-12.2 GHz is allocated on a co-primary basis to terrestrial services and to the broadcasting-satellite service;

b) that, in Region 2, the band 11.7-12.1 GHz is allocated on a co-primary basis to terrestrial services (except in the countries listed in No. **S5.486**) and to the fixed-satellite service;

c) that, in Region 2, the band 12.1-12.2 GHz is allocated on a co-primary basis to terrestrial services in Peru (see No. **S5.489**) and to the fixed-satellite service;

d) that protection of the broadcasting-satellite service in Regions 1 and 3 from the fixed-satellite service in Region 2 is assured by Article 7 and Annex 4 of Appendix **S30**;

e) that protection of the fixed-satellite service in Region 2 from the fixed-satellite service in that Region is assured either by Article **S9** (Nos. **S9.7** or **S9.12**) or Article **S22**;

f) that protection of terrestrial services in Regions 1, 2 and 3 from non-geostationary-satellite systems in the fixed-satellite service in Region 2 is assured by Article **S21**;

g) that there is a need to protect terrestrial services in Regions 1, 2 and 3 from geostationary-satellite networks in the fixed-satellite service in Region 2;

h) that this conference has modified No. **S5.488** by revising the regulatory limitations on the operation of geostationary-satellite networks in the fixed-satellite service in Region 2 in the band 11.7-12.2 GHz,

recognizing

that ITU-R has developed Recommendation ITU-R SF.674-1, dealing with sharing between the fixed-satellite service in Region 2 and the fixed service in the band 11.7-12.2 GHz in Region 2,

resolves

that, before an administration notifies to the Bureau or brings into use, in Region 2, a frequency assignment for a geostationary-satellite network in the fixed-satellite service in the 11.7-12.2 GHz band, it shall seek the agreement of any administration of Regions 1, 2, and 3 having a primary allocation to terrestrial services in the same frequency band if the power flux-density produced on its territory exceeds the following thresholds:

–124	dB(W/m^2) in 1 MHz	for $0° \leq \Theta \leq 5°$
$-124 + 0.5 (\Theta-5)$	dB(W/m^2) in 1 MHz	for $5° < \Theta \leq 25°$
–114	dB(W/m^2) in 1 MHz	for $\Theta > 25°$

where Θ is the angle of arrival of the incident wave above the horizontal plane, in degrees,*

instructs the Radiocommunication Bureau

in its examination of requests for coordination for any geostationary space station in the fixed-satellite service operating in the band 11.7-12.2 GHz in Region 2, to determine if the power flux-density thresholds under *resolves* above are exceeded on the territory of any administration, other than the notifying administration, having a primary allocation to terrestrial services and, if so, to so notify both the notifying and the affected administrations.

* These values relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

ADD

RESOLUTION [GT PLEN-1/1] (WRC-2000)

Application and study of the regulatory procedures and associated sharing criteria contained in Appendices S30 and S30A and in the associated provisions of Articles S9 and S11

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted a revision of the Regions 1 and 3 broadcasting-satellite service (BSS) and associated feeder-link Plans contained in Appendices **S30** and **S30A**, respectively;

b) that this conference has adopted revisions to the sharing criteria contained in Annex 1 to Appendix **S30** to identify whether terrestrial services may be affected by BSS;

c) that this conference has suppressed the method that was contained in section 3 of Annex 4 to Appendix **S30A** and replaced it with the method contained in Appendix **S7**;

d) that this conference has modified the criteria in section 1 of Annex 4 to Appendix **S30A** concerning sharing between non-planned transmitting space stations and planned receiving BSS feeder-link space stations;

e) that this conference has revised the orbital position limitations on Region 1 BSS in section A3 of Annex 7 to Appendix **S30** to allow more flexibility for new and modified assignments in the list of Region 1 BSS assignments, while continuing to guarantee access to Region 2 fixed-satellite service (FSS) in the orbital arc from 37° W to 10° E;

f) that the power flux-density limits currently appearing in section 6 of Annex 1 to Appendix **S30** for BSS to protect FSS do not vary as a function of orbital separation between the FSS and BSS space stations, and therefore do not provide adequate protection to FSS networks at small orbital separations, and at large orbital separations overly constrain the implementation of BSS networks;

g) that the sharing criteria in Appendices **S30** and **S30A** should provide appropriate protection to the BSS, FSS and terrestrial services whilst not unduly constraining the services involved;

h) that, worldwide, in various sub-bands of the frequency range 11.7-12.7 GHz, FSS networks as well as BSS networks are in operation, and others will be operated in the near future and, consequently, difficulties may be experienced in modifying their characteristics;

i) that this conference has also revised the regulatory procedures contained in Appendices **S30** and **S30A**, and the associated provisions in Articles **S9** and **S11** and associated Appendices,

recognizing

a) that there are differing geographic situations between the ITU Regions and that this may have an impact on the sharing criteria and therefore should be taken into account in any revision to the sharing criteria in the relevant Annexes of Appendices **S30** and **S30A**;

b) the need to protect existing and future terrestrial and space services and systems,

further noting

that the Bureau has been instructed by this conference to analyse the newly established Regions 1 and 3 BSS and feeder-link Plans with respect to compatibility with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan (Resolution **53 (Rev.WRC-2000)**),

resolves

1 that, until section 6 of Annex 1 to Appendix **S30** is modified by [WRC-03], the pfd limits appearing in the Annex to this resolution shall be applied in place of the –138 dB(W/(m^2 · 27 kHz)) and –160 dB(W/(m^2 · 4 kHz)) criteria appearing in paragraph 3 of section 6 of Annex 1 to Appendix **S30**;

2 to instruct the Director of the Radiocommunication Bureau to apply this resolution as of [3 June 2000],

invites ITU-R

to undertake, as a matter of urgency, additional studies and complete them by [WRC-03] on:

1 the sharing criteria in Annexes 1, 3, 4 and 6 to Appendix **S30** and Annexes 1 and 4 to Appendix **S30A**, except the criteria referred to in *considering b)* and *c)*, taking into account *considering g)* and *h)* and *recognizing a)*;

2 review the changes made by WRC-2000 to the regulatory procedures contained in:

a) Articles 4 and 5 to Appendices **S30** and **S30A** with a view to establishing a list of additional uses for Regions 1 and 3 and providing for its implementation;

b) Articles 6 and 7 to Appendices **S30** and **S30A**, including related modifications to Articles **S9** and **S11** and the associated Appendix **S5**,

with a view to ensuring consistency among these provisions, as appropriate, taking into account *considering i)*;

3 the limitations of [section A3 of Annex 7 to Appendix **S30**] in the context of any changes to the sharing criteria studied by ITU-R,

instructs the Secretary-General

to bring this resolution to the attention of the ITU Council so as to include in the agenda of the next WRC consideration of the results of the ITU-R studies carried out pursuant to *invites ITU-R* above.

ANNEX 1 TO RESOLUTION [GT PLEN-1/1] (WRC-2000)

Pfd limits to be applied in place of –138 dB(W/(m² · 27 MHz)) and –160 dB(W/(m² · 4 kHz)) in paragraph 3 of section 6 of Annex 1 to Appendix S30[1]

Instead of the uniform pfd limits of –138 dB(W/(m² · 27 MHz)) and –160 dB(W/(m² · 4 kHz)), apply new pfd limits to protect FSS in all Regions from BSS in all Regions, as given below:

For Regions 1 and 3 BSS → Region 2 FSS (space-to-Earth in the band 11.7-12.2 GHz):

–160 dB(W/(m² · 27 MHz))	0° ≤ θ < 0.054°
(–137.46 + 17.74 log θ) dB(W/(m² · 27 MHz))	0.054° ≤ θ < 3.67°
(–141.56 + 25 log θ) dB(W/(m² · 27 MHz))	3.67° ≤ θ < 11.54°
–115 dB(W/(m² · 27 MHz))	11.54° ≤ θ

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 1 BSS → Region 3 FSS (space-to-Earth in the band 12.2-12.5 GHz):

–160 dB(W/(m² · 27 MHz))	0° ≤ θ < 0.054°
(–137.46 + 17.74 log θ) dB(W/(m² · 27 MHz))	0.054° ≤ θ < 3.67°
(–141.56 + 25 log θ) dB(W/(m² · 27 MHz))	3.67° ≤ θ < 16.69°
–111 dB(W/(m² · 27 MHz))	16.69° ≤ θ

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 2 BSS → Regions 1 and 3 FSS (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):

–160 dB(W/(m² · 27 MHz))	0° ≤ θ < 0.054°
(–137.46 + 17.74 log θ) dB(W/(m² · 27 MHz))	0.054° ≤ θ < 3.67°
(–141.56 + 25 log θ) dB(W/(m² · 27 MHz))	3.67° ≤ θ < 11.54°
–115 dB(W/(m² · 27 MHz))	11.54° ≤ θ

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

It is understood that, in the implementation of these criteria, the Bureau should take into account the pertinent station-keeping accuracy of the BSS and FSS space stations as filed by the notifying administrations.

NOTE - In addition, the 0.25 dB allowed increase over the pfd resulting from the original Plan assignments of all Regions should be maintained.

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[1] For those sharing situations not listed here, the provisions of Appendix **S30** and Appendix **S30A** apply.

MOD

RESOLUTION 214 (Rev.WRC-2000)

Sharing studies relating to consideration of the allocation of bands below 1 GHz to the non-geostationary mobile-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

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 1999 Conference Preparatory Meeting, 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;

h) that the bands 410-430 MHz and 440-470 MHz are extensively used by existing services in Region 1, in many countries in Region 3, and in some countries in Region 2, and new terrestrial systems are planned to be introduced in these bands;

i) that studies of certain bands have not yet been completed,

noting

a) that additional studies may identify suitable bands below 1 GHz and appropriate sharing techniques to be considered for worldwide allocations to non-GSO MSS;

b) 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;

c) that interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039, 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) 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;

e) that substantial progress has been made, with recently completed ITU-R studies of sharing between the non-GSO MSS below 1 GHz in the Earth-to-space direction and specific existing services, but studies on some important issues nevertheless remain to be completed;

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 the use of some sharing techniques such as those referred to in *noting c)* results in non-GSO MSS systems which have significantly greater spectrum requirements in the Earth-to-space direction than in the space-to-Earth direction,

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 WRC-03 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,

invites ITU-R

1 to study and develop Recommendations on, as a matter of urgency, the performance requirements, sharing criteria and technical and operational issues relating to sharing between existing and planned systems of allocated services and non-GSO MSS below 1 GHz;

2 to carry out studies, as a matter of urgency, in preparation for WRC-03, having regard to *noting c)*;

3 as a matter of urgency, to carry out studies in preparation for WRC-03 with respect to interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039, necessary to permit the continued development of all of the services to which the bands are allocated;

4 to bring the results of these studies to the attention of WRC-03 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.

SUP

RESOLUTION 218 (WRC-97)

Use of the bands 1525-1559 MHz and 1626.5-1660.5 MHz by the mobile-satellite service

SUP

RESOLUTION 219 (WRC-97)

Studies relating to consideration of the allocation to the non-geostationary mobile-satellite service in the meteorological aids band 405-406 MHz and the impact on primary services allocated in the adjacent bands

ADD

RESOLUTION [COM5/22] (WRC-2000)

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 (Istanbul, 2000),

considering

a) that prior to WRC-97, the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (R) service (AMS(R)S) in most countries;

b) that WRC-97 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;

c) that WRC-97 adopted No. **S5.353A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. **S5.357A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article **S44** in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz,

further considering

a) that coordination between satellite networks is required on a bilateral basis in accordance with the ITU Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;

b) that, in these bands, GSO satellite system operators currently use a capacity-planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements;

c) that the GMDSS and AMS(R)S spectrum requirements are currently satisfied through the capacity-planning approach and that, in the bands to which Nos. **S5.353A** or **S5.357A** apply, this approach, and other methods such as intra- and inter-system prioritization, pre-emption and interoperability, may assist in accommodating the expected increase of spectrum requirements for GMDSS and AMS(R)S;

d) that the feasibility of prioritization, real-time pre-emptive access and the mechanism to transfer spectrum between different mobile-satellite systems that may or may not provide GMDSS and/or AMS(R)S has yet to be established,

recognizing

a) that priority access and immediate availability of spectrum for distress, urgency and safety communications of the GMDSS and AMS(R)S communications is of vital importance for the safety of life;

b) that ICAO has adopted Standards and Recommended Practices (SARPs) addressing satellite communications with aircraft in accordance with the Convention on International Civil Aviation;

c) that all air traffic communications as defined in Annex 10 to the Convention on International Civil Aviation fall within priority categories 1 to 6 of Article **S44**;

d) that Table **S15-2** of Appendix **S15** to the Radio Regulations 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,

resolves

1 that, in frequency coordination of mobile-satellite services in the bands 1 525-1 559 and 1 626.5-1 660.5 MHz, administrations shall ensure that the spectrum needed for distress, urgency and safety communications of GMDSS, as described in Articles **S32** and **S33,** in the bands where No. **S5.353A** applies, and for AMS(R)S communications within priority categories 1 to 6 of Article **S44** in the bands where No. **S5.357A** applies is accommodated;

2 that administrations shall ensure the use of the latest technical advances, which may include prioritization and real-time pre-emptive access between MSS systems, when necessary and where feasible, in order to achieve the most flexible and practical use of the generic allocations;

3 that administrations shall ensure that mobile-satellite service operators carrying non-safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for distress, urgency and safety communication of GMDSS communications, as described in Articles **S32** and **S33,** and for AMS(R)S communications within priority categories 1 to 6 of Article **S44**; this could be achieved in advance through the coordination process in *resolves* 1, and, when necessary and where feasible, through prioritization and real-time pre-emptive access,

invites ITU-R

to complete studies to determine the feasibility and practicality of prioritization and real-time pre-emptive access between different networks of mobile-satellite systems as referred to in *resolves* 2 above, while taking into account the latest technical advances in order to maximize spectral efficiency,

invites

ICAO, IMO, IATA, administrations and other organizations concerned to participate in the studies identified in *invites ITU-R* above.

ADD

RESOLUTION [COM5/23] (WRC-2000)

Development of procedures in case the operational or additional operational limits in Article S22 are exceeded

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted in Article **S22** single-entry operational limits (see Tables **S22-4A** through **S22-4C**) and single-entry additional operational limits (see Table **S22-4A1**) applicable to non-GSO FSS systems (space-to-Earth) in certain parts of the frequency range 10.7-20.2 GHz;

b) that, taking into account Nos. **S22.5H** and **S22.5I**, wherever the limits referred to in *considering a)* are exceeded by a non-GSO FSS system to which the limits apply, this constitutes a violation of No. **S22.2** of the Radio Regulations;

c) that ITU-R has identified the need for specific procedures that correct in the most expeditious manner any cases where the limits in *considering a)* are exceeded, by the inclusion of appropriate procedures in the Radio Regulations;

d) that the growth in use of non-GSO satellites is unlikely to lead to many cases of the limits mentioned in *considering a)* being exceeded before WRC-03,

resolves

that further study is needed to develop procedures suitable for application in the long term,

requests ITU-R

taking into consideration the guidelines in Annex 1, to conduct, as a matter of urgency, and in time for consideration by WRC-03, the appropriate regulatory studies to develop procedures, not limited to modification of Article **S15**, for application in cases where the power limits referred to in *considering a)* are exceeded at an operational earth station.

ANNEX 1 TO RESOLUTION [COM5/23] (WRC-2000)

Guidelines for the development of procedures for ensuring compliance with single-entry operational and additional operational limits in Section II of Article S22

1 It is essential that Member States exercise the utmost goodwill and mutual assistance in the application of the provisions of Article 45 of the Constitution and of these procedures for the settlement of problems stemming from epfd↓ interference from non-GSO FSS systems in excess of the operational limits given in Tables **S22-4A, S22-4B** and **S22-4C** and/or the additional operational limits given in Table **S22-4A1** ("excess epfd↓ interference").

2 In the settlement of such problems, due consideration shall be given to all factors involved, including the relevant technical and operational factors.

3 For the purpose of these procedures, the term "administration" may include the centralizing office designated by the administration, in accordance with No. **S16.3**.

4 Administrations shall cooperate in the detection and elimination of excess epfd↓ interference.

5 Where practicable, and subject to agreement between the administrations concerned, the case of excess epfd↓ interference may be dealt with directly between their operating organizations.

6 When a case of excess epfd↓ interference to a receiving GSO earth station associated with a transmitting space station is reported, and such excess epfd↓ interference cannot be accepted by the affected administration, the affected administration should first attempt to identify the source of the excess epfd↓ interference.

7 If the administration having jurisdiction over the receiving earth station has difficulty in determining the source or characteristics of the excess epfd↓ interference:

a) It may send a request for cooperation to all administrations responsible for non-GSO FSS systems with overlapping frequency assignments that have been brought into use, providing all relevant details. A copy of any such request shall be sent to Bureau.

b) Upon receipt of such a request, each administration shall, as soon as possible, acknowledge receipt and send to the requesting administration, within 15 days, with a copy to the Bureau, the information that may be used to identify the source of the problem. Such acknowledgement shall not constitute acceptance of responsibility.

c) If an administration fails to respond within 15 days, the affected administration may request the assistance of the Bureau, in which case Bureau shall immediately send a fax to the administration responsible for the non-GSO system, requesting action within an additional 15 days.

d) If the administration fails to respond to the Bureau within the time period established in § 7 *c)* above, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess epfd↓ interference.

8 Once the administration having jurisdiction over the receiving GSO earth station identifies the source(s) of the excess epfd↓ interference, it may send a letter, by fax or other mutually agreed electronic means, to the administration(s) concerned and request immediate corrective action. It shall give all useful information to enable the responding administration(s) to take such steps as may be necessary to reduce the interference to the epfd↓ levels required in Table **S22-4A, S22-4A1, S22-4B** or **S22-4C,** as appropriate, or to a higher level that is acceptable to the administration having jurisdiction over the receiving GSO earth station suffering the interference.

9 Upon receipt of such a request, an administration shall acknowledge receipt to the requesting administration within 15 days, with a copy to the Bureau. Such acknowledgement shall not constitute acceptance of responsibility.

10 Within 15 days after receipt of a request for corrective action pursuant to § 7 above, the administration receiving the request shall either:

a) provide the requesting administration and the Bureau with information indicating that no non-GSO FSS system for which it is responsible could have caused the excess epfd↓ interference experienced by the receiving GSO earth station; or

b) acknowledge responsibility for causing the excess epfd↓ interference and immediately reduce emissions of the interfering system into the affected receiving GSO earth station to the epfd↓ levels laid down in Table **S22-4A, S22-4A1, S22-4B** or **S22-4C,** as appropriate.

In either case, the Bureau shall be informed of the action taken.

11 If an administration fails to respond within 15 days, the affected administration may request the assistance of the Bureau, in which case the Bureau shall immediately send a fax to the administration responsible for the non-GSO system, requesting action within an additional 15 days.

12 If the administration fails to respond to the Bureau within the time period established in § 11 above, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess epfd↓ interference.

13 If an administration acknowledges responsibility for causing the excess epfd↓ interference pursuant to § 10 *b)* above, but fails to reduce immediately emissions of the interfering system as required:

a) The administration responsible for the interference shall have an additional 10 days to take the necessary action to correct the excess epfd↓ interference situation pursuant to No. **S15.21** of the Radio Regulations.

b) If, after the 10 day period, the administration responsible for the interference has still not reduced emissions of the interfering system as required, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the use of the affected frequency bands by the interfering system is in violation of Nos. **S22.2** and **S22.5I** of the Radio Regulations. Notice of the entry of the remark shall be included in the IFIC.

14 The Bureau shall retain any entry in the Remarks column of the Master Register made pursuant to § 7 *d)*, § 12 or § 13 *b)* above, which shall remain in place until such time as the non-responding administration responds and/or remedies the excess epfd↓ interference, as appropriate.

15 If it considers necessary, and particularly if the steps taken in accordance with the procedures described above have not produced satisfactory results, the administration concerned shall forward details of the case to the Bureau for its information.

16 In such a case, the administration concerned may also request the Bureau to act in accordance with the provisions of Section I of Article **S13**; but it shall then supply the Bureau with the full facts of the case, including all the technical and operational details and copies of the correspondence.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 449-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2
OF THE PLENARY

Note by the Chairperson of GT PLEN-1 to the Chairperson of GT PLEN-2

At its 11th Plenary Meeting on Friday, 26 May 2000, GT PLEN-1 considered proposal IRN/126/43 which proposes an item for inclusion in the agenda of a forthcoming WRC.

The majority of those attending the meeting were opposed to this proposal. The participants at the meeting asked that this result of the discussions be brought to your attention.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 450-E
29 May 2000
Original: French/ English/ Spanish

ISTANBUL, 8 MAY – 2 JUNE 2000

LIST OF DOCUMENTS ISSUED
(Documents 401 – 450)

DOCUMENT NUMBER	***SOURCE***	***TITLE***	***DESTINATION***
401	WG 4A	Fourth Report from Working Group 4A to Committee 4	C4
402	WG 4B	Eighth Report from Working Group 4B to Committee 4	C4
403	WG 5D	Modification to RR S21, RR S22 and relevant footnotes	C5
404 + Corr.1, 2	WG 4B	Ninth Report from Working Group 4B to Committee 4	C4
405	WG 4B	Tenth Report from Working Group 4B to Committee 4	C4
406	WG 4B	Report by the Chairperson of Working Group 4B to the Chairperson of Committee 4	C4
407	WG 4B	Note by the Chairperson of Working Group 4B to Committee 4	C4
408	C5	Third series of texts submitted by Committee 5 to the Editorial Committee	C6
409	C5	MSS allocation in the band 1 559-1 567 MHz	PL
410	WG 4A	Third Report from Working Group 4A to Committee 4	C4
411	BR	Implication of a revision of Resolution 51 (WRC-97)	C4
412	C5	Note from Chairperson, Committee 5	WG PLEN-2
413	G	Additional allocation for the mobile-satellite service in the band 1 518-1 525 MHz	C5

DOCUMENT NUMBER	*SOURCE*	*TITLE*	*DESTINATION*
414	WG 5D	Chairperson, Working Group 5D	C5
415	WG 5B	Modifications to Article S5 of the Radio Regulations	C5
416 + Rev.1	SG	Transfer of powers Federated States of Micronesia - United States of America	PL
417	C4	Note from the Chairperson of Committee 4 to the Chairperson of Committee 5	C5
418	C5	Note from Chairperson, Committee 5	C3
419	WG 5A	Conclusions relating to agenda item 1.6.1 on the use of HAPS in IMT-2000	C5
420	C4	Summary Record of the fourth meeting of Committee 4 (Regulatory and associated issues)	C4
421	ARM/AZE/ BUL/UZB/ KGZ	Proposals for the work of the Conference	C5
422	WG 4A	Conclusions relating to agenda item 1.6.1 on the terrestrial and satellite components of IMT-2000	C5
423	WG PLEN-1	First series of texts submitted by Working Group 1 of the Plenary to the Editorial Committee	C6
424 + Add.1	WG PLEN-1	Draft new Resolution [GT PLEN-1/1]	WG PLEN-2
425	C4	Possible text for the WRC-03 agenda	WG PLEN-2
426	WG PLEN-1	Working Group 1 of the Plenary Agenda item 2 (Incorporation by reference)	C4
427	WG 5C	Proposals for the work of the Conference	C5
428	C4	Fifth series of texts submitted by Committee 4 to the Editorial Committee	C6
429 + Rev.1	C4	ITU-R Recommendations containing texts incorporated by reference in the Radio Regulations	C5, WG PLEN-1
430	Group Ad Hoc 1	Note from Chairperson, Committee 5 Ad Hoc 1	C5
431	C5	Fourth series of texts submitted by Committee 5 to the Editorial Committee	C6

DOCUMENT NUMBER	*SOURCE*	*TITLE*	*DESTINATION*
432	WG 4A	Note from the Chairperson of Working Group 4A to the Chairperson of GT PLEN-1	WG PLEN-1
433	WG PLEN-1	ITU-R Recommendations containing texts incorporated by reference	C4
434	WG PLEN-1	Need to update Appendix S4	C4
435	D	Proposal for the work of the Conference	C4
436	C4	Note by the Chairperson of Committee 4 to the Chairperson of Committee 3	C3
437	CVA	Proposal for the work of the Conference	WG PLEN-2
438	CME	Proposals for the work of the Conference	C5
439	Group ad hoc 2	Report to Committee 5	C5
440	C4	Sixth series of texts submitted by Committee 4 to the Editorial Committee	C6
441	WG 4A	Fifth and final Report of Working Group 4A to Committee 4	C4
442	C4	Note from Chairperson, Committee 4	WG PLEN-2
443	SG	Final days of the Conference	PL
444	SG	Signing Ceremony	PL
445	C5	Fifth series of texts submitted by Committee 5 to the Editorial Committee	C6
446	C2	Report by Committee 2 to the Plenary Meeting Credentials	PL
447	1	Draft Resolution relating to the implementation of Resolution 99 of the Plenipotentiary Conference, Minneapolis 1998	PL
448	C6	**B.5** - Fifth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
449	WG PLEN-1	Note by the Chairperson of GT PLEN-1 to the Chairperson of GT PLEN-2	WG PLEN-2
450	BR	List of documents issued (401 – 450)	-

[1] ALG/ARS/EGY/UAE/INS/JOR/LBN/LBY/MLA/MLI/MRC/OMA/QAT/TUN/ YEM/PALESTINE

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 451-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 427, 422, 419, 439 **COMMITTEE 6**

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

Committee 5 has continued its consideration of its agenda items. As a result of these deliberations, it has adopted, at its seventh and eighth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

Chris Van DIEPENBEEK
Chairperson, Committee 5

Annex

ARTICLE S5

Frequency allocations

1 MOD

34.2-40.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
37-37.5	FIXED MOBILE SPACE RESEARCH (space-to-Earth) MOD S5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) MOD S5.547 ADD S5.NGSO	
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) MOD S5.547 ADD S5.NGSO	
39.5-40	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) MOD S5.547 ADD S5.NGSO	
40-40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	

40.5-55.78 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
40.5-~~42.5~~41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile ~~S5.551B S5.551D~~MOD S5.547	**40.5-~~42.5~~41** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [Mobile-satellite (space-to-Earth)] ~~S5.551C S5.551F~~ MOD S5.547	**40.5-~~42.5~~41** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [MOD S5.551C] ~~S5.551F~~ MOD S5.547
41-42 FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551D~~ [~~S5.551B~~] BROADCASTING BROADCASTING-SATELLITE Mobile MOD S5.547 ADD S5.RAS	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) [~~S5.551B~~] ~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile ~~S5.551C S5.551F~~ MOD S5.547 ADD S5.RAS	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) [~~S5.551B~~] ~~S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [MOD S5.551C] S5.551F MOD S5.547 ADD S5.RAS
42-42.5 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile ~~S5.551B~~ ADD S5.RAS ~~S5.551D~~ MOD S5.547 ADD S5.NGSO	**42-42.5** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile ~~S5.551C S5.551F~~ MOD S5.547 ADD S5.NGSO ADD S5.RAS	**42-42.5** FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.551B S5.551E~~ BROADCASTING BROADCASTING-SATELLITE Mobile [MOD S5.551C] S5.551F MOD S5.547 ADD S5.NGSO ADD S5.RAS
42.5-43.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY S5.149 MOD S5.547	

2 MOD S5.547

S5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 GHz, 51.4-52.6 GHz, 55.78-59, and 64-66 GHz are available for high-density applications in the fixed service (see Resolutions ~~**726 (WRC-97)**~~**[COM5/11]** and **[COM5/27]**). Administrations should take this into account, when considering regulatory provisions in relation to these bands. Because of potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42.0 GHz,

administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution **[COM5/28]**).

3 ADD S5.NGSO

S5.NGSO In the bands 37.5-40 GHz and 42.0-42.5 GHz, non-GSO fixed-satellite service systems should employ power control or other methods of downlink fade compensation on the order of 10 dB, such that the satellite transmissions are at power levels required to meet the desired link performance while reducing the level of interference to the fixed service. The use of downlink fade compensation methods are the subject of study by ITU-R (see Resolution **[COM5/28]**).

5 SUP S5.551B

S5.551B

MOD

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.

6 ADD S5.RAS

S5.RAS In order to protect the radio astronomy service in the band 42.5-43.5 GHz, the aggregate power flux-density radiated in the 42.5-43.5 GHz band by all the space stations within any non-GSO fixed-satellite service (space-to-Earth) or broadcasting-satellite service (space-to-Earth) system operating in the 41.5-42.5 GHz band shall not exceed the level of –167 dB(W/m^2) in any 1 MHz bandwidth, into any radio astronomy observatory site for more that 2% of the time. The power flux-density in the band 42.5-43.5 GHz by any GSO fixed-satellite service (space-to-Earth) or broadcasting-satellite service (space-to-Earth) station operating in the band 42.0-42.5 GHz shall not exceed –167 dB(W/m^2) in any 1 MHz bandwidth at the site of a radio astronomy station. These limits are provisional and will be reviewed in accordance with Resolution **128 (Rev.WRC-2000)**.

7 SUP S5.551D

8 SUP S5.551E

9 SUP Resolution 133

RESOLUTION 133 (WRC-97)

Sharing between the fixed service and other services in the band 37-40 GHz

10 SUP Resolution 129

RESOLUTION 129 (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

11 SUP Resolution 134

RESOLUTION 134 (WRC-97)

Use of the frequency band 40.5-42.5 GHz by the fixed-satellite service

12 SUP Resolution 726

RESOLUTION 726 (WRC-97)

Frequency bands above 30 GHz available for high-density applications in the fixed service

13 ADD Additions to Table S21-4

Table S21-4 *(end)*

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°**	
37.5-40.0 GHz	Fixed-satellite (Non-geostationary) Mobile-satellite (Non-geostationary)	-120 [10, 16, FSS]	-120 + 0.75(δ-5) [10, 16, FSS]	-105 [10, 16, FSS]	1 MHz
37.5-40.0 GHz	Fixed-satellite (Geostationary) Mobile-satellite (Geostationary)	-127 [16, FSS]	**5° - 20°**: -127 + (4/3)(δ-5) [16, FSS] **20° - 25°**: -107 + 0.4(δ-20) [16, FSS]	-105 [16, FSS]	1 MHz
40-40.5 GHz	Fixed-satellite	-115	-115 + 0.5(δ-5)	-105	1 MHz
40.5-42.0 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-Geostationary)	-115 [10, 16, FSS, BSS]	-115 + 0.5(δ-5) [10,16, FSS, BSS]	-105 [10, 16, FSS, BSS]	1 MHz
40.5-42.0 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	-120 [16, FSS, BSS]	**5° - 15°**: -120+ (δ-5) [16, FSS, BSS] **15° - 25°**: -110+ 0.5(δ-15) [16, FSS, BSS]	-105 [16, FSS, BSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-geostationary)	-120 [10, 16, FSS, BSS]	-120 + 0.75(δ-5) [10, 16, FSS, BSS]	-105 [10, 16, FSS, BSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	-127 [16, FSS, BSS]	**5° - 20°**: -127 + (4/3)(δ-5) [16, FSS, BSS] **20° - 25°**: -107 + 0.4(δ-20) [16, FSS, BSS]	-105 [16, FSS, BSS]	1 MHz

14 MOD [10]S21.16.4

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[10] **S21.16.4** The values given in this ~~box shall apply until such a time as modified by a competent world radiocommunication conference.~~ table entry shall apply to emissions of space stations of non-geostationary satellites in networks operating with 99 or fewer satellites. Further study concerning the applicability of these values is necessary in order to apply them to networks operating with 100 or more satellites.

15 ADD [16]S21.16.10

[16] **S21.16.10** Except to the extent provided in footnote S21.16.FSS, these values are provisional and shall be applied subject to Resolution **[COM5/28]**.

16 ADD S21.16.FSS

S21.16.FSS In the bands 37.5-40 and 40.5-42.5 GHz, notwithstanding any further studies, the power flux-density limits in this table shall be applied to stations in the fixed-satellite service for which complete coordination (GSO) or notification information (non-GSO), as appropriate, has been received by the Bureau before the end of WRC-03 and after 2 June 2000.

17 ADD S21.16.BSS

S21.16.BSS The values given in this box are provisional and need confirmation by a future conference.

18 ADD RESOLUTION [COM5/28] (WRC-2000)

RESOLUTION [COM5/28] (WRC-2000)

Power flux-density limits in the bands 37.5-42.5 GHz for the fixed-satellite service, broadcasting-satellite service, and mobile-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference established power flux-density limits in accordance with the provisions of footnotes S21.16.10 and S21.16.FSS for the fixed-satellite service (space-to-Earth) in the bands 37.5-40.0 GHz and 40.5-42.5 GHz, and the mobile-satellite service (space-to-Earth) in the band 39.5-40 GHz;

b) that in the band 37.5-42.5 GHz, Recommendation ITU-R SF.1484 recommends power flux-density limits for non-GSO fixed-satellite service systems;

c) that in the bands 37.5-40.0 GHz and 40.5-42.5 GHz, the power flux-density limits adopted by this conference for GSO fixed-satellite service systems are based on ITU-R studies;

d) that this conference harmonized the allocation to the fixed-satellite service in the band 40.5-42.5 GHz across all Regions;

e) that there exists an allocation to the broadcasting-satellite service on a co-primary basis in the band 40.5-42.5 GHz;

f) that there are only provisional power flux-density limits for BSS in the range 40.5-42.5 GHz;

g) 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;

h) that the band 40.0-40.5 GHz has not been identified as being available for high density applications in the fixed service,

noting

a) that Recommendation ITU-R SF.1484 notes that some fixed service systems employing small net fade margins and which operate at elevation angles greater than 10 degrees in the band 37.5-40 GHz may not be fully protected from interference from fixed-satellite service systems without unduly constraining fixed-satellite service systems;

b) that the fixed service parameters for sharing studies are given in Recommendation ITU-R F.758;

c) that new studies taking account of high-density fixed service deployments with new characteristics (as documented in Recommendation ITU-R F.1498) in some countries have been presented and discussed during this conference;

d) that the new studies submitted to this conference, on which consensus has not been reached, identified high-density fixed service protection requirements from GSO and non-GSO fixed-satellite service systems, that indicate clear-sky pfd protection requirements that are about 13.5 dB more stringent at elevation angles above 25° than the table entries in Table **S21-4** for the band 37.5-40 GHz;

e) that footnote S5.NGSO may provide additional protection to the fixed service,

recognizing

a) that some downlink fade compensation techniques, such as adaptive power control, could reduce the operational power flux-density levels of satellite networks under normal operating conditions while enhancing the ability of fixed-satellite service networks to overcome rain fade;

b) that there is a need for further study to determine the percentage of time during which fade conditions will require downlink fade compensation techniques;

c) that within the range 39.5-42 GHz, some administrations plan to deploy fixed-satellite service systems using ubiquitous very small aperture terminals,

recognizing further

a) that the use of downlink fade compensation techniques by satellite systems may affect the performance of fixed service and fixed-satellite service links operating in unfaded conditions in the same frequency band;

b) that the use of downlink fade compensation techniques affects the design of fixed-satellite service links,

resolves

1 that the limits in Table **S21-4** for the bands 37.5-40.0 GHz and 40.5-42.5 GHz, as revised by this conference, shall be applied for verification purposes by the Bureau and by administrations as of 2 June 2000 in accordance with the provisions of footnotes S21.16.10 and S21.16.FSS;

2 taking into account *recognizing a)*, that in the interim period before WRC-03, before an administration brings into use, in Region 2, a frequency assignment for a GSO fixed-satellite service network in the 37.5-40 GHz band, it shall seek the agreement of any administration in Region 2 where the power flux-density produced on the territory of that administration exceeds the values in Table **S21-4** minus 12 dB,

urges administrations

a) to meet the requirements of footnote S5.NGSO;

b) when considering regulatory provisions in relation to the band 40-40.5 GHz to take into account that there were a number of propsals to WRC-2000 to identify the band 40-40.5 GHz for high density applications in the fixed-satellite service,

invites ITU-R

1 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the bands 37.5-40 GHz and 42-42.5 GHz from space-to-Earth transmissions in the fixed-satellite and mobile-satellite services;

2 taking into account the *resolves,* to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the band 40.5-42.0 GHz from space-to-Earth transmissions in the fixed-satellite services, taking into account the requirements of the fixed-satellite service and *recognizing c)*;

3 to study technical and operational characteristics and power flux-density values for the broadcasting-satellite service in the range 40.5-42.5 GHz;

4 in conducting studies under *invites ITU-R* 1, 2 and 3 above, to take into account the need to ensure the proper balances of impacts on the fixed service and space services sharing the same band;

5 to conduct as a matter of urgency and taking into account the *considerings* above, studies on the mitigation techniques to improve sharing conditions between space services in the *considerings* above and the fixed service systems, taking account of the impact on these space services systems and the fixed service systems;

6 to undertake, as a matter of urgency, studies of the appropriate criteria and techniques for addressing interference from transmitters of the fixed service into earth station receivers in high-density applications in the fixed-satellite service with allocations in the bands 39.5-40 GHz and 40.5-42.5 GHz intended for operation in the same geographic area;

7 in the bands 37.5-40 GHz and 42-42.5 GHz, to study the nominal clear-sky power flux-density levels, and the percentage of time during which they may be exceeded to overcome fading conditions between the satellite and one or more geographically separated earth stations, in order to protect the fixed service while permitting operation of fixed-satellite service earth stations using, e.g., coordinated large antennas, taking into account the balance of constraints on fixed-satellite systems and the fixed service;

8 to report on the results of these studies in time for WRC-03,

requests

WRC-03 to take appropriate action based on the results of these studies.

19 MOD RESOLUTION 128 (WRC-97)

RESOLUTION 128 (Rev.WRC-~~97~~2000)

~~Allocation to the fixed fixed-satellite services (space-to-Earth) in the [41.5-42.5] [41.542-42.5] GHz band and p~~Protection of the radio astronomy service in the 42.5-43.5 GHz band

The World Radiocommunication Conference (~~Geneva 1997~~Istanbul 2000),

considering

a) that ~~this Conference this Conference has~~WRC-97 ~~has~~ added a primary allocation to the fixed-satellite service (space-to-Earth) in the band 40.5-42.5 GHz in Regions 2 and 3 and in certain countries in Region 1, that this conference expanded this allocation to include all of 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 there is also a worldwide primary allocation to the broadcasting-satellite service in the 40.5-42.5 GHz band;

~~*b*~~*c)* that unwanted emissions from geostationary (GSO) space stations in the broadcasting-satellite service and fixed-satellite service (space-to-Earth) in the band 42-42.5 GHz may result in harmful interference to the radio astronomy service in the band 42.5-43.5 GHz;

d) that aggregate unwanted emissions from non-GSO space stations in the broadcasting-satellite and fixed-satellite services (space-to-Earth) 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*~~*e)* that various technical and operational means may be used to reduce ~~these~~ unwanted emissions from these space stations ~~in the broadcasting-satellite and fixed-satellite service~~;

~~*d*~~*f)* that a limited number of radio astronomy stations worldwide require protection in the band 42.5-43.5 GHz, and that there may be means to limit the susceptibility of radio astronomy stations ~~receivers~~ to interference,

recognizing

a) that WRC-97 required that systems in the fixed-satellite service not be implemented in the band 41.5-42.5 GHz band 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;

b) that this conference established provisional power flux density limits for out of band emissions from stations in the broadcasting-satellite and fixed-satellite services in accordance with footnote S5.RAS,

~~*taking into account*~~

~~the relevant provisions of the Radio Regulations,~~

resolves

~~that administrations shall not implement broadcasting-satellite service systems where advanced publication materials are received by the Bureau after 2 June 2000 and fixed-satellite systems in the band [41.5-42.5][41.542-42.5] 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;~~

that, notwithstanding any further studies, the power flux-density limits in footnote S5.RAS shall be applied to stations in the broadcasting-satellite and fixed-satellite services for which complete coordination (GSO) or notification (non-GSO) information, as appropriate, has been received by the Bureau before the end of WRC-03 and after the end of WRC-2000,

invites ITU-R

~~1 to study, as a matter of urgency, the harmful interference that space stations in the broadcasting-satellite service where advanced publication materials are received by the Bureau after 2 June 2000 and fixed-satellite service (space-to-Earth) operating in the band [41.5-42.5][41.542-42.5] GHz may cause to stations in the radio astronomy service operating in the band 42.5-43.5 GHz;~~

1 to study, as a matter of urgency and in time for WRC-03, the provisional power flux-density limits given in footnote S5.RAS;

2 to identify technical and operational measures in the band 41.5-42.5 GHz, including possible mitigation techniques, that may be implemented ~~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 broadcasting-satellite service and fixed-satellite service~~s 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~~these studies ~~in~~ *invites* ~~1~~ and 2 ~~to the CPM Conference Preparatory Meeting of for WRC-99~~9902/03,~~;~~

~~4 to complete the ongoing ITU-R studies on aggregate unwanted emissions from non-geostationary fixed-satellite service systems operating in the band [41.5-42.5][41.5-42.0] GHz for protection of the radio astronomy service in the band 42.5-43.5 GHz,~~

urges administrations

1 to participate actively in the aforementioned studies by submitting contributions to ITU-R; and

2 when planning to implement space stations in~~ing~~ the ~~non-geostationary~~ broadcasting-satellite or fixed-satellite services in the band 41.5-42.5 GHz for which complete coordination (GSO) or notification (non-~~N~~GSO) has been received prior to this conference, to take into consideration the provisions of footnote S5.RAS in order to protect the radio astronomy service in the band 42.5-43.5 GHz,

requests

WRC-~~99~~03 to take appropriate action based on those studies.

20 ADD RESOLUTION [COM5/27]

RESOLUTION [COM5/27] (WRC-2000)

Development of the technical basis for coordination of radio astronomy stations with transmitting high-density fixed systems (HDFS) in the fixed service, in the band 42.5-43.5 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference decided that the band 42.5-43.5 GHz, which is allocated to the fixed service, should become available for high-density applications;

b) that the 42.5-43.5 GHz band is also allocated to the radio astronomy service on a primary basis worldwide, and it is intensively used for both continuum and spectral line observations, at a limited number of sites;

c) that radio astronomy observatories operating in the band are generally located far from urban population centres, employ very high-gain antennas and very low-noise amplifiers to receive extremely weak cosmic radio emissions over which astronomers have no control;

d) that HDFS stations are expected to be deployed in large numbers over areas of large geographical extent in urban population centres;

e) that studies are being initiated to characterize short-term anomalous propagation from transmitting stations dispersed over a large geographical area to a single receiving earth station (area-to-point propagation);

f) that no studies are yet available on the coordination distance that may be required to protect a radio astronomy station from HDFS transmissions associated with a single urban population centre, but that based on preliminary studies made at lower frequencies a provisional coordination distance of 250 km may be appropriate,

resolves to request ITU-R

to conduct studies on the coordination distance between radio astronomy stations operating in the 42.5-43.5 GHz band and HDFS stations associated with a view to developing ITU-R Recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

MOD

470-890 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
470-790 BROADCASTING S5.149 S5.291A S5.294 S5.296 S5.300 S5.302 S5.304 S5.306 S5.311 S5.312	**470-512** BROADCASTING Fixed Mobile S5.292 S5.293	**470-585** FIXED MOBILE BROADCASTING S5.291 S5.298
	512-608 BROADCASTING S5.297	**585-610** FIXED MOBILE BROADCASTING RADIONAVIGATION S5.149 S5.305 S5.306 S5.307
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	
	614-806 BROADCASTING Fixed Mobile S5.293 S5.309 S5.311	**610-890** FIXED MOBILE<u> ADD S5.XXX</u> BROADCASTING
790-862 FIXED BROADCASTING S5.312 S5.314 S5.315 S5.316 S5.319 S5.321	**806-890** FIXED MOBILE<u> ADD S5.XXX</u> BROADCASTING	
862-890 FIXED MOBILE except aeronautical mobile<u> ADD S5.XXX</u> BROADCASTING S5.322 S5.319 S5.323	S5.317 S5.318	S5.149 S5.305 S5.306 S5.307 S5.311 S5.320

MOD

890-1 350 MHz

<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="3">890-942
FIXED
MOBILE except aeronautical mobile ADD S5.XXX
BROADCASTING S5.322
Radiolocation

S5.323</td><td>890-902
FIXED
MOBILE except aeronautical mobile ADD S5.XXX
Radiolocation
S5.318 S5.325</td><td rowspan="3">890-942
FIXED
MOBILE ADD S5.XXX
BROADCASTING
Radiolocation

S5.327</td></tr>
<tr><td>902-928
FIXED
Amateur
Mobile except aeronautical mobile
Radiolocation ADD S5.CCC
S5.150 S5.325 S5.326</td></tr>
<tr><td>928-942
FIXED
MOBILE except aeronautical mobile ADD S5.XXX
Radiolocation
S5.325</td></tr>
<tr><td>942-960
FIXED
MOBILE except aeronautical mobile ADD S5.XXX
BROADCASTING S5.322
S5.323</td><td>942-960
FIXED
MOBILE ADD S5.XXX</td><td>942-960
FIXED
MOBILE ADD S5.XXX
BROADCASTING

S5.320</td></tr>
</table>

ADD

S5.CCC *Different category of service:* in Cuba, the allocation of the band 902-915 MHz to the land mobile service is on a primary basis.

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Earth exploration-satellite Mobile except aeronautical mobile S5.349 S5.341 S5.342 S5.350 S5.351 S5.352A S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Earth exploration-satellite Mobile S5.349 S5.341 S5.351 S5.352A S5.354
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A ADD S5.SSS Earth exploration-satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530-1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A ADD S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	
1 535-1 559	MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.356 S5.357 S5.357A S5.359 S5.362A	

MOD

1 610-1 660 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 610-1 610.6	**1 610-1 610.6**	**1 610-1 610.6**
MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
	RADIODETERMINATION-SATELLITE (Earth-to-space)	Radiodetermination-satellite (Earth-to-space)
S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 610.6-1 613.8	**1 610.6-1 613.8**	**1 610.6-1 613.8**
MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS
RADIO ASTRONOMY	RADIO ASTRONOMY	RADIO ASTRONOMY
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
	RADIODETERMINATION-SATELLITE (Earth-to-space)	Radiodetermination-satellite (Earth-to-space)
S5.149 S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	S5.149 S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	S5.149 S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 613.8-1 626.5	**1 613.8-1 626.5**	**1 613.8-1 626.5**
MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
Mobile-satellite (space-to-Earth)	RADIODETERMINATION-SATELLITE (Earth-to-space)	Mobile-satellite (space-to-Earth)
	Mobile-satellite (space-to-Earth)	Radiodetermination-satellite (Earth-to-space)
S5.341 S5.355 S5.359 S5.363 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	S5.341 S5.364 S5.365 S5.366 S5.367 S5.368 S5.370 S5.372	S5.341 S5.355 S5.359 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.372
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.357A S5.359 S5.362A S5.374 S5.375 S5.376	

MOD

1 660-1 710 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 660-1 660.5	MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 S5.362A S5.376A	

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE S5.380 ADD S5.AAA S5.149 S5.341 S5.385 S5.386 S5.387 S5.388 MOD S5.388	
1 930-1 970 FIXED MOBILE MOD S5.388	**1 930-1 970** FIXED MOBILE Mobile-satellite (Earth-to-space) MOD S5.388	**1 930-1 970** FIXED MOBILE MOD S5.388
1 970-1 980	FIXED MOBILE MOD S5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389A S5.389B S5.389F	
2 010-2 025 FIXED MOBILE MOD S5.388	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 010-2 025** FIXED MOBILE MOD S5.388
2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) S5.392	
2 110-2 120	FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) MOD S5.388	
2 120-2 160 FIXED MOBILE MOD S5.388	**2 120-2 160** FIXED MOBILE Mobile-satellite (space-to-Earth) MOD S5.388	**2 120-2 160** FIXED MOBILE MOD S5.388
2 160-2 170 FIXED MOBILE MOD S5.388 S5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 160-2 170** FIXED MOBILE MOD S5.388

MOD

2 170-2 520 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 170-2 200	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) MOD S5.388 S5.389A S5.389F S5.392A	
2 200-2 290	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) S5.392	
2 290-2 300	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
2 300-2 450 FIXED MOBILE Amateur Radiolocation S5.150 S5.282 S5.395	**2 300-2 450** FIXED MOBILE RADIOLOCATION Amateur S5.150 S5.282 S5.393 S5.394 S5.396	
2 450-2 483.5 FIXED MOBILE Radiolocation S5.150 S5.397	**2 450-2 483.5** FIXED MOBILE RADIOLOCATION S5.150 S5.394	
2 483.5-2 500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS Radiolocation S5.150 S5.371 S5.397 S5.398 S5.399 S5.400 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) S5.398 S5.150 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ADD S5.SSS RADIOLOCATION Radiodetermination-satellite (space-to-Earth) S5.398 S5.150 S5.400 S5.402
2 500-2 520 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile ADD S5.AAA MOBILE-SATELLITE (space-to-Earth) S5.403 ADD S5.SSS 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 ADD S5.AAA MOBILE-SATELLITE (space-to-Earth) S5.403 ADD S5.SSS S5.404 S5.407 S5.414 S5.415A	

MOD

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 520-2 655 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403 S5.405 S5.408 S5.412 S5.417 S5.418	**2 520-2 655** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403	**2 520-2 535** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.403 S5.415A **2 535-2 655** FIXED S5.409 S5.411 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.418
2 655-2 670 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.412 S5.417 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) S5.415 MOBILE except aeronautical mobile ADD S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420
2 670-2 690 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile ADD S5.AAA MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 ADD S5.AAA MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 ADD S5.AAA MOBILE-SATELLITE (Earth-to-space) ADD S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.419 S5.420 S5.420A

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 they are allocated. The bands should be made available for IMT-2000 in accordance with Resolution **212 (Rev.WRC-97)**. (See also Resolution **[COM5/24] (WRC-2000).)**

ADD

S5.XXX Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution **[COM5/25] (WRC-2000)**). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.AAA The bands, or portions of the bands, 1 710-1 885 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution **[COM5/24] (WRC-2000)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.SSS For the use of the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz and 2 483.5-2 500 MHz, 2 500-2 520 MHz, 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-97)** and **[COM5/26] (WRC-2000)**.

ADD

RESOLUTION [COM5/24] (WRC-2000)

Additional frequency bands identified for IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that IMT-2000 is the ITU vision of global mobile access and is scheduled to start service around the year 2000 subject to market and other considerations;

b) that IMT-2000 is an advanced mobile communication applications concept intended to provide telecommunication services on a worldwide scale regardless of location, network or terminal used;

c) that IMT-2000 will provide access to a wide range of telecommunication services supported by the fixed telecommunication networks (e.g. PSTN/ISDN), and to other services which are specific to mobile users;

d) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations including Recommendation ITU-R M.1457 which contains the detailed specifications of the radio interfaces of IMT-2000;

e) that the evolution of IMT-2000 is being studied within ITU-R;

f) that the review of IMT-2000 spectrum requirements at WRC-2000 concentrated on the bands below 3 GHz;

g) that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000 in No. MOD **S5.388** and under the provisions of Resolution **212 (Rev.WRC-97)**;

h) that since WARC-92 there has been a tremendous growth in mobile communications including an increasing demand for wideband multimedia capability;

i) that ITU-R studies forecasted that spectrum in the order of 160 MHz, in addition to that identified already for IMT-2000 in No. MOD **S5.388** and in addition to the spectrum used for the first- and second-generation mobile systems in all three ITU Regions, will be needed to meet the projected requirements of IMT-2000 in those areas where the traffic is the highest by 2010;

j) that WRC-2000 has identified additional frequency bands in No. **S5.AAA** for IMT-2000 in order to meet the ITU-R projected additional spectrum requirement;

k) that the bands identified for IMT-2000 are currently used by either first- or second-generation mobile systems or applications of other radiocommunication services;

l) that Recommendation ITU-R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000;

m) that harmonized worldwide bands for IMT-2000 are desirable to achieve global roaming and the benefits of economies of scale;

n) that the bands 1 710-1 885 MHz and 2 500-2 690 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;

o) that the existing applications in the bands identified for IMT-2000 require spectrum below 3 GHz for technical reasons;

p) that technological advancement and market demand will promote innovation and accelerate the delivery of advanced communication applications to consumers;

q) that changes in technology may lead to the further development of communication applications, including IMT-2000,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transitions plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services allocated in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met;

c) that Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 to meet the needs of developing countries,

noting

a) Resolutions **[COM5/25] (WRC-2000)** and **[COM5/26] (WRC-2000)** which also relate to IMT-2000;

b) that the sharing implications between services sharing in the bands identified for IMT-2000 in No. **S5.AAA** will need further study in ITU-R;

c) that studies regarding the availability of the 1 710-1 885 MHz and 2 500-2 690 MHz bands for IMT-2000 are being conducted in many countries, the results of which could have implications for the use of those bands in those countries;

d) that not all administrations may need, due to differing requirements, or be able to implement, due to the usage by and investment in the existing services, all of the IMT-2000 bands identified at this conference;

e) that the spectrum for IMT-2000 identified by WRC-2000 may not completely satisfy the expected requirements of some administrations;

f) that currently operating second-generation mobile communication systems may evolve to IMT-2000 in their existing bands;

g) that services such as fixed, mobile (second-generation systems), space operations, space research and aeronautical mobile are in operation, or planned in the band 1 710-1 885 MHz, or portions of this band;

h) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite and fixed, including multipoint distribution/communication systems, are in operation or planned, in the band 2 500-2 690 MHz, or in portions of this band;

i) that the identification of several bands for IMT-2000 allows administrations to choose the best band or parts of bands for their circumstances;

j) that ITU-R has identified additional work to address further developments in IMT-2000 applications and beyond;

k) that the IMT-2000 radio interfaces as defined in Recommendation ITU-R M.1457 are expected to evolve within the framework of ITU-R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation;

l) that the identification of a band for IMT-2000 does not establish any priority in the Radio Regulations and does not preclude the use of the band for any application of the service to which it is allocated;

m) that the provisions of Nos. MOD **S5.388**, **S5.AAA** and **S5.XXX** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT-2000, based on national requirements,

recognizing

a) that some administrations are planning to use the band 2 300-2 400 MHz for IMT-2000;

b) that for some administrations the only way for implementation of IMT-2000 would be spectrum refarming requiring significant financial investment;

c) that spectrum for IMT-2000 is identified in Nos. MOD **S5.388**, **S5.AAA** and **S5.XXX**. This identification does not preclude the use of other bands allocated to the mobile service for IMT-2000,

resolves

1 to invite administrations implementing IMT-2000 or planning to implement IMT-2000 to make available, based on market demand and other national considerations, additional bands or portions of the bands above 1 GHz identified in No. **S5.AAA** for the terrestrial component of IMT-2000. Due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT-2000, taking into account the use and planned use of these bands by all services to which these bands are allocated;

2 to acknowledge that the differences in the texts of Nos. **S5.388** and **S5.AAA** do not confer differences in the regulatory status,

invites ITU-R

a) to study the implications of sharing of IMT-2000 with other applications and services in the bands 1 710-1 885 MHz and 2 500-2 690 MHz and the implementation, sharing and frequency arrangements of IMT-2000 in the bands 1 710-1 885 MHz and 2 500-2 690 MHz in accordance with Annex 1;

b) to develop harmonized frequency arrangements for operation of the terrestrial component of IMT-2000 in the spectrum mentioned in this Resolution, aiming to achieve compatibility with existing frequency arrangements used by the first- and second-generation systems;

c) to continue its studies on further enhancements of IMT-2000 including the provision of Internet Protocol (IP)-based applications that may require unbalanced radio resources between mobile and base station transmit;

d) to provide guidance to ensure that IMT-2000 can meet the telecommunication needs of the developing countries and rural areas in the context of the studies mentioned above;

e) to include these frequency arrangements and the results of these studies in one or more ITU-R Recommendations,

invites ITU-T

a) to complete its studies of signalling and communication protocols for IMT-2000;

b) to develop a common worldwide intersystem numbering plan and associated network capabilities that will facilitate worldwide roaming,

further invites ITU-R and ITU-T

to commence these studies forthwith,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies and to report the results of these studies before the next competent conference or within three years, whichever occurs earlier,

urges administrations and Sector Members

to submit the necessary contributions and to actively participate in ITU-R studies.

ANNEX 1

Request for studies by ITU-R

In response to Resolution [**COM5/24] (WRC-2000)**, studies that address the following should be conducted:

1 sharing implications and possibilities for all services allocated in the identified frequency bands;

2 harmonized frequency arrangements for the implementation of IMT-2000 in the bands mentioned in this Resolution that take into account the services currently using the bands or planning to use the bands and the required compatible frequency arrangements of second-generation systems using these bands taking into account the need to facilitate the evolution of current mobile systems to IMT-2000;

3 means to facilitate global roaming across different regional band plans within the bands identified for IMT-2000;

4 spectrum demand predictions related to traffic density and timing;

5 planning tools for adaptation of mobile radiocommunication technologies, including IMT-2000, for the needs of developing countries;

6 to maintain a database of national studies and decisions on selection of spectrum for IMT-2000;

7 to study the provision of a fixed wireless access interface using IMT-2000 technologies.

ADD

RESOLUTION [COM5/25] (WRC-2000)

Frequency bands for terrestrial component of IMT-2000 below 1 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that parts of the band 806-960 MHz are extensively used in the three Regions by first- and second-generation mobile systems;

b) that some administrations are planning to use part of the band 698-806 MHz for IMT-2000;

c) that in some countries, the band 698-806 MHz is allocated to the mobile services on a primary basis;

d) that first- and second-generation mobile systems in the three Regions operate using various frequency arrangements;

e) that where cost considerations warrant installation of fewer base stations, such as sparsely populated areas, bands below 1 GHz are generally suitable for implementing mobile systems including IMT-2000;

f) Recommendation ITU-R M.819 which describes the objectives to be met by IMT-2000 to meet the needs of developing countries,

recognizing

that the evolution of first- and second-generation cellular-based mobile systems to IMT-2000 can be facilitated if permitted to use their current frequency bands,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services allocated in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met,

resolves

to invite administrations which are implementing, or planning to implement IMT-2000, to consider the use of bands below 1 GHz and the possibility of evolution of first- and second-generation mobile systems to IMT-2000, in the frequency band identified in No. **S5.XXX**, based on market demands and other national considerations,

invites ITU-R

to study the compatibility between mobile systems with different technical characteristics and provide guidance on any impact on spectrum arrangements.

ADD

RESOLUTION [COM5/26] (WRC-2000)

Use of additional frequency bands for the satellite component of IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are identified for use by the satellite component of International Mobile Telecommunications 2000 (IMT-2000) through No. MOD **S5.388** and Resolution **212 (Rev.WRC-97)**;

b) Resolutions **212 (Rev.WRC-97)**, **[COM5/24] (WRC-2000)** and **[COM5/25] (WRC-2000)** on the implementation of the terrestrial and satellite components of IMT-2000;

c) that the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz are allocated on a co-primary basis to the mobile-satellite service and other services in accordance with the Radio Regulations;

d) that distress, urgency and safety communications of the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (route) service have priority over all other mobile-satellite service communications in accordance with Nos. **S5.353A** and **S5.357A**,

recognizing

a) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite, fixed (including point-to-multipoint distribution/communication systems) and mobile are in operation or planned in the band 2 500-2 690 MHz, or in portions of this band;

b) that other services such as mobile services and radiodetermination-satellite service are in operation or planned in the bands 1 525-1 559/1 626.5-1 660.5 MHz and 1 610-1 626.5/2 483.5-2 500 MHz, or in portions of these bands, and that these bands, or portions thereof, are intensively used in some countries by applications other than IMT-2000 satellite component, and the sharing studies within ITU-R are not finished;

c) that studies of potential sharing and coordination between the satellite component of IMT-2000 and the terrestrial component of IMT-2000, mobile-satellite services and other high-density applications in other services such as point-to-multipoint communication/distribution systems, in the bands 2 500-2 520 MHz and 2 670-2 690 MHz bands are not finished;

d) that the bands 2 520-2 535 MHz and 2 655-2 670 MHz are allocated to the mobile-satellite, except aeronautical mobile-satellite, service for operation limited to within national boundaries as per Nos. **S5.403** and **S5.420**;

e) Resolution ITU-R 47 on studies under way on satellite radio transmission technologies for IMT-2000,

resolves

1 that, in addition to the frequency bands indicated in *considering a)* and *resolves* 2, the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz may be used by administrations wishing to implement the satellite component of IMT-2000, subject to the regulatory provisions related to the mobile-satellite service in these frequency bands;

2 that the bands 2 500-2 520 MHz and 2 670-2 690 MHz as identified for IMT-2000 in No. **S5.AAA** and allocated to the mobile-satellite service, may be used by administrations wishing to implement the satellite component of IMT-2000, however, depending on market developments, it may be possible in the longer term for bands 2 500-2 520 MHz and 2 670-2 690 MHz to be used by the terrestrial component of IMT-2000;

3 that this identification of frequency bands for the satellite component of IMT-2000 does not preclude the use of these bands by any applications of the services to which they are allocated and does not establish priority in the Radio Regulations,

invites ITU-R

1 to study the sharing and coordination issues in the above bands related to use of the mobile-satellite service allocations for the satellite component of IMT-2000 and the use of this spectrum by the other allocated services, including the radiodetermination-satellite service;

2 to report the results of these studies to a future WRC,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies.

1 Modifications to Article S5

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE S5.380 ADD S5.BBB S5.149 S5.341 S5.385 S5.386 S5.387 MOD S5.388	
1 930-1 970 FIXED MOBILE ADD S5.BBB MOD S5.388	**1 930-1 970** FIXED MOBILE ADD S5.BBB Mobile-satellite (Earth-to-space) MOD S5.388	**1 930-1 970** FIXED MOBILE ADD S5.BBB MOD S5.388
1 970-1 980	FIXED MOBILE ADD S5.BBB MOD S5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389A S5.389B S5.389F	
2 010-2 025 FIXED MOBILE ADD S5.BBB MOD S5.388	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 010-2 025** FIXED MOBILE ADD S5.BBB MOD S5.388
2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) S5.392	
2 110-2 120	FIXED MOBILE ADD S5.BBB SPACE RESEARCH (deep space) (Earth-to-space) MOD S5.388	
2 120-2 160 FIXED MOBILE ADD S5.BBB MOD S5.388	**2 120-2 160** FIXED MOBILE ADD S5.BBB Mobile-satellite (space-to-Earth) MOD S5.388	**2 120-2 160** FIXED MOBILE ADD S5.BBB MOD S5.388
2 160-2 170 FIXED MOBILE ADD S5.BBB MOD S5.388 S5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) MOD S5.388 S5.389C S5.389D S5.389E S5.390	**2 160-2 170** FIXED MOBILE ADD S5.BBB MOD S5.388

ADD

S5.BBB In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz, and in Region 2, the bands 1 885-1 980 and 2 110-2 160 MHz, may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications 2000 (IMT-2000), in accordance with Resolution **[COM5/13] (WRC-2000)**. The use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations.

2 New Resolution

ADD

RESOLUTION [COM5/13] (WRC-2000)

Use of high altitude platform stations providing IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2

The World Radiocommunication Conference 2000 (Istanbul, 2000),

considering

a) that the bands 1 885-2 025 MHz and 2 110-2 200 MHz, are identified in No. MOD **S5.388** as intended for use on a worldwide basis for IMT-2000, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000;

b) that a high altitude platform station is defined in No. **S1.66A** as "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";

c) that high altitude platform stations may offer a new means of providing IMT-2000 services with minimal network build out as it is capable of providing service to a large footprint together with a dense coverage;

d) that the use of high altitude platform stations as base stations of terrestrial IMT-2000 is optional for administrations and that such use should not have any priority over other terrestrial IMT-2000 use;

e) that, in accordance with No. MOD **S5.388** and Resolution **212 (Rev.WRC-97)**, administrations may use the bands identified for IMT-2000, including the bands noted herein, for stations of other primary services to which they were allocated;

f) that these bands are allocated to the fixed and mobile services on a co-primary basis;

g) that ITU-R has studied sharing and coordination between high altitude platform stations and other stations within IMT-2000, has considered compatibility of high altitude platform stations within IMT-2000 with some services allocated in the adjacent bands, and has established Recommendation ITU-R M.1456;

h) that ITU-R did not address sharing and coordination between high altitude platform stations and some existing systems, particularly PCS (Personal Communications Service), MMDS (Multichannel Multipoint Distribution Service), and systems in the fixed service, which are currently operating in some administrations in the bands 1 885-2 025 MHz and 2 110-2 200 MHz;

i) that in accordance with No. **S5.BBB**, high altitude platform stations may be used as base stations of terrestrial IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2 the use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations,

recognizing

that the value in *resolves 1* may not be appropriate for the protection of some stations operating in these bands in the fixed and mobile services,

resolves

1 that:

a) for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, a high altitude platform station operating as a base station to provide IMT-2000 shall not exceed a provisional value of co-channel power flux-density (pfd) level –121.5 dB (W/(m^2 · MHz)) on the Earth's surface outside an administration's borders unless agreed otherwise by the administration of the affected neighbouring country;

b) a high altitude platform station operating as a base station to provide IMT-2000, in order to protect fixed stations from interference, shall not exceed a provisional value of out-of-band pfd level on the Earth's surface in the bands 2 025-2 110 MHz of:

– –165 dB(W/(m^2 · MHz)) for angles of arrival (θ) less than 5° above the horizontal plane;

– –165 + 1.75 (θ – 5) dB (W/(m^2 · MHz)) for angles of arrival between 5° and 25° above the horizontal plane; and

– –130 dB(W/(m^2 · MHz)) for angles of arrival between 25° and 90° above the horizontal plane,

2 that such a high altitude platform station shall, as of the end of WRC-03, operate only in accordance with such limits as are confirmed or, if appropriate, revised by WRC-03, irrespective of the date of bringing into use;

3 that administrations wishing to implement high altitude platform stations within a terrestrial IMT-2000 system shall conform with the following:

a) that for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, administrations using high altitude platform stations as base stations to IMT-2000 shall use antennas that comply with the following antenna pattern:

$G(\psi) = G_m - 3(\psi/\psi_b)^2$	dBi	for	$0° \le \psi \le \psi_1$
$G(\psi) = G_m + L_N$	dBi	for	$\psi_1 < \psi \le \psi_2$
$G(\psi) = X - 60\log(\psi)$	dBi	for	$\psi_2 < \psi \le \psi_3$
$G(\psi) = L_F$	dBi	for	$\psi_3 < \psi \le 90°$

where:

$G(\psi)$: gain at the angle ψ from the main beam direction (dBi)

G_m: maximum gain in the main lobe (dBi)

ψ_b: one-half of the 3 dB beamwidth in the plane of interest (3 dB below G_m) (degrees)

L_N: near-in-side-lobe-level in dB relative to the peak gain required by the system design, and has a maximum value of –25 dB

L_F: G_m - 73 dBi far side-lobe level (dBi)

$\psi_1 = \psi_b \sqrt{-L_N / 3}$ degrees

$\psi_2 = 3.745\ \psi_b$ degrees

$X = G_m + L_N + 60\log(\psi_2)$ dB

$\psi_3 = 10^{(X - L_F)/60}$ degrees

The 3 dB beamwidth ($2\psi_b$) is again estimated by:

$(\psi_b)^2 = 7442/(10^{0.1Gm})$ (in degrees^2)

where G_m is the peak aperture gain (dBi);

b) that a high altitude platform station operating as a base station to provide IMT-2000, in order to protect mobile earth stations of the satellite component of IMT-2000 from interference, shall not exceed an out-of-band pfd level of –165 dB (W/(m^2 · 4 kHz)) on the Earth's surface in the bands 2 160-2 200 MHz in Region 2 and 2 170-2 200 MHz in Regions 1 and 3;

4 that administrations wishing to implement high altitude platform stations within a terrestrial IMT-2000 system shall, prior to their bringing into use, take into account in their bilateral coordination with affected neighbouring administrations, the operation and growth of existing and planned systems in the fixed and the mobile service allocated on a primary basis;

5 that administrations wishing to implement high altitude platform stations within a terrestrial IMT-2000 system shall, pending the review by WRC-02/03 of the studies mentioned below, for the purpose of protecting fixed service stations operating in neighbouring countries from co-channel interference, take full account of the relevant ITU-R Recommendations relating to protection values for fixed stations (see Recommendation ITU-R F.758),

invites ITU-R

to complete, as a matter of urgency, additional studies of high altitude platform stations sharing criteria with, between and into other systems in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 in Region 2, and in adjacent bands, and to report on the results of these studies on time for consideration of WRC-02/03 to allow revision of the values in *resolves* 1, [as well as to advise on other relevant regulatory, operational and technical matters].

ADD

RESOLUTION [COM5/29] (WRC-2000)

Sharing studies for and possible additional allocations to the mobile-satellite service (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 considered proposals for an allocation to the mobile-satellite service (space-to-Earth) in Regions 1 and 3 in the frequency band 1 518-1 525 MHz;

b) that ITU-R has established that in order to meet projected MSS requirements in the frequency range 1-3 GHz, the order of two times 123 MHz of spectrum will be required by 2005 and two times 145 MHz will be required by 2010;

c) that the frequency band 1 492-1 525 MHz is allocated to the mobile-satellite service (space-to-Earth) in Region 2 on a primary basis except in the United States;

d) that the frequency band 1 518-1 525 MHz is allocated to the fixed service on a primary basis in all three Regions, to the mobile service on a primary basis in Regions 2 and 3, and to the mobile service except aeronautical mobile on a primary basis in Region 1;

e) that in Belarus, the Russian Federation and Ukraine, the band 1 429-1 535 MHz is allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within the national territory by the provisions of **S5.342**;

f) that in Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service by the provisions of **S5.343**;

g) that, as an alternative allocation in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **S5.343**) under the provisions of **S5.344**;

h) that there has been further development of point-to-multipoint systems in the fixed service since the time of ITU-R studies that formed the basis for the power-flux-density (pfd) values for use as coordination thresholds for protection of fixed service systems in the band 1 492-1 525 MHz that are contained in Appendix **S5**;

i) that there is a need to review the pfd values in Appendix **S5** to ensure that they are adequate to protect these new point-to-multipoint systems operating in the fixed service;

j) that the proposed allocation to the mobile-satellite service (space-to-Earth) is intended for satellite downlink operations, which due to their potentially widespread emissions upon the Earth from either geostationary or non-geostationary systems, could have an impact upon the terrestrial mobile service, to include aeronautical mobile and aeronautical mobile telemetry, in all three Regions;

k) in response to Resolution **220 (WRC-97)** ITU-R studies concluded that sharing between the mobile-satellite service and the RNSS was not feasible in the band 1 559-1 610 MHz,

recognizing

a) that there remains an unsatisfied need for additional downlink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.5 GHz allocations;

b) that Recommendation ITU-R F.1338, for an adjacent frequency band, includes an allowance for consideration of pfd values other than those specified therein for use as coordination thresholds for the fixed service;

c) that Recommendation ITU-R M.1459 contains criteria for the protection of aeronautical mobile telemetry with respect to geostationary satellites in the mobile-satellite service;

d) that additional information on the characteristics of systems in both the mobile-satellite service and aeronautical mobile telemetry would facilitate studies on sharing between these services,

noting

that Resolution **[COM5/30]** addresses sharing studies for the possible additional allocations to the mobile-satellite service (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz,

resolves to request ITU-R

1 as a matter of urgency, to study sharing between the mobile-satellite service and aeronautical mobile telemetry in all Regions in the band 1 518-1 525 MHz, taking into account, *inter alia*, Recommendation ITU-R M.1459;

2 as a matter of urgency, to review the pfd levels used as coordination thresholds for MSS (space-to-Earth) with respect to the protection of point-to-multipoint FS systems in the band 1 518-1 525 MHz in Regions 1 and 3, taking into account the work already done in ITU-R Recommendations M.1141 and M.1142 and the characteristics of FS systems contained in ITU-R Recommendations F.755-2 and F.758-1, and the sharing methodologies contained in ITU-R Recommendations F.758-1, F.1107 and F.1108;

3 should these studies of the specific frequency bands mentioned in this Resolution lead to an unsatisfactory conclusion, ITU-R should carry out sharing studies in order to recommend alternative mobile-satellite service (space-to-Earth) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to invite WRC-03 to consider making new allocations to the mobile-satellite service (space-to-Earth), on a global basis preferably in the vicinity of the existing allocation around 1.5 GHz,

urges administrations

to participate actively in these studies with the involvement of terrestrial and satellite interests.

ADD

RESOLUTION [COM5/30] (WRC-2000)

Sharing studies for and possible additional allocations to the mobile-satellite service (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that ITU-R has established that in order to meet projected MSS requirements in the frequency range 1-3 GHz, in the order of two times 123 MHz of spectrum will be required by 2005 and two times 145 MHz will be required by 2010;

b) that at WRC-2000 proposals were made for a worldwide allocation of 1 683-1 690 MHz to the MSS (Earth-to-space);

c) that the frequency band 1 675-1 710 MHz is allocated to the MSS (Earth-to-space) in Region 2 on a co-primary basis;

d) that the band 1 683-1 690 MHz is mainly used by meteorological-satellite (MetSat) and meteorological aids (MetAids) services;

e) that while there are only a limited number of main MetSat earth stations operated in this band in all three Regions, there are a large number of meteorological-satellite earth stations operated in Regions 2 and 3 and the locations of many of these stations are unknown;

f) that there is an increase in use of these stations in Regions 2 and 3 by government, commercial and private users for public safety and enhancement of national economies;

g) that sharing between MetSat and MSS in the band 1 675-1 690 MHz is feasible if appropriate separation distances are maintained pursuant to coordination under **S9.11A**;

h) that sharing between MetSat and MSS may not be feasible in those countries where a large number of MetSat stations are deployed;

i) that ITU-R Recommendation SA.1158-2 indicates that additional study is required to determine the criteria for coordination between MSS, and the MetSat service for GVAR/S-VISSR stations operated in the band 1 683-1 690 MHz in Regions 2 and 3;

j) that sharing of the band between MSS and MetSat in the band 1 690-1 710 MHz is not feasible;

k) that co-channel sharing between MSS and MetAids is not feasible;

l) that co-frequency sharing between MetAids and MetSat services is not feasible;

m) that WMO identified future spectrum requirements for MetAids operations as 1 675-1 683 MHz in the band 1 675-1 700 MHz, however some administrations will continue to require spectrum in the range 1 683-1 690 MHz for MetAids operations;

n) that MSS operation should not constrain current and future development of the MetSat service as specified in **S5.377**;

o) that at WRC-2000 new coordination parameters for MetSat earth stations were adopted which will require a review of assumptions made in earlier ITU-R studies,

recognizing

that there remains an unsatisfied need for additional uplink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.6 GHz allocations,

noting

a) that further study is not required regarding sharing between the services identified in the *considerings* above and the MSS in the bands 1 675-1 683 MHz and 1 690-1 710 MHz;

b) that Resolution **[COM5/29]** addresses sharing studies for the possible additional allocations to the mobile-satellite service (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz,

resolves to request ITU-R

1 as a matter of urgency, and in time for WRC-03, to complete the technical and operational studies on the feasibility of sharing between MSS and MetSat by determining appropriate separation distances between mobile earth stations and MetSat stations, including GVAR/S-VISSR stations, in the band 1 683-1 690 MHz as stated in Recommendation ITU-R SA.1158-2;

2 to assess, with the participation of WMO, the current and future spectrum requirements of the MetAids service taking into account improved characteristics, and of the MetSat service in the band 1 683-1 690 MHz taking into account future developments;

3 should these studies of the specific frequency band mentioned in this Resolution lead to an unsatisfactory conclusion, ITU-R should carry out sharing studies in order to recommend alternative mobile-satellite service (Earth-to-space) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to invite WRC-03 to consider making new allocations to the mobile-satellite service (Earth-to-space), on a global basis preferably in the vicinity of the existing allocation around 1.6 GHz,

urges

administrations and interested parties (e.g. WMO) to participate actively in such studies by submitting relevant contributions,

instructs the Secretary General

to bring this Resolution to the attention of WMO.

SUP

RESOLUTION 213 (Rev.WRC-95)

Sharing studies concerning possible use of the band 1 675-1 710 MHz by the mobile-satellite service

SUP

RESOLUTION 220 (WRC-97)

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)

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 452-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Chairperson of GT PLEN-1 to the Chairperson of Committee 4

With reference to Document 382, GT PLEN-1 wishes to draw your attention to Document DT/90(Rev.1) which shows the modification proposed for S9.17. You may note that the modification proposed by GT PLEN-1 is quite different from that shown in Document 382.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 453-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 404 (+ Corr.1 and 2), 410 and 435 **COMMITTEE 6**

SEVENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 has finished its consideration of agenda item 1.1 and parts of agenda items 1.3 and PP Resolution 86.

Footnote S5.551D is shown as SUP because Committee 4 received confirmation that Committee 5 had decided to delete it.

As a result of these deliberations, it has unanimously adopted, at its eighth meeting, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

The attention of Committee 6 is drawn to page 2 of Document 353 and to Corr.1 and 2 of Document 404 as well as to a statement by the Russian delegation during the Committee 4 meeting that the name “Russia” should be changed to “Russian Federation” in all footnotes.

H. RAILTON
Chairperson, Committee 4

Annex: 1

MOD

S5.393 *Additional allocation:* in the United States, 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)** with the exception of *resolves* 3 in regard to the upper 25 MHz limit on broadcasting-satellite systems.

MOD

S9.17 *f)*[13] for any specific earth station ~~or,~~ typical mobile earth station or typical earth station in the broadcasting-satellite service with parameters shown in Appendix **S7**, in frequency bands above ~~1 GHz~~100 MHz 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** [and Article 4 of Appendix **S30A** and the coordination of earth stations in the broadcasting-satellite service which are subject to the Appendix **S30** Plans];

ADD

S9.53A Upon expiry of the deadline for comments to a coordination request under Nos. **S9.11** to **S9.14** and **S9.21**, the Bureau shall, according to its record, publish a Special Section, indicating the list of administrations having submitted their disagreement or other comments within the regulatory deadline.

ARTICLE S5

Frequency allocations

MOD

S5.55 *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, Russian Federation, Georgia, ~~Kazakstan,~~ Kyrgyzstan, Tajikistan~~,~~ and Turkmenistan ~~and Ukraine~~, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.58 *Additional allocation:* in Armenia, Azerbaijan, ~~Bulgaria,~~ Georgia, Kazakstan, Kyrgyzstan, Russian Federation, Tajikistan~~,~~ and Turkmenistan ~~and Ukraine~~, the band 67-70 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.59 *Different category of service:* in Bangladesh~~, the Islamic Republic of Iran~~ and Pakistan, the allocation of the bands 70-72 kHz and 84-86 kHz to the fixed and maritime mobile service is on a primary basis (see No. **S5.33**).

MOD

S5.65 *Different category of service:* in Bangladesh, ~~the Islamic Republic of Iran and Pakistan,~~ the allocation of the bands 112-117.6 kHz and 126-129 kHz to the fixed and maritime mobile services is on a primary basis (see No. **S5.33**).

MOD

S5.67 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania~~,~~ and 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

S5.75 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, ~~Kazakstan,~~ Moldova, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Bulgaria and Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned.

MOD

S5.77 *Different category of service:* in Australia, China, the French Overseas Territories of Region 3, India, Indonesia (until 1 January 2005), the Islamic Republic of Iran, Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in these countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the band 435-495 kHz do not cause interference to reception by coast stations of ship stations transmitting on frequencies designated for ship stations on a worldwide basis (see No. **S52.39**).

MOD

S5.93 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, ~~Bulgaria,~~ Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz and in Bulgaria the bands 1 625-1 635 kHz and 1 800-1 810 kHz, are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Denmark, Estonia, Finland, Georgia, Hungary, Ireland, Israel, Jordan, Kazakstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, the United Kingdom, Russian Federation, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W.

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, Russian Federation, 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, Austria, 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

S5.107 *Additional allocation:* in Saudi Arabia, Botswana, Eritrea, Ethiopia, Iraq, Lesotho, Libya, Somalia, and 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.

SUP

S5.124

MOD

S5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, the Islamic Republic of Iran, Kazakstan, Moldova, Uzbekistan, Kyrgyzstan, Russian Federation, 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, Russian Federation, 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.

MOD

S5.155A In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

MOD

S5.160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, ~~Namibia,~~ Dem. Rep. of the Congo, Rwanda and Swaziland, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

MOD

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, the Netherlands, Poland, Portugal, Slovakia, the Czech Republic, the United Kingdom, Russian Federation, Sweden~~,~~ and 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 **217 (WRC-97)**.

MOD

S5.175 *Alternative allocation:* in Armenia, Azerbaijan, Belarus, ~~Estonia,~~ Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned.

MOD

S5.176 *Additional allocation:* in Australia, China, the Republic of Korea, the Philippines, the Democratic People's Republic of Korea, Estonia (subject to agreement obtained under No. **S9.21**) and Western Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis.

MOD

S5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, ~~Estonia,~~ Georgia, Kazakstan, Latvia, ~~Lithuania,~~ Moldova, ~~Mongolia,~~ Uzbekistan, Poland, Kyrgyzstan, Russian Federation, 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,~~ and 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

S5.197 *Additional allocation:* in ~~Germany, Austria, Cyprus, Denmark,~~ Egypt, ~~France, Italy,~~ Japan, ~~Jordan, Lebanon, Malta, Morocco, Monaco, Norway,~~ Pakistan~~,~~ and 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

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, Russian Federation, 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.

MOD

S5.206 *Different category of service:* in Armenia, ~~Austria,~~ Azerbaijan, Belarus, Bulgaria, Egypt, Finland, France, Georgia, Greece, ~~Hungary,~~ Kazakstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Syria, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. **S5.33**).

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

S5.211 *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Bosnia and Herzegovina, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Malta, Norway, the Netherlands, Qatar, the United Kingdom, ~~Slovenia,~~ Somalia, Sweden, Switzerland, Tanzania, Tunisia, Turkey and Yugoslavia, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis.

MOD

S5.214 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, ~~Slovenia,~~ Somalia, Sudan, Tanzania and Yugoslavia, the band 138-144 MHz is also allocated to the fixed service on a primary basis.

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, 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, Lithuania, 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, Russian Federation, 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

S5.259 *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,~~ and 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

S5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, ~~Estonia,~~ Georgia, Hungary, ~~Indonesia,~~ the Islamic Republic of Iran, Iraq, Israel, Jordan, Kazakstan, Kuwait, Liberia, Malaysia, Moldova, Nigeria, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, Russian Federation, Singapore, Somalia, ~~Sri Lanka,~~ Tajikistan, Turkmenistan, Ukraine and Yugoslavia, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.271 *Additional allocation:* in Azerbaijan, Belarus, China, Estonia, India, Latvia, Lithuania, Kyrgyzstan~~,~~ and Turkmenistan ~~and Ukraine~~, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

MOD

S5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, the Congo, Djibouti, ~~Gabon,~~ Georgia, Hungary, Israel, Kazakstan, Latvia, Mali, Moldova, Mongolia, Uzbekistan, ~~Pakistan,~~ Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, 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, Japan, ~~Kazakstan,~~ Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, ~~the Czech Republic,~~ Russian Federation, 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

S5.293 *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico ~~and~~, Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed and mobile services is on a primary basis (see No. **S5.33**), subject to agreement obtained under No. **S9.21**. In Argentina and Ecuador, the allocation of the band 470-512 MHz to the fixed and mobile services 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, Lithuania, 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 listed 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.

MOD

S5.297 *Additional allocation:* in Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica, and Mexico ~~and Venezuela~~, the band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.314 *Additional allocation*: in Austria, Italy, Moldova, Uzbekistan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis.

MOD

S5.315 *Alternative allocation*: in Greece, Italy~~, Morocco~~ and Tunisia, the band 790-838 MHz is allocated to the broadcasting service on a primary basis.

MOD

S5.316 *Additional allocation*: in Germany, Saudi Arabia, 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.

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, Namibia, Nigeria, South Africa, Tanzania, ~~and~~ Zimbabwe and Zambia, subject to agreement obtained under No. **S9.21**.

MOD

S5.331 *Additional allocation:* in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, the Islamic Republic of Iran, Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, ~~Pakistan,~~ the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.338 In Azerbaijan, Bulgaria, Mongolia, ~~Poland,~~ Kyrgyzstan, Slovakia, the Czech Republic, Romania~~,~~ and Turkmenistan ~~and Ukraine~~, 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, 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**).

MOD

S5.350 *Additional allocation:* in Azerbaijan, Kyrgyzstan~~,~~ and 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~~,~~ and Yemen ~~and Zambia~~, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis.

ADD

S5.355A *Additional allocation:* in Bahrain, Bangladesh, the Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015 at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed service systems in this band.

[**MOD**

S5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Lithuania, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Democratic People's Republic of Korea, Romania, Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan~~,~~ and Ukraine, ~~Zambia and Zimbabwe~~ the bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands ~~1 550-1 555 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz~~.]

[**ADD**

S5.359A *Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Lithuania, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, Dem. People's Rep. of Korea, Romania, Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, the band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005. After this date, the fixed service may continue to operate on a secondary basis until 1 January 2015 at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed service systems in this band.]

MOD

S5.387 *Additional allocation:* in ~~Armenia,~~ Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, ~~Uzbekistan,~~ Kyrgyzstan, Slovakia, ~~the Czech Republic,~~ Romania, ~~Russian Federation,~~ Tajikistan~~,~~ and 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

S5.389F In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Israel, Mali, Syria and Tunisia, the use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services.

MOD

S5.390 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, ~~and~~ Suriname and Uruguay, 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 No. **S9.11A** and to the provisions of Resolution **716 (WRC-95)**.

SUP

S5.408

MOD

S5.412 *Alternative allocation:* in Azerbaijan, Bulgaria, Kyrgyzstan~~,~~ and 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

S5.415A *Additional allocation*: in India and 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~~ their national boundar~~y~~ies ~~from 1 January 2000~~.

MOD

S5.417 *Alternative allocation:* in ~~Germany and~~ Greece, the band 2 520-2 670 MHz is allocated to the fixed service on a primary basis.

MOD

S5.418 *Additional allocation:* in Bangladesh, Belarus, ~~China,~~ Rep. of Korea, India, Japan, Pakistan, ~~Russian Federation,~~ Singapore, Sri Lanka~~,~~ and Thailand, ~~and Ukraine~~ the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to provisions of Resolution **528 (WARC-92)**. The provisions of No. **S5.416** and Article **S21**, Table **S21-4**, do not apply to this additional allocation.

MOD

S5.420A *Additional allocation:* in India and 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 operation limited to within ~~its~~ their national boundar~~y~~ies ~~from 1 January 2000~~.

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, Dem Rep. of the Congo, Romania, Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen~~,~~ and Yugoslavia ~~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, ~~Kazakstan,~~ Mongolia, ~~Poland,~~ Kyrgyzstan, Romania~~,~~ and Turkmenistan ~~and Ukraine~~, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.430 *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Mongolia, ~~Poland,~~ Kyrgyzstan, Romania~~,~~ and 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

S5.437

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

S5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, ~~Morocco,~~ Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania~~,~~ and Turkmenistan ~~and Ukraine~~, the band 5 250-5 350 MHz is also allocated to the 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, Russian Federation, 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

S5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, ~~Kazakstan,~~ Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis.

MOD

S5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, ~~Kazakstan,~~ Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan. Slovakia, the Czech Republic, Romania, Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service 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, ~~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 Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, ~~and~~ Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, El Salvador, Ecuador, Spain, Guatemala, Japan, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, Democratic People's Republic of Korea, Sweden, Tanzania, ~~and~~ Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

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, Russian Federation, 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

S5.495 *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, Kyrgyzstan~~,~~ and 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 listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed 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 listed 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, 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,~~ Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom~~,~~ and 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

S5.509 *Additional allocation:* in Japan ~~and Pakistan~~ the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service 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~~,~~ and 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, Dem. Rep. of the Congo, Syria, Democratic People's Republic of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, 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 the 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, Russian Federation, 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

S5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, ~~Bulgaria,~~ Egypt, United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, the Islamic Republic of Iran, Israel, Jordan, ~~Kazakstan,~~ Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, Russian Federation, 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**).

MOD

S5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, ~~Bulgaria,~~ Georgia, ~~Kazakstan,~~ Mongolia, Uzbekistan, Kyrgyzstan, Russian Federation, 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**).

SUP

S5.551D

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 454-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 429 (Rev.1) **PLENARY MEETING**

Note by the Chairperson of Committee 4

ITU-R RECOMMENDATIONS CONTAINING TEXTS INCORPORATED BY REFERENCE IN THE RADIO REGULATIONS

DRAFT TABLE OF CONTENTS OF VOLUME 4 OF THE RADIO REGULATIONS (EDITION, 2000)

Attached is the draft table of contents of Volume 4 of the Radio Regulations (edition, 2000), which contains the provisional list of the ITU-R Recommendations containing texts incorporated by reference in the Radio Regulations.

The list will be completed on the basis of the decisions that may be taken in this regard by this conference.

Committee 5 and Working Group of the Plenary GT PLEN-1 were requested to inform Committee 4 on any decision which may lead to a change of the status of the ITU-R Recommendations containing texts incorporated by reference that are included in the attached list, as well as on the possible addition of new ITU-R Recommendations to this list. In accordance with the procedure in Document 201, the new ITU-R Recommendations containing texts that are proposed for incorporation by reference were available for consultation in office 0/13 of the Rumeli building, level 0, opposite to Rumeli A Room (Mr W. Frank, Mrs L. Trarieux). In addition, one copy was provided to each administration (Document 377).

Following the conference, the Radiocommunication Bureau and the General Secretariat shall review the decisions taken by this conference with a view to complete the list in accordance with Resolution 27 (Rev.WRC-2000) and to publish Volume 4 of the Radio Regulations accordingly.

H. RAILTON
Chairperson, Committee 4, Box 2895

VOLUME 4

ITU-R Recommendations incorporated by reference

Recommendation	Title	Provision No.[1]
ITU-R M.257-3	Sequential single frequency selective-calling system for use in the maritime mobile service	**S19.38**, S19.83, **S19.92**, **S19.96A**, S52.188, **S52.222.1**, **S52.235**, S54.2, AP S13, Part A5, § 11
ITU-R TF.460-5	Standard-frequency and time-signal emissions	**S1.14**
ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	**S19.83**, **S19.96A**, **S51.41**
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	**S51.77**, **S52.231**, **AP S13**, **Part A2, § 10 1)** AP S18, Note *e)*
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	**S52.27**, S56.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**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	S19.83, **S51.41**
ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	S19.83, **S51.41**
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	**AP S13, Part A5**, **§ 1 *b)*** and **4 2)** AP S15, Table S15-2, 121.5 MHz
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	AP S1, § 1 2) and **2 3.1)**
ITU-R SA.1154[2]	Provisions to protect the space research (SR), space operations (SO), and Earth-exploration satellite services (EES) and to facilitate sharing with the mobile service in the 2 025-2 110 MHz and 2 200-2 290 MHz bands	**S5.391**
ITU-R M.1169	Hours of service of ship stations	**S47.26**, **S47.27**, **S47.28**, **S47.29**, **S50.9**
ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	S51.71, **S52.23**, **S52.25**, **S52.31**, S52.32, S52.63, **S52.69**, **S55.1**

[1] This column is provided only for convenience to delegates so that they may trace the process of incorporation by reference and will not appear in Volume 4.

[2] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

ITU-R M.1171	Radiotelephony procedures in the maritime mobile service	S51.71, S52.192, **S52.195**, S52.213, **S52.224**, S52.234, **S52.240**, **S57.1**, **AP S13**, **Part A2, § 14A 1)**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	**S19.48**, S32.7, AP S13, Part A1, § 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	**S52.181**, **S52.229**, **AP S17**, **Part B, Section I**, **§ 2, 6** ***a)*** and ***b)***
ITU-R M.1174-1[3]	Characteristics of equipment used for on-board communications in the bands between 450 and 470 MHz	**S5.287**, **S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	**AP S13**, **Part A5**, **§ 9**
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	AP **S4**, **§ C.11** ***d)***
ITU-R S.1256[4]	Methodology for determining the maximum aggregate power flux-density at the geostationary-satellite orbit in the band 6 700-7 075 MHz from feeder links of non-geostationary satellite systems in the mobile-satellite service in the space-to-Earth direction	**S22.5A**
ITU-R BO.1293-1[5]	Protection masks and associated calculation methods for interference into broadcast satellite systems involving digital emissions	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**
ITU-R BO.1295	Reference transmit earth station antenna off-axis e.i.r.p. patterns for planning purposes to be used in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.5.3**
ITU-R BO.1296	Reference receive space station antenna patterns for planning purposes to be used for elliptical beams in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.7.3**

[3] Committee 5 has indicated in Document 229 that the updated version of the subject ITU-R Recommendation should be included.

[4] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[5] GT PLEN-1, in Document 426 proposes to incorporate by reference Recommendation ITU-R BO.1293-1.

ITU-R BO.1297	Protection ratios to be used for planning purposes in the revision of the Appendices 30 (Orb-85) and 30A (Orb-88) Plans of the Radio Regulations in Regions 1 and 3	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**
ITU-R S.1340[6]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the Earth-to-space direction in the band 15.4-15.7 GHz	**S5.511C**
ITU-R S.1341[7]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the space-to-Earth direction in the band 15.4-15.7 GHz and the protection of the radio astronomy service in the band 15.35-15.4 GHz	**S5.511A**

NOTE - Recommendations ITU-R IS.847-1, IS.848-1, IS.849-1 and M.1185-1, which appeared in Volume 4 of the Radio Regulations (1998 edition) will not appear in the forthcoming edition of Volume 4, bearing in mind the decisions of WRC-2000 related to Appendix S7.

Committee 5 and GT PLEN-1 decided to suppress the incorporation by reference of Recommendations ITU-R RA.769-1 AND BO.1213 respectively (see Documents 229 and 433)..

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6 This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

7 This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 455-E
27 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

B.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 **first reading:**

Source	**Document**	**Title**
COM 4	428	**ARTICLE S1** – S1.171 – S1.173 – S1.185 **ARTICLE S8** – S8.1.1 **ARTICLE S14** – S14.6 **ARTICLE S20** – S20.11 **ARTICLE S21** – S21.7 **APPENDIX S13** – Part A1, § 2 – Part A6, § 11 **APPENDIX S27** – Section II, Article 1 – Section II, Article 2, **S27**/222 **APPENDIX S42** – Call signs **RESOLUTION 25 (Rev.WRC-2000)** **RESOLUTION 28 (Rev.WRC-2000)** **RESOLUTION 60** **RESOLUTION 72 (Rev.WRC-2000)** **RESOLUTION 95 (Rev.WRC-2000)** **RESOLUTION 706 (Rev.WRC-2000)**

		RESOLUTION 716 (Rev.WRC-2000)
		RESOLUTION 727 (Rev.WRC-2000)
		RESOLUTION [COM4/1] (WRC-2000)
		RESOLUTION [COM4/3] (WRC-2000)
		RECOMMENDATION 105 (WRC-95)
		RECOMMENDATION 711
COM 4	440	**APPENDIX S4, Annex 1A**
		APPENDIX S4, Annex 1B
		RESOLUTION 8 (Rev.Mob-87)
		RESOLUTION 14
		RESOLUTION 23 (WRC-95)
		RESOLUTION 24 (WRC-95)
		RESOLUTION 30 (WRC-97)
		RESOLUTION 50 (WRC-97)
		RESOLUTION 52 (WRC-97)
		RESOLUTION 54 (WRC-97)
		RESOLUTION 70 (WARC-92)
		RESOLUTION 406
		RESOLUTION 411 (WARC-92)
		RESOLUTION 412 (WARC-92)
		RESOLUTION 500
		RESOLUTION 703 (Rev.WRC-2000)
		RESOLUTION 721 (WRC-97)
		RECOMMENDATION 32 (Orb-88)
		RECOMMENDATION 61
		RECOMMENDATION 405
		RECOMMENDATION 518 (HFBC-87)
		RECOMMENDATION 720 (WRC-95)

Annex: 40 pages

ARTICLE S1

Terms and definitions

MOD

S1.171 *coordination area:* When determining the need for coordination, the area surrounding an *earth station* sharing the same frequency band with *terrestrial stations*, or surrounding a transmitting *earth station* sharing the same bidirectionally allocated frequency band with receiving *earth stations*, beyond which the level of *permissible interference* will not be exceeded and coordination is therefore not required.

MOD

S1.173 *coordination distance:* When determining the need for coordination, the distance on a given azimuth from an *earth station* sharing the same frequency band with *terrestrial stations*, or from a transmitting *earth station* sharing the same bidirectionally allocated frequency band with receiving *earth stations*, beyond which the level of *permissible interference* will not be exceeded and coordination is therefore not required.

MOD

S1.185 *inclination of an orbit* (of an earth satellite)*:* The angle determined by the plane containing the *orbit* and the plane of the Earth's equator measured in degrees between 0 and 180 and in counter-clockwise direction from the Earth's equatorial plane at the ascending node of the *orbit*.

ARTICLE S8

Status of frequency assignments recorded in the Master International Frequency Register

MOD

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[1] **S8.1.1** 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 Register. Additionally, wherever the expression relates to a geostationary or non-geostationary space station, it shall be associated with § A.4 of Annex 2A to Appendix **S4**, as relevant, and wherever the expression relates to an earth station associated with a geostationary or non-geostationary space station, it shall be associated with § A.4 *c)* of Annex 2A to Appendix **S4**, as relevant.

ARTICLE S14

Procedure for the review of a finding or other decision of the Bureau

MOD

S14.6 The decision of the Board on the review, to be taken in accordance with the Convention, shall be regarded as final in so far as the Bureau and the Board are concerned. That decision, together with the supporting information, shall be published as under No. **S14.4**. If the 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. However, if the administration which requested the review disagrees with the Board's decision it may raise the matter at a world radiocommunication conference.

ARTICLE S20

Service documents

SUP

S20.11

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

MOD

S21.7 5) Transhorizon systems in the 1 700-1 710 MHz, 1 980-2 010 MHz, 2 025-2 110 MHz and 2 200-2 290 MHz bands may exceed the limits given in Nos. **S21.3** and **S21.5**, but the provisions of Nos. **S21.2** and **S21.4** should be observed. Considering the difficult sharing conditions with other services, administrations are urged to keep the number of transhorizon systems in these bands to a minimum.

APPENDIX S13*

Distress and safety communications (non-GMDSS)

(see Article **S30**)

Part A1 – General provisions

MOD

§ 2 The procedure specified in this Appendix is obligatory in the maritime mobile-satellite service and for communications between stations on board aircraft and stations of the maritime mobile-satellite service, where this service or stations of this service are specifically mentioned. Paragraphs 1, 3 3), 6 of Part A3, and paragraphs 3 1), 3 4) and 14 1) of Part A4 are also applicable.

Part A6 – Special services relating to safety

Section IV – Narrow-band direct-printing telegraphy system for transmission of navigational and meteorological warnings and urgent information to ships (NAVTEX)

MOD

§ 11 In addition to existing methods, navigational and meteorological warnings and urgent information shall be transmitted by means of narrow-band direct-printing telegraphy, with forward error correction, by selected coast stations.

MOD

APPENDIX S27*

Frequency allotment Plan for the aeronautical mobile (R) service and related information

(See Article **S43**)

Section II – Allotment of frequencies in the aeronautical mobile (R) service

ARTICLE 1

Area	Frequency bands (MHz)										
	3	**3.5**	**4.7**	**5.4 (Reg. 2)**	**5.6**	**6.6**	**9**	**10**	**11.3**	**13.3**	**18**
	kHz	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**
2	2 938 2 950		4 696		5 556	6 583 6 601	8 846 8 855 8 888	10 015 10 045	11 297 11 360 11 390	13 321 13 357	17 964

ARTICLE 2

S27/222 Band **5 450-5 480 kHz (Reg. 2)** **5.4 MHz**

Frequency (kHz)	Authorized area of use*	Remarks*
1	**2**	**3**
5 466	R l0B 13I	

MOD

APPENDIX S42

Table of allocation of international call sign series

Call sign series	Allocated to
VSA-VSZ	United Kingdom of Great Britain and Northern Ireland

MOD

RESOLUTION 25 (Rev.WRC-2000)

Operation of global satellite systems for personal communications

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in accordance with No. 6 of its Constitution (Geneva, 1992), one of the purposes of the Union is "to promote the extension of the benefits of the new telecommunication technologies to all the world's inhabitants";

b) that, to this end, the Union is fostering the use of new technologies in telecommunications and is studying questions relating to this use in the Radiocommunication and the Telecommunication Standardization Sectors;

c) that the Telecommunication Development Sector is studying questions aimed at identifying the benefits that developing countries may derive from using new technologies;

d) that, among these new technologies, constellations of low-Earth orbit satellites may provide global coverage and facilitate low-cost communications;

e) that the theme "global mobile personal communications by satellite" (GMPCS) was discussed at the first World Telecommunication Policy Forum established by Resolution 2 (Kyoto, 1994) of the Plenipotentiary Conference;

f) that Council Resolution 1116 instructs the Secretary-General to act as depositary of the GMPCS Memorandum of Understanding (MoU) and its Arrangements, to act as the registry for type-approval procedures and terminal types and to authorize the use of the abbreviation "ITU" as part of the GMPCS-MoU mark;

g) Recommendations ITU-R M.1343 and ITU-R M.1480 on the essential technical requirements of GMPCS earth stations that should be used by administrations as a common technical basis facilitating the global circulation and use of such GMPCS terminals in conformity with these Recommendations,

recognizing

a) that the spectrum available to global satellite systems for personal communications is limited;

b) that successful coordination does not in any way imply licensing authorization to provide a service within the territory of a Member State,

considering further

that other countries intending to use these systems should be guaranteed that they will be operated in accordance with the Constitution, the Convention and the Administrative Regulations,

noting

a) that the Constitution recognizes the sovereign right of each State to regulate its telecommunications;

b) that the International Telecommunication Regulations "recognize the right of any Member, subject to national law and should it decide to do so, to require that administrations and private operating agencies, which operate in its territory and provide an international telecommunication service to the public, be authorized by that Member", and specifies that "within the framework of the present Regulations, the provision and operation of international telecommunication services in each relation is pursuant to mutual agreement between administrations";

c) that Article **S18** specifies the authorities for licensing the operation of stations within any given territory;

d) the right of each Member State to decide on its participation in these systems, and the obligations for entities and organizations providing international or national telecommunication services by means of these systems to comply with the legal, financial and regulatory requirements of the administrations in whose territory these services are authorized,

resolves

that administrations licensing global satellite systems and stations intended to provide public personal communications by means of fixed, mobile or transportable terminals shall ensure, when licensing these systems and stations, that they can be operated only from the territory or territories of administrations having authorized such service and stations in compliance with Articles **S17** and **S18**, in particular No. **S18.1**,

requests administrations

1 to continue cooperating with worldwide satellite system operators in improving the established arrangements for the provision of service within their territories and with the Secretary-General in implementing the GMPCS-MoU and its Arrangements;

2 to participate actively in the ITU-R studies in developing and improving relevant Recommendations,

reminds operators of such systems

to take account, when contracting agreements on the operation of their systems from the territory of a country, of any potential loss of revenue that the country may suffer from a possible reduction of its international traffic existing at the time such agreements are executed.

MOD

RESOLUTION 28 (Rev.WRC-2000)

Revision of references to the text of ITU-R Recommendations incorporated by reference in the Radio Regulations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the Voluntary Group of Experts on simplification of the Radio Regulations (VGE) proposed the transfer of certain texts of the Radio Regulations to other documents, especially to ITU-R Recommendations, using the incorporation by reference procedure;

b) that, in some cases, the provisions of the Radio Regulations imply an obligation on Member States to conform to the criteria or specifications incorporated by reference;

c) that references to incorporated texts shall be explicit and shall refer to a precisely identified provision (see Resolution **27 (Rev.WRC-2000)**);

d) that all texts of ITU-R Recommendations incorporated by reference are published in a volume of the Radio Regulations;

e) that, taking into account the rapid evolution of technology, ITU-R may revise the ITU-R Recommendations containing text incorporated by reference at short intervals;

f) that, following revision of an ITU-R Recommendation containing text incorporated by reference, the reference in the Radio Regulations shall continue to apply to the earlier version until such time as a competent WRC agrees to incorporate the new version;

g) that it would be desirable that texts incorporated by reference reflect the most recent technical developments,

noting

that administrations need sufficient time to examine the potential consequences of changes to ITU-R Recommendations containing text incorporated by reference and would therefore benefit greatly from being advised, as early as possible, of which ITU-R Recommendations have been revised and approved during the elapsed study period,

resolves

1 that each Radiocommunication Assembly shall communicate to the following WRC a list of the ITU-R Recommendations containing text incorporated by reference in the Radio Regulations which have been revised and approved during the elapsed study period;

2 that, on this basis, WRC should examine those revised ITU-R Recommendations, and decide whether or not to update the corresponding references in the Radio Regulations;

3 that, if WRC decides not to update the corresponding references, the currently referenced version shall be maintained in the Radio Regulations;

4 that recommended agendas for future world radiocommunication conferences should include a standing agenda item for the examination of the ITU-R Recommendations, in application of this resolution,

instructs the Director of the Radiocommunication Bureau

to provide the CPM immediately preceding each WRC with a list, for inclusion in the CPM Report, of those ITU-R Recommendations containing texts incorporated by reference that have been revised or approved since the previous WRC, or that may be revised in time for the following WRC,

urges administrations

1 to participate actively in the work of the radiocommunication study groups and the Radiocommunication Assembly on revision of those Recommendations to which mandatory references are made in the Radio Regulations;

2 to examine any indicated revisions of ITU-R Recommendations containing text incorporated by reference and to prepare proposals on possible updating of relevant references in the Radio Regulations.

SUP

RESOLUTION 60

Relating to information on the propagation of radio waves used in the determination of the coordination area

MOD

RESOLUTION 72 (Rev.WRC-2000)

Regional preparations for world radiocommunication conferences

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that many regional telecommunication organizations have coordinated their preparations for WRC-2000;

b) that many 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 Member States 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,

recognizing

a) *resolves* 2 of Resolution 80 (Minneapolis, 1998) of the Plenipotentiary Conference:

“to support the regional harmonization of common proposals, as stated in Resolution 72 (WRC-97), for submission to world radiocommunication conferences”;

b) *resolves* 3 of Resolution 80 (Minneapolis, 1998) of the Plenipotentiary Conference:

“to encourage both formal and informal collaboration in the interval between conferences with a view to resolving differences on new, or conference agenda issues”,

noting

a) that at the World Telecommunication Development Conference (Valletta, 1998) many regional telecommunication organizations expressed the need for the Union to cooperate more closely with regional telecommunication organizations;

b) that, consequently, the Plenipotentiary Conference (Minneapolis, 1998) resolved that the Union should develop stronger relations with regional telecommunication organizations;

c) that the Radiocommunication Assembly (Istanbul, 2000) adopted Resolution ITU-R 48 which sought a strengthening of the regional presence in ITU-R study group work, including WRC-related studies,

further noting

that in some regions the relationship with the ITU-D regional offices has proved to be of great benefit,

resolves to instruct the Director of the Radiocommunication Bureau

a) to continue consulting 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:

– organization of regional preparatory meetings;

– organization of information sessions, preferably before and after the second session of the Conference Preparatory Meeting;

– development of coordination methods;

– identification of major issues to be resolved by the future world radiocommunication conference;

– facilitation of regional and interregional informal and formal meetings, with the objective of reaching a convergence of interregional views on major issues;

b) pursuant to Resolution ITU-R 2-3 of the Radiocommunication Assembly on the CPM, to assist in ensuring that overview presentations of the chapters of the CPM Report will be made by the CPM management at an early stage in the CPM session, as part of the regularly scheduled meetings, in order to help all participants understand the contents of the CPM report;

c) to submit a report on the results of such consultations to both the next plenipotentiary conference and WRC-03,

invites the Director of the Telecommunication Development Bureau

to collaborate with the Director of the Radiocommunication Bureau in implementing this resolution.

MOD

RESOLUTION 95 (Rev.WRC-2000)

General review of the resolutions and recommendations of world administrative radio conferences and world radiocommunication conferences

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that it is important to keep the resolutions and recommendations of past world administrative radio conferences and world radiocommunication conferences under constant review, in order to keep them up to date;

b) that the reports of the Director of the Radiocommunication Bureau submitted to previous conferences provided a useful basis for a general review of the resolutions and recommendations of past conferences;

c) that some principles and guidelines are necessary for future conferences to treat the resolutions and recommendations of previous conferences which are not related to the agenda of the conference,

resolves to invite future competent world radiocommunication conferences

1 to review the resolutions and recommendations of previous conferences that are related to the agenda of the conference with a view to their possible revision, replacement or abrogation and to take appropriate action;

2 to review the resolutions and recommendations of previous conferences that are not related to any agenda item of the conference with a view to:

– abrogating those resolutions and recommendations that have served their purpose or have become no longer necessary;

– updating and modifying resolutions and recommendations, or parts thereof that have become out of date, and to correct obvious omissions, inconsistencies, ambiguities or editorial errors and effect any necessary alignment;

3 at the beginning of the conference, to determine which committee within the conference has the primary responsibility to review each of the resolutions and recommendations referred to in *resolves* 1 and 2 above,

instructs the Director of the Radiocommunication Bureau

1 to conduct a general review of the resolutions and recommendations of previous conferences and, after consultation with the Radiocommunication Advisory Group and the chairpersons and vice-chairpersons of the radiocommunication study groups, submit a report to the second session of the Conference Preparatory Meeting in respect of *resolves* 1 and *resolves* 2;

2 if practicable, to include in the above report an indication of the agenda item, if appropriate, and possible responsible committees within the conference for each text, based on the available information as to the possible structure of the conference,

invites the Conference Preparatory Meeting

to include, in its report, the results of a general review of the resolutions and recommendations of previous conferences.

MOD

RESOLUTION 706 (Rev.WRC-2000)

Operation of the fixed service in the band 90-110 kHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) the need to protect phased pulse hyperbolic radionavigation systems (Loran-C) operating in the band 90-110 kHz used as a safety service for both maritime and aeronautical services;

b) the studies made by the ITU-R in this band;

c) that harmful interference affecting safety of flight and ship navigation may be caused to this service by the operation of the fixed service having a secondary allocation in this band;

d) that, the World Administrative Radio Conference for the Mobile Services (Geneva, 1987) (Mob-87) removed the allocation for the maritime mobile service from this band,

noting

that Mob-87 was not competent to affect significantly the allocation of the fixed service,

resolves

to invite the next competent conference to review the fixed service allocation in this band with a view to its possible deletion.

MOD

RESOLUTION 716 (Rev.WRC-2000)

Use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the fixed and mobile-satellite services and associated transition arrangements

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WARC-92 allocated the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the mobile-satellite service with a date of entry into force of 1 January 2005, these allocations being co-primary with fixed and mobile service allocations;

b) that the use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service (MSS), in accordance with the provisions of Nos. **S5.389A**, **S5.389C** and **S5.389D** of the Radio Regulations, as adopted by WRC-95 and WRC-97, is subject to a date of entry into force of 1 January 2000, 1 January 2002 (for Region 2) or 1 January 2005;

c) that these bands are shared with the fixed and mobile[1] services on a primary basis and that they are widely used by the fixed service in many countries;

d) that the studies made have shown that, while sharing of the MSS with the fixed service in the short to medium term would be generally feasible, in the long term sharing will be complex and difficult in both bands, so that it would be advisable to transfer the fixed service stations operating in the bands in question to other segments of the spectrum;

e) that for many developing countries, the use of the 2 GHz band offers a substantial advantage for their radiocommunication networks and that it is not attractive to transfer these systems to higher frequency bands because of the economic consequences that this would entail;

f) that ITU-R has developed a new frequency plan for the fixed service in the 2 GHz band, set out in Recommendation ITU-R F.1098 which will facilitate the introduction of new fixed service systems in band segments that do not overlap with the above-mentioned MSS allocations at 2 GHz;

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[1] This resolution does not apply to the mobile service. In this respect, the use of these bands by the mobile-satellite service is subject to coordination with the mobile service under the provisions of Resolution **46 (Rev.WRC-97)** or No. **S9.11A**, as applicable.

g) that sharing between fixed service systems using tropospheric scatter and Earth-to-space links in the MSS in the same frequency band segments is generally not feasible;

h) that some countries utilize these bands in application of Article 48 of the Constitution (Geneva, 1992),

recognizing

a) that WARC-92 identified the bands 1 885-2 025 MHz and 2 110-2 200 MHz for worldwide use by International Mobile Telecommunications-2000 (IMT-2000), the satellite component being limited to the bands 1 980-2 010 MHz and 2 170-2 200 MHz, and that the development of IMT-2000 can offer great potential in helping the developing countries develop more rapidly their telecommunication infrastructure;

b) that WARC-92 resolved to request the Telecommunication Development Bureau (BDT), when formulating its immediate plans for assistance to the developing countries, to consider the introduction of specific modifications in the radiocommunication networks of the developing countries and that a future world development conference should examine the needs of developing countries and should assist them with the resources needed to implement the required modifications to their radiocommunication networks,

resolves

1 to request administrations to notify to the Radiocommunication Bureau the basic characteristics of frequency assignments to existing or planned fixed stations requiring protection, or those typical[2] of existing and planned fixed stations brought into use before 1 January 2000 in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2;

2 that administrations proposing to bring an MSS system into service must take account of the fact that, when coordinating their system with administrations having terrestrial services, such administrations may have existing or planned installations covered by Article 48 of the Constitution;

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[2] With respect to the notification of frequency assignments to stations in the fixed and mobile services, it was possible to notify the characteristics of typical stations in the fixed service in accordance with No. **S11.17** without restriction up until 1 January 2000.

3 that in respect of stations of the fixed service taken into account in the application of Resolution **46 (Rev.WRC-97)/S9.11A**, administrations responsible for MSS networks operating in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 shall ensure that unacceptable interference is not caused to fixed service stations notified and brought into use before 1 January 2000;

4 that to facilitate the introduction and future use of the 2 GHz bands by the MSS:

4.1 administrations are urged to ensure that frequency assignments to new fixed service systems, to be brought into operation after 1 January 2000, do not overlap with the 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 MSS allocations, for example by using the channel plans of Recommendation ITU-R F.1098;

4.2 administrations are urged to take all practicable steps to phase out troposcatter systems operating in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2 by 1 January 2000. New troposcatter systems shall not be brought into operation in these bands;

4.3 administrations are encouraged, where practicable, to draw up plans for the gradual transfer of the frequency assignments to their fixed service stations in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 to non-overlapping bands, giving priority to the transfer of their frequency assignments in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2, considering the technical, operational and economical aspects;

5 that administrations responsible for the introduction of mobile-satellite systems should take into account and address the concerns of affected countries, especially developing countries, to minimize the possible economic impact of transition measures in respect to existing systems;

6 to invite the Bureau to provide assistance to developing countries requesting it for the introduction of specific modifications to their radiocommunication networks that will facilitate their access to the new technologies being developed in the 2 GHz band as well as in all coordination activities;

7 that administrations responsible for the introduction of mobile-satellite systems urge their mobile-satellite system operators to participate in the protection of terrestrial fixed services especially in the least developed countries,

invites ITU-R

to conduct, as a matter of urgency, further studies, in conjunction with the Bureau, to:

– develop and provide to administrations the necessary tools in a timely manner and not later than WRC-03 to assess the impact of interference in the detailed coordination of mobile-satellite systems;

– develop the necessary planning tools as soon as possible to assist those administrations considering a replanning of their terrestrial fixed networks in the 2 GHz range not later than WRC-03,

invites ITU-D

to evaluate, as a matter of urgency, the financial and economic impact on the developing countries of the transfer of fixed services, and to present its results to a future competent world radiocommunication conference and/or world telecommunication development conference,

invites the Director of the Telecommunication Development Bureau

to implement *invites ITU-D* by encouraging joint activities between the relevant study groups of both ITU-D and ITU-R,

instructs the Director of the Radiocommunication Bureau

to submit a report on the implementation of this resolution to world radiocommunication conferences.

MOD

RESOLUTION 727 (Rev.WRC-2000)

Use of the frequency band 420-470 MHz by the earth exploration-satellite (active) service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the United Nations Conference on Environment and Development (UNCED) (Rio de Janeiro, 1992) identified an urgent need for assessment and systematic observations of forest cover and rate of forest degradation in tropical and temperate regions;

b) that, during WRC-97, many countries agreed to the principle that ITU should take action in response to the need identified by UNCED;

c) that frequencies around 450 MHz have been identified as having the unique capability to penetrate the canopy of forests and to determine the ground-trunk interaction;

d) that a bandwidth of about 6 MHz is considered necessary to provide the required resolution,

recognizing

a) that WRC-97 considered a proposal for a secondary allocation for the earth exploration-satellite (active) service within the frequency band 432-438 MHz;

b) that CPM-97 concluded that spaceborne sensors cannot be considered technically compatible with terrestrial tracking radars without restriction on the spaceborne sensors;

c) that measures may be needed to minimize interference to fixed, mobile, mobile-satellite, amateur, amateur-satellite and space operation services,

resolves

1 to invite ITU-R to study, as a matter of urgency, emission criteria, specific sharing criteria and operational characteristics for active spaceborne sensors in the frequency band 420-470 MHz, and develop a relevant Recommendation;

2 to invite ITU-R to develop an ITU-R Report by the date of a future Conference Preparatory Meeting on the specific emission and operational characteristics used by the Earth exploration-satellite (active) service in order to minimize the potential interference to existing services, and in order to support the selection of a frequency band having the optimal sharing scenarios;

3 that, on the basis of proposals from administrations, and taking into account the results of the ITU-R studies, the ITU-R Report mentioned in *resolves* 2, and a future CPM Report, a future competent world radiocommunication conference should consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite (active) service in the frequency band 420-470 MHz.

ADD

RESOLUTION [COM4/1] (WRC-2000)

Process to keep the technical bases of Appendix S7 current

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that Appendix **S7** to the Radio Regulations provides the method for the determination of the coordination area of an earth station, and the assumed technical coordination parameters for unknown terrestrial stations or earth stations;

b) that the technical coordination parameters are contained in Tables 7, 8 and 9 of Annex 7 to Appendix **S7**;

c) that the technical coordination parameter tables are based on Recommendation ITU-R SM.1448;

d) that ITU-R studies on methods for the determination of the coordination area of an earth station are continuing, and the conclusions of these studies could lead to revision of Appendix **S7**; these methods under study are:

– methods considering the cumulative impact in determining the coordination areas for high-density earth stations (fixed and mobile);

– methods to address the modelling of VHF/UHF frequencies for percentages of time less than 1%;

– methods to address propagation mode (2) water vapour density for both radio climatic Zones B and C;

– refinements to propagation mode (2) to address elevation angle dependency and the displacement of the centre of the propagation mode (2) contour from the coordinating earth station;

e) that the technical coordination parameter tables may also need to be modified when changes are made to the Table of Frequency Allocations at future WRCs, or due to changes in technology or in applications;

f) that the technical coordination parameter tables do not include values for all the necessary parameters of certain space radiocommunication services and terrestrial radiocommunication services sharing frequency bands with equal rights,

recognizing

a) that Recommendation ITU-R SM.1448 was developed by ITU-R as a basis for the revision of Appendix **S7**;

b) that there is a need for future WRCs to keep Appendix **S7** current with the latest techniques and to ensure protection of other radiocommunication services sharing the same frequency bands with equal rights, particularly through revision of the tables of technical coordination parameters,

invites ITU-R

1 to continue its study, as required, of the technical bases used for determination of the coordination area of an earth station, including recommended values for the missing entries in the tables of technical coordination parameters (Annex 7 to Appendix **S7**);

2 to maintain the relevant ITU-R texts in a format which would facilitate the future revision of Appendix **S7**;

3 to assess the significance of any changes to the technical bases,

resolves

1 that when ITU-R concludes, based on its studies of the methods in *considering d)* for determination of the coordination area of an earth station and/or the values of technical coordination parameters, that a revision of Appendix **S7** is warranted, the matter shall be brought to the attention of the Radiocommunication Assembly;

2 that, if the Radiocommunication Assembly confirms the improvements of the methods in *considering d)* for determination of the coordination area of an earth station and/or the values of technical coordination parameters which have been presented by ITU-R, the Director of the Radiocommunication Bureau shall identify the matter in the Director’s report to the following WRC,

invites

1 WRCs, when presented with any significant changes through the Director’s report, to consider the revision of Appendix **S7** in light of the recommendation of the Radiocommunication Assembly, pursuant to *resolves* 1 and 2 above;

2 each WRC, when modifying the Table of Frequency Allocations, to consider any consequential changes that may be required to the technical coordination parameters of Annex 7 to Appendix **S7** and, if necessary, request ITU-R to study the matter.

ADD

RESOLUTION [COM4/3] (WRC-2000)

Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that there is a demand for global wideband satellite communication services on vessels;

b) that the technology exists that enables earth stations on board vessels (ESVs) to use fixed-satellite service (FSS) networks operating in the 3 700-4 200 MHz and 5 925-6 425 MHz bands;

c) that ESVs have the potential to cause unacceptable interference to other services in the band 5 925-6 425 MHz;

d) that ESVs operating in these bands require considerably less than the full bandwidth in this FSS allocation and only a portion of the visible geostationary arc;

e) that there are a limited number of geostationary FSS systems that have global coverage;

f) that the number of vessels equipped with ESVs may be such as to place a heavy coordination burden on some administrations, especially those in developing countries;

g) that in order to ensure the protection and future growth of other services, ESVs shall operate with requisite technical and operational constraints;

h) that, based on appropriate assumptions, a minimum distance can be calculated beyond which an ESV will not have the potential to cause unacceptable interference to other services in this band,

noting

a) that ESVs may operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz under No. **S4.4** of the Radio Regulations and shall not claim protection from, nor cause interference to, other services having allocations in the band;

b) that operation within territorial waters is at the discretion of the administration with territorial authority, in which case the relevant procedures of that administration will apply;

c) that operation of ESVs from specified fixed points at locations outside territorial waters but for which an administration has jurisdiction is fully within the FSS,

recognizing

a) that progress has been made within ITU-R in determining the technical and operational provisions under which ESVs could operate;

b) that further studies are needed,

resolves

1 to invite ITU-R to continue to study, as a matter of urgency, the regulatory, technical and operational constraints to be applied to ESV operations, having regard to the provisional guidelines for ESV use in Annex 1 and the provisional technical guidelines given in Annex 2 and, in particular, to determine the appropriate value for the minimum distance from the coast of any administration beyond which ESVs are assumed not to have the potential to cause unacceptable interference to stations of other services of that administration and beyond which no coordination would be required;

2 to invite ITU-R, as a matter of urgency:

– to develop Recommendations on methods for coordination between terrestrial services and ESVs;

– to study the feasibility of mitigation techniques, such as various frequency arrangements or dual-band systems, as a way to avoid the need for detailed coordination of ESVs without constraining existing services;

– to study, as a complement to the 3 700-4 200 MHz and 5 925-6 425 MHz bands, the use of other FSS allocations for ESVs transmitting in the 6 GHz and 14 GHz bands;

3 to invite WRC-03 to assess, in the light of these studies, the provisions under which ESVs could operate in FSS networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz, without causing unacceptable interference to radiocommunication services operating in accordance with the Radio Regulations;

4 that, until a decision is adopted for ESVs by WRC-03, agreement between the administrations licensing ESVs and affected administrations should be reached on a bilateral or multilateral basis, in accordance with the guidelines in Annexes 1 and 2;

5 that, until a decision is adopted for ESVs by WRC-03, administrations licensing ESVs that enter into bilateral or multilateral agreements under *resolves* 4 should ensure that, as part of the licensing process, ESVs operate in compliance with such agreements, taking into consideration the interests of concerned neighbouring countries,

encourages concerned administrations

to cooperate with administrations which license ESVs while seeking agreement under *resolves* 4,

encourages ESV licensing administrations

to consider registering their ESV frequency assignments in the Master International Frequency Register, for information purposes only,

urges all administrations

to participate actively in the above-mentioned studies by submitting contributions,

instructs the Secretary-General

to bring this resolution to the attention of the Secretary-General of the International Maritime Organization and to invite IMO to participate in the work on this issue.

ANNEX 1 TO RESOLUTION [COM4/3] (WRC-2000)

Provisional guidelines for ESV use

1 The administration that issues the licence for the use of ESVs in these bands (licensing administration) shall ensure that such stations do not cause unacceptable interference to the services of other concerned administrations.

2 Operators of ESVs shall comply with the technical guidelines listed in Annex 2 and/or those agreed by the licensing and concerned administrations.

3 ESVs shall not claim protection from transmissions of other services operating in accordance with the Radio Regulations.

4 Any transmissions from ESVs within an agreed distance* of any given coast shall be based upon the prior agreement of the concerned administration.

5 Administrations which issue ESV licences shall ensure that ESV operators endeavour to provide the necessary assistance to the concerned administrations in order to facilitate the agreement.

6 Administrations, in determining the distance referred to in item 4 above, are encouraged to exclude those parts of their territory, such as remote small islands, where other services in the band 5 925-6 425 MHz are neither operating nor planned.

7 If an administration changes its actual or planned deployment of stations in other services, it may require revision of the agreement with the ESV licensing administration(s).

8 The ESV system should include means of identification and automatic mechanisms to terminate transmissions whenever the station operates outside its authorized geographic (see item 4 above) or operational limits.

9 ESVs should be equipped so as to enable the licensing administration under the provisions of Article **S18** to verify earth station performance and to terminate ESV transmissions immediately upon request by an administration whose services may be affected.

10 When ESVs operating beyond the territorial waters but within a specified distance (as referred to in item 4 above) of the coast of an administration fail to comply with the terms required by that administration pursuant to items 2 and 4, then that administration may:

– request the ESV to comply with such terms or cease operation immediately; or

– request the licensing administration to require such compliance or immediate cessation of the operation.

11 Any licensing authority that licenses ESVs should maintain at all times a point of contact that may be contacted by a concerned administration.

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* The distance is a minimum distance from the coast of an administration beyond which ESVs are assumed not to have the potential to cause unacceptable interference to fixed service stations of that administration and beyond which no coordination is required.

ANNEX 2 TO RESOLUTION [COM4/3] (WRC-2000)

Provisional technical guidelines applicable to ESVs operating in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

Minimum diameter of ESV antenna:	2.4 m
Maximum half-power beamwidth of ESV antenna:	1.5º
Minimum elevation angle of ESV antenna:	10°
Maximum necessary bandwidth per vessel:	2.346 MHz
Maximum necessary bandwidth in a single operating area:	36 MHz (see Note)
Maximum ESV transmitter power spectral density at the input to the antenna:	17 dB(W/MHz)
Tracking accuracy of ESV antenna:	0.2º

NOTE - The actual bandwidth required in an operating area will depend on the number of ESVs that would be present simultaneously in that area, and in many areas the required bandwidth will be less than 36 MHz. In addition, because ESVs are frequency agile, the necessary bandwidth per vessel (2.346 MHz) can be generally identified anywhere within the 4/6 GHz bands and does not have to be contiguous with bandwidth of other ESVs.

SUP

RECOMMENDATION 105 (WRC-95)

Further work by ITU-R on determination of the coordination area around earth stations operating with geostationary-satellite networks in the fixed-satellite service and earth stations providing feeder links to non-geostationary-satellite networks in the mobile-satellite service operating in opposite directions of transmission

SUP

RECOMMENDATION 711

Relating to the coordination of earth stations

APPENDIX S4

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter SIII

ANNEX 1A

List of characteristics of stations in the terrestrial services[1]

MOD

ITEM B – Notifying administration

Symbol of the notifying administration.

MOD

ITEM SYNC – Synchronized network

Symbol followed by the identification of the network, if the station concerned by the assignment pertains to a synchronized network.

ADD

ITEM 1AA – Usable frequency range

For MF/HF adaptive systems, the difference between the maximum and minimum assignable frequencies of a distinct frequency band.

SUP

ITEM 1D

MOD

ITEM 1E – Frequency offset, in terms of the line frequency

The carrier frequency offset expressed as a multiple of 1/12 of the line frequency of the television system concerned, expressed by a number (positive or negative).

ADD

ITEM 1E1 – Frequency offset (kHz)

The carrier frequency offset, in kHz, expressed by a number (positive or negative).

SUP

ITEM 1H

MOD

ITEM 3A – Call sign or station identification

The call sign or other identification used in accordance with Article **S19**.

MOD

ITEM 4A – Name of the location of the transmitting station

The name of the locality by which the transmitting station is known or in which it is situated.

MOD

ITEM 4B – Country or geographical area

Symbol of the geographical area in which the station is located.

SUP

ITEM 4F

MOD

ITEM 5A – Name of the location of the receiving station

The name of the locality by which the receiving station is known or in which it is situated.

MOD

ITEM 5B – Country or geographical area

Symbol of the geographical area in which the receiving station is located.

ADD

ITEM 7A1 – Frequency stability

Frequency stability for analogue television (RELAXED, NORMAL or PRECISION).

MOD

ITEM 7AA – Type of modulation

For HF broadcasting stations in their exclusive bands, a symbol which specifies the use of DSB, SSB or any new modulation techniques recommended by ITU-R.

ADD

ITEM 7B1 – Adjacent channel protection ratio

For assignments to stations of the broadcasting service covered by the LF/MF Broadcasting Agreement (Regions 1 and 3) (Geneva, 1975), the protection ratio (dB) to be used for adjacent channel interference calculations.

MOD

ITEM 7D – Transmission system

Symbol corresponding to the transmission system for an assignment to a VHF sound broadcasting station.

MOD

ITEM 8A – Power delivered to the antenna

The power delivered to the antenna transmission line expressed in dBW, with the exception of LF/MF sound broadcasting, for which the power delivered to the antenna shall be expressed in kW.

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**.

ADD

ITEM 8BA – Range of power control

In the case of systems where automatic power control is applied, the range of power control (dB) above the nominal power indicated in 8B.

MOD

ITEM 8BH – Maximum effective radiated power (dBW) – horizontal

The maximum effective radiated power of the horizontally polarized component (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments).

MOD

ITEM 8BV – Maximum effective radiated power (dBW) – vertical

The maximum effective radiated power of the vertically polarized component (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments).

MOD

ITEM 8D – Vision/sound power ratio

Vision/sound carrier power ratio for VHF/UHF analogue television broadcasting (BT) assignments.

MOD

ITEM 9A – Azimuth of maximum radiation

For a directional transmitting antenna, the azimuth of maximum radiation of the transmitting antenna in degrees (clockwise) from True North.

MOD

ITEM 9AA – Central azimuth of augmentation

The central azimuth of the augmentation (centre of the span) in degrees for an assignment to an MF broadcasting station in Region 2.

MOD

ITEM 9CA – Total span of augmentation

The total span of the augmentation in degrees for an assignment to an MF broadcasting station in Region 2.

SUP

ITEM 9H

MOD

ITEM 9I – Maximum radiation or r.m.s. value of radiation

The maximum radiation, in dB, relative to a cymomotive force (c.m.f.) of 300 V or an effective monopole radiated power (e.m.r.p.) of 1 kW, determined from the nominal power of the transmitter and the theoretical gain of the antenna without allowing for miscellaneous losses.

For assignments to stations of the broadcasting service covered by the MF Broadcasting Agreement (Region 2) (Rio de Janeiro, 1981), the product of the r.m.s. characteristic field strength, calculated in the horizontal plane, and the square root of the power.

ADD

ITEM 9L – Maximum effective radiated power (dB(kW))

The maximum effective radiated power, expressed in dB relative to an e.r.p. of 1 kW on a short vertical antenna.

SUP

ITEM 9N

MOD

ITEM 9NH – Attenuation (dB) of the horizontally polarized component at different azimuths

The value of attenuation of the horizontally polarized component in the horizontal plane at different azimuths, with respect to the maximum e.r.p. of this component, expressed in dB.

MOD

ITEM 9NV – Attenuation (dB) of the vertically polarized component at different azimuths

The value of attenuation of the vertically polarized component in the horizontal plane at different azimuths, with respect to the maximum e.r.p. of this component, expressed in dB.

MOD

ITEM 9Q – Type of antenna

Symbol designating a simple vertical antenna or any other antenna.

MOD

ITEM 9R – Slew angle

For HF broadcasting stations in their exclusive bands, the slew angle represents the difference between the azimuth of maximum radiation and the direction of unslewed radiation.

MOD

ITEM 9T3 – Phase difference of the field

The positive or negative phase difference in the tower field with respect to the field of the reference tower, in degrees.

SUP

ITEM 9T6

MOD

ITEMS 9T9A to 9T9D – Description of top-loaded or sectionalized tower

Description of top-loaded or sectionalized towers, in accordance with the RJ81 Agreement.

SUP

ITEM 10A

MOD

ITEM 10CA – Start date

For HF broadcasting stations in their exclusive bands, this parameter is used in the case that the requirement starts after the start of the schedule.

MOD

ITEM 10CB – Stop date

For HF broadcasting stations in their exclusive bands, this parameter is used in the case that the requirement stops before the end of the schedule.

MOD

ITEM 10CC – Days of operation

For HF broadcasting stations in their exclusive bands, this parameter is used when the station does not transmit every day of the week.

MOD

ITEM 11 – Coordination with other administrations

Symbol of the administration with which coordination has been effected and the provision (No. of the Radio Regulations, regional agreement, or other arrangement) requiring such coordination.

SUP

ANNEX 1B

Table of characteristics to be submitted for stations in the terrestrial services

ADD

ANNEX 1B

Table of characteristics to be submitted for stations in the terrestrial services

Notice type	**T01**	**T02**	**T03**	**T04**	**T11**	**T12**			**T13**		**T14**	**T15**	**T16**	**T17**		**AR S12**	**Notice type**
Item No.	**BC**	**BT**	**BC**	**BC**	**FX**	**AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS**	**FD, FG, SM**	**NL**	**AM, MA, ML, MO, MR, MS, NR, OD, SA**	**RM**	**AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS**	**FC[4]**	**AL[5], FC[5]**	**FX**	**FA, FB, FC[2], FD[2], FG[2], FL, FP**	**BC**	**Item No.**
B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	B
SYNC			+	+													SYNC
1A	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1A
1AA														X	X		1AA
1B					+	+	+	+	+	+	+		+	+	+		1B
1C						+						*[6]				O	1C
1E		*[7,13]															1E
1E1		*[7, 13]															1E1
1G																O	1G
1X												*[6]	O				1X
1Y												O					1Y
1Z												+					1Z
2C	+	+	+	+	X	X	X	X	X	X	X	X		X	X		2C
3A	O	O	O	O	+	+	X	O						+	X	O	3A

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
4A	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		4B
4C	X	X	X	X	X	X	X	X	*[8]	X	*[8]	+	X	X	X	X	4C
4D									*[8]	X	*[8]						4D
4E									*[8]		*[8]	X					4E
4G			X														4G
5A					X[9]				X	X				X[9]			5A
5B					X[9]				X	X				X[9]			5B
5C					X[9]	*[10]	*[10]	*	X	X				X[9]	*[10]		5C
5D						*[10]	*[10]					X			*[10]	X	5D
5E						*[10]	*[10]	*					X		*[10]		5E
5F						*[10]	*[10]	*					X		*[10]		5F
5G					O	O	O	O				O		O	O		5G
6A					X	X	X	X	X	X	X	X	X	X	X		6A
6B					X	X	X	X	X	X	X	X	X	X	X		6B
7A	X[11]		X[11]	O	X	X	X	X	X	X	X	X	X	X	X		7A
7A1		+[7]															7A1
7AA																X	7AA
7B				X	+									+			7B
7B1			X														7B1
7C1		X															7C1
7C2		+[7]															7C2
7D	+																7D
7E					+[12]												7E

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
7F					+[12]												7F
8					X	X	X	X	X	X	X	X		X	X		8
8A			X	X	*	*	X	*	*	*	*	X		X	X	X	8A
8AB					+[12]												8AB
8B					*	*	*	*	*	*	*			+	+		8B
8BA														O	O		8BA
8BH	X	X															8BH
8BV	X	X															8BV
8D		+[7]															8D
9	X	X			X	X	X	X				X		X	X		9
9A					+	+	+	+				+		+	+	X	9A
9AA				+													9AA
9AB					+	+	+	+				+		+	+		9AB
9B					+	+	+	+									9B
9C					+	+	+	+				+		+	+		9C
9CA				+													9CA
9D	X	X			+												9D
9E	X	+	X		+	+	+	+									9E
9EA	X	+			+	+	+	+									9EA
9EB	X	X															9EB
9EC	+	+															9EC
9F				+													9F
9G					+	+	+	+			+	+		+	+		9G
9GH			+														9GH
9GV			+														9GV

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	**BC**	**BT**	**BC**	**BC**	**FX**	**AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS**	**FD, FG, SM**	**NL**	**AM, MA, ML, MO, MR, MS, NR, OD, SA**	**RM**	**AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS**	**FC[4]**	**AL[5], FC[5]**	**FX**	**FA, FB, FC[2], FD[2], FG[2], FL, FP**	**BC**	**Item No.**
9I				X													9I
9IA				+													9IA
9J					O	O	O	O						O	O	X	9J
9K					+[12]												9K
9L			X														9L
9NA				+													9NA
9NH	+	+															9NH
9NV	+	+															9NV
9O				+													9O
9P				O													9P
9Q			X	X													9Q
9R																X	9R
9T1				+													9T1
9T2				+													9T2
9T3				+													9T3
9T4				+													9T4
9T5				+													9T5
9T7				+													9T7
9T8				+													9T8
9T9A				+													9T9A
9T9B				+													9T9B
9T9C				+													9T9C
9T9D				+													9T9D
10B	+	+	X	X	X	X	X	X	X	X	X	X	X	X	X		10B
10CA																+	10CA

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(end)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
10CB																+	10CB
10CC																+	10CC
10D												X					10D
10E												X					10E
11	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O		11
12A	O	O	O	O	O	O	O	O	O	O	O			O	O	+	12A
12B	+	+	+	+	X	X	X	X	X	X	X			X	X		12B

X Mandatory * One of the items + Required in specific cases O Optional

[1] Outside the planned LF/MF bands and the VHF/UHF bands (up to 960 MHz), the HF bands that are governed by Article **S12**.

[2] In the non-planned bands.

[3] Outside the bands governed by the GE85M and GE89 Regional Agreements.

[4] In the bands governed by Appendix **S25**.

[5] In the bands governed by the GE85 Regional Agreement.

[6] 1C or 1X.

[7] For analogue television only if the frequency stability is normal or precision.

[8] (4C and 4D) or (4E).

[9] (5A, 5B and 5C) or (minimum three sets of 5C).

[10] (Minimum three sets of 5C) or (5D) or (5E and 5F).

[11] The necessary bandwidth only.

[12] This information may be furnished for stations in the fixed service when the parameters are used as a basis for effecting coordination with another administration.

[13] 1E or 1E1.

SUP

RESOLUTION 8 (Rev.Mob-87)

Implementation of the changes in allocations in the bands between 4000 kHz and 27500 kHz[1]

SUP

RESOLUTION 14

Relating to the transfer of technology[1]

SUP

RESOLUTION 23 (WRC-95)

Provisions applicable to the frequency assignments in the non-planned bands below 28 000 kHz

SUP

RESOLUTION 24 (WRC-95)

Review of the provisions of the Constitution relating to revisions of the Radio Regulations

SUP

RESOLUTION 30 (WRC-97)

Publication of the Weekly Circular including special sections

SUP

RESOLUTION 50 (WRC-97)

Interval between world radiocommunication conferences

SUP

RESOLUTION 52 (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

SUP

RESOLUTION 54 (WRC-97)

Implementation of Resolution 46 (Rev.WRC-97)

SUP

RESOLUTION 70 (WARC-92)

Establishment of standards for the operation of low-orbit satellite systems

SUP

RESOLUTION 406

Relating to the use of frequency bands higher than the HF bands in the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service for communication and for meteorological broadcasts

SUP

RESOLUTION 411 (WARC-92)

Implementation of the new provisions applicable in the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz[1]

SUP

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]

SUP

RESOLUTION 500

Relating to the modification of carrier frequencies of LF broadcasting stations in Region 1

(MOD)

RESOLUTION 703 (Rev.WRC-2000)

Calculation methods and interference criteria recommended by the ITU-R for sharing frequency bands between space radiocommunication and terrestrial radiocommunication services or between space radiocommunication services*

SUP

RESOLUTION 721 (WRC-97)

Agenda for the 1999 World Radiocommunication Conference

SUP

RECOMMENDATION 32 (Orb-88)

International monitoring of emissions originating from space stations[1]

SUP

RECOMMENDATION 61

Relating to technical standards for the assessment of harmful interference in the frequency bands above 28 MHz[1]

SUP

RECOMMENDATION 405

Relating to a study of the utilization of the aeronautical mobile-satellite (R) service[1]

SUP

RECOMMENDATION 518 (HFBC-87)

HF broadcast receivers

SUP

RECOMMENDATION 720 (WRC-95)

The flexible and efficient use of the radio spectrum by fixed and some mobile services in the MF and HF bands using block allocations for adaptive systems

_____

* WRC-2000 reviewed this resolution and decided to recommend that WRC-03 review the need for this resolution and, until that time, the implementation of the resolution should be suspended, except that once a year the Director will send a list of ITU-R Recommendations as identified according to *resolves* 1 to all administrations for information.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 1 to Document 456-E 30 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 375(Rev.1) **COMMITTEE 6**

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

Committee 5 has continued its consideration of its agenda items. As a result of these deliberations, it has adopted, at its fifth and sixth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

Chris Van DIEPENBEEK
Chairperson, Committee 5

Annex

SUP

RESOLUTION 130 (WRC-97)

Use of non-geostationary systems in the fixed-satellite service in certain frequency bands

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 456-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 393 and 375(Rev.1) **COMMITTEE 6**

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

Committee 5 has continued its consideration of its agenda items. As a result of these deliberations, it has adopted, at its fifth and sixth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

Chris Van DIEPENBEEK
Chairperson, Committee 5

MOD

S5.520 The use of the band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service using the geostationary-satellite orbit.

S5.516 The use of the band 17.3-18.1 GHz by geostationary-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-geostationary-satellite systems in the fixed-satellite service is subject to the application of the provisions of ~~Resolution **538 (WRC-97)**~~No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary FSS systems in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites.

SUP

RESOLUTION 538 (WRC-97)

Use of the frequency bands covered by Appendices S30/30 and S30A/30A by non-geostationary-satellite systems in the fixed-satellite service

ADD

RESOLUTION [COM5/17] (WRC-2000)

Possible identification of spectrum for non-GSO FSS (Earth-to-space) gateway type operations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 adopted epfd↑ limits that apply to non-GSO FSS in the Earth-to-space direction in portions of the 10.7-30 GHz band, including the 17.3-17.8 GHz band in Regions 1 and 3;

b) that WRC-2000 decided that due to incompatibilities in the 17.3-17.8 GHz band between non-GSO FSS (Earth-to-space) and existing and planned operations (including broadcasting-satellite and radiolocation services), non-GSO FSS (Earth-to-space) operations are not allowed in Region 2 in this band;

c) that in the 10-30 GHz band, the amount of spectrum identified for use by non-GSO FSS Earth-to-space transmission is limited compared to the amount of spectrum for the space-to-Earth transmission;

d) that non-GSO FSS systems may need additional spectrum in the Earth-to-space direction for very low density gateway type operations that could be constrained by a minimum antenna diameter,

resolves to instruct ITU-R

to study the necessity and suitability of frequency bands for non-GSO FSS (Earth-to-space) gateway operation outside those bands allocated to the non-GSO FSS subject to **S9.11A**, on the basis of the compatibility between this type of non-GSO FSS operation and existing and planned services in these bands,

instructs the Director of the Radiocommunication Bureau

to report the results of these studies to a future competent WRC.

MOD

Section VI – GSO ~~E~~earth station off-axis power limitations in the fixed-satellite service[11, 12]

MOD

S22.26 § 9 The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station shall within a geostationary-satellite network not exceed the following values for any off-axis angle φ which is ~~2.5~~3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p.*
~~2.5~~3° ≤ φ ≤ 7°	(~~39~~42 – 25 log φ) dB(W/40 kHz)
7° < φ ≤ 9.2°	~~18~~21 dB(W/40 kHz)
9.2° < φ ≤ 48°	(~~42~~45 – 25 log φ) dB(W/40 kHz)
48° < φ ≤ 180°	~~0~~3 dB(W/40 kHz)

MOD

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~~3° ≤ φ ≤ 7°	(~~53~~56 – 25 log φ) dBW
7° < φ ≤ 9.2°	~~32~~35 dBW
9.2° < φ ≤ 48°	(~~56~~59 – 25 log φ) dBW
48° < φ ≤ 180°	~~14~~17 dBW

MOD

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~~3° ≤ φ ≤ 7°	(~~53~~56 – 25 log φ) dBW
7° < φ ≤ 9.2°	~~32~~35 dBW
9.2° < φ ≤ 48°	(~~56~~59 – 25 log φ) dBW
48° < φ ≤ 180°	~~14~~17 dBW

MOD

---

[11] **S22.VI.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~~The provisions of this section shall not be used for coordination of, or to evaluate interference between, GSO FSS networks (see RR **S9.50.1**).

ADD

[12] **S22.VI.2** Although the provisions of this section cover off-axis power limitations in all directions, the radiation pattern of GSO FSS earth station antennas in more than two orthogonal planes is not required.

NOC

S22.29

ADD

S22.30 The e.i.r.p. limits given in Nos. **S22.26**, **S22.27**, **S22.28** and **S22.32** do not apply to earth station antennas in service or ready to be in service[13] prior to 2 June 2000 nor to earth stations associated with a satellite network in the fixed-satellite service for which complete coordination or notification information has been received before 2 June 2000.

ADD

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[13] **S22.30.1** "Ready to be in service" relates to the case where antennas have been installed but the start of service has been delayed due to *force majeure*.

ADD

S22.31 Telecommand and ranging[x] carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directive receiving antenna on the space station) may exceed the levels given in **S22.26** by no more than 16 dB in the frequency bands 12.75-13.25 GHz and 13.75-14.5 GHz. In all other modes of operation, and in case of *force majeure*, telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in **S22.26**.

ADD

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[x] **S22.31.1** Measurement of the distance to the satellite.

ADD

S22.32 § 10 The level of equivalent isotropically radiated power (e.i.r.p.) density emitted by an earth station within a geostationary-satellite network in the 29.5-30 GHz frequency band shall not exceed the following values for any off-axis angle φ which is 3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p. density*
$3° \leq \varphi \leq 7°$	$(28 - 25 \log \varphi)$ dB(W/40 kHz)
$7° < \varphi \leq 9.2°$	7 dB(W/40 kHz)
$9.2° < \varphi \leq 48°$	$(31 - 25 \log \varphi)$ dB(W/40 kHz)
$48° < \varphi \leq 180°$	+1 dB(W/40 kHz)

ADD

S22.33 Not used.

ADD

S22.34 Telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directive receiving antenna on the space station) may exceed the levels given in **S22.32** by no more than 10 dB[y] in the frequency band 29.5-30 GHz. In all other modes of operation, and in case of *force majeure*, telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in **S22.32**.

ADD

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[y] **S22.34.1** Further studies are required toconfirm the value of 10 dB.

ADD

S22.35 For GSO systems in which the earth stations are expected to transmit simultaneously in the same 40 kHz band, e.g. for the GSO systems employing CDMA, the maximum e.i.r.p., values in **S22.32** should be decreased by 10*log(N) dB, where N is the number of earth stations which are in the receive satellite beam of the satellite to which these earth stations are communicating and which are expected to transmit simultaneously on the same frequency.

ADD

S22.36 Earth stations operating in the 29.5-30 GHz frequency band should be designed in such a manner that 90% of their peak off-axis e.i.r.p. density levels do not exceed the values given in **S22.32**. Further study is needed to determine the off-axis angular range over which these exceedances would be permitted, taking into account the interference level into adjacent satellites. The statistical processing of the off-axis e.i.r.p. density peaks should be dealt with using the method given in Recommendation ITU-R S.732.

ADD

S22.37 The limits given in **S22.26** to **S22.28** and **S22.32** apply under clear-sky conditions. During rain-fade conditions, the limits may be exceeded by earth stations when implementing uplink power control.

ADD

S22.38 FSS earth stations operating in the 29.5-30 GHz band, which have lower elevation angles to the GSO will require higher e.i.r.p. levels relative to the same terminals at higher elevation angles to achieve the same power flux-densities at the GSO due to the combined effect of increased distance and atmospheric absorption. Earth stations with low elevation angles may exceed the levels given in **S22.32** by the following amount:

Elevation angle to GSO (ε)	*Increase in e.i.r.p. density (dB)*
$\varepsilon \leq 5°$	2.5
$5 < \varepsilon \leq 30°$	$0.1(25 - \varepsilon) + 0.5$

ADD

S22.39 The values in **S22.32** applicable to the off-axis angle range from 48° to 180° are intended to account for spillover effects.

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 geostationary-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 a non-geostationary-satellite systems in the fixed-satellite service ~~shall be in accordance with the provisions of Resolution **130 (WRC-97)**~~is subject to the application of the provision of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary FSS systems in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

S5.484A 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 a non-geostationary ~~and geostationary~~-satellite systems in the fixed-satellite service is subject to the application of the provisions of ~~Resolution **130 (WRC-97)**. The use of the band 17.8-18.1 GHz (space-to-Earth) by non-geostationary fixed-satellite service systems is also subject to the provisions of Resolution **538 (WRC-97)**~~No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary FSS systems in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

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 systems and subject to the application of the provisions of ~~Resolution **538 (WRC-97)**~~No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary FSS systems in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

APPENDIX S4

ADD

A.16 Commitment regarding compliance with off-axis power limitations

A commitment that the earth stations operating with a geostationary-satellite network in the FSS meet the off-axis power limitations given in **S22.26** to **S22.28** or **S22.32** (as appropriate) under the conditions specified in **S22.30**, **S22.31** and **S22.34** to **S22.39**, where the earth stations are subject to those power limitations.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 457-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2 OF THE PLENARY

Note from Chairperson, Committee 5

Committee 5 has approved revisions of Resolutions 128 and 214 as well as a number of new draft resolutions which relate to items intended to be considered by WRC-03.

These resolutions are listed below along with the relevant input documents to Committee 5. The approved texts which are being forwarded to Committee 6 will be found in Documents 431, 451 and 456.

Resolution	**Document**
[COM5/13]	419
[COM5/24]	422
[COM5/26]	422
[COM5/28]	427
[COM5/29]	439
[COM5/30]	439
MOD 128	427
MOD 214	355

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 458(Rev.1)-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note by the Secretary-General

REVIEW AND POSSIBLE REVISION OF THE 1997 BROADCASTING-SATELLITE SERVICE PLANS FOR REGIONS 1 AND 3

ADMINISTRATIVE DUE DILIGENCE INFORMATION (RESOLUTION 49) FOR "EXISTING" AND "PART B" SYSTEMS RECEIVED BY THE RADIOCOMMUNICATION BUREAU

Please find attached administrative due diligence information received by the Radiocommunication Bureau under Resolution 49 (WRC-97) from the administrations responsible for "existing" and "Part B" systems listed in Document WRC2000/238.

Yoshio UTSUMI
Secretary-General

Annex: Administrative due diligence information of the satellite networks received by the Radiocommunication Bureau

Index

Satellite networks which satisfy the conditions of Principle 3 of Annex 1 to Resolution 532 (WRC-97), i.e. “existing” systems.

Satellite networks included in WRC-97 Plans as national assignments for which the eight years regulatory lapsing period does not apply, which were notified before 12 May 2000 but have not been brought into use.

Administration	Satellite network	Orbital position	Status	Page
AUS	AUSSAT C 152E BSS	152.0E	Not applicable	
RUS	RST-1	36.0 E	Not applicable	
RUS	RST-2	36.0 E	Not applicable	

Satellite networks which successfully completed the procedure of Article 4 of Appendices S30/S30A which were not brought into use before 12 May 2000.

Administration	Satellite network	Orbital position	Status	Page
ARS/ARB	ARABSAT-BSS1 (channels 21 - 40 for downlink, channels 20 - 40 for feeder link)	26.0 E	Published	
D	EUROPE*STAR-1B	45.0 E	Yet to be published	25
F	RADIOSAT-5	7.0 W	Yet to be published	26
F	RADIOSAT-5A	7.0 W	Yet to be published	28
G	GE-SATCOM E1	24.0 W	Yet to be published	30
LAO	LSTAR3B	116.0 E	Yet to be published	31
LAO	LSTAR4B	126.0 E	Yet to be published	32
TUR	TURKSAT-BSS	42.0 E	Yet to be published	33
USA	USASAT 29H	41.0 E	Yet to be published	35
USA	USASAT29M	149.0 E	Yet to be published	36
USA	USASAT29N	164.0 E	Yet to be published	37
USA	USASAT29O	173.0 E	Yet to be published	38
USA	USASAT29R	132.0 E	Yet to be published	39

ANNEX 1

Administrative due diligence information (Resolution 49)

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
ARABSAT-BSS1	SAUDI ARABIA	ARS	AP30/E/73 AP30A/E/69 AP30/E/73(Corr.1) AP30A/E/69(Corr.1)	(11.7-12.5 GHz) (17.3-18.1 GHz)	ARABSAT	ARABSAT-BSS1	26.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
AEROSPATIALE FRANCE	01.12.1996	From : 01.01.1999 To: 31.03.1999	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	01.12.1996	From: 01.01.1999 To: 30.06.1999	ARIANE	KOUROU FRENCH GUYANA/F

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-1 (27 MHz Digital)	SPAIN	E	AP30/E/9(Corr.1) AP30A/E/5(Corr.1)	(11.7-12.5 GHz) (17.3-18.1 GHz)	031	HISPASAT-1	30.0 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	23.01.1990	From : 23.01.1990 To: 10.09.1992	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	07.02.1990	From: 10.09.1992 To: --------	ARIANE 44 LP	CNT ESPACIAL CUARANI/GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-1 (33 MHz Digital)	SPAIN	E	AP30/E/9(Add.1) AP30/E/9(Add.1)(Corr.1) AP30(Res. 533)/E/9(Add.1) AP30(Res. 533)/E/9(Add.1)(Corr.1) AP30A/E/5(Add.1) AP30A(Res. 533)/E/5(Add.1)	(11.7-12.5 GHz) (17.3-18.1 GHz)	031	HISPASAT-1	30.0 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	23.01.1990	From : 23.01.1990 To: 10.09.1992	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	07.02.1990	From: 10.09.1992 To: ---	ARIANE 44 LP	CNT ESPACIAL GUARANI GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-2	SPAIN	E	AP30/E/14 AP30/E/47, Part B AP30/E/14(Corr.1) AP30/E/14(Corr.2) AP30(Res. 533)/E/14 AP30(Res. 533)/E/14(Corr.1) AP30A/E/11 AP30A/E/43, Part B AP30A/E/11(Corr.1) AP30A(Res. 533)/E/11	(11.7-12.5 GHz) (17.3-18.1 GHz)	031	HISPASAT-2	30.0 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE	12.12.1997	From : 12.12.1997 To: 12.10.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	19.12.1997	From: 01.12.1999 To: 31.03.2000	ATLAS II AS	CAPE CANAVERAL USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-3	SPAIN	E	AP30/E/103 AP30(Res. 533)/E/103 AP30(Res. 533)/E/103(Corr.1)	(11.7-12.5 GHz)	031	HISPASAT-3	30 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE	12.12.1997	From : 12.12.1997 To: 12.10.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	19.12.1997	From: 03.02.00 To:	ATLAS II AS	CAPE CANAVERAL USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
NILESAT-1S	TELECOM REGULATORY AUTHORITY	EGY	AP30/E/41 AP30(Res. 533)/E/41 AP30(Res. 533)/E/41(Corr.1) AP30A/E/37 AP30A(Res. 533)/E/37	(11.7-12.5 GHz) (17.3-18.1 GHz)	THE EGYPTIAN SATELLITE CO. NILESAT	NILESAT-1S	7 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	15.10.1995	From: 10.1997 To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE		From: 28.04.1998 To:	ARIANE 4	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
EUTELSAT B-13E	FRANCE	F/EUT	AP30/E/26 AP30/E/26(Corr.1) AP30/E/26(Add.1) AP30(Res. 533)/E/26 AP30(Res. 533)/E/26(Corr.1) AP30A/E/23 AP30A/E/23(Corr.1) AP30A/E/23(Add.1) AP30A(Res. 533)/E/23	(11.7-12.5 GHz) (17.3-18.1 GHz)	EUT	HOT BIRD 2	13.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From : --- To: 27.09.1996	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	29.04.1994	From: --- To: 21.11.1996	ATLAS IIA	CAPE CANAVERAL/USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
EUTELSAT B-13E	FRANCE	F/EUT	AP30/E/26 AP30/E/26(Corr.1) AP30/E/26(Add.1) AP30(Res. 533)/E/26 AP30(Res. 533)/E/26(Corr.1) AP30A/E/23 AP30A/E/23(Corr.1) AP30A/E/23(Add.1) AP30A(Res. 533)/E/23	(11.7-12.5 GHz) (17.3-18.1 GHz)	EUT	HOT BIRD 3	13.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.12.1994	From : --- To: 25.06.1997	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	23.12.1994	From: --- To: 02.09.1997	ARIANE 44LP	KOUROU/GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
EUTELSAT B-36E	FRANCE	F/EUT	AP30/E/63 AP30(Res. 533)/E/63 AP30(Res. 533)/E/63(Corr.1) AP30A/E/59 AP30A(Res. 533)/E/59	(11.7-12.5 GHz) (17.3-18.1 GHz)	EUT	W 4	36.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
AEROSPATIALE	01.08.1995	From : 31.10.1997 To: 31.01.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
INTERN. LAUNCH SERVICE	10.10.1999	From: 14.04.2000 To: 14.05.2000	ATLAS IIIA	CAPE CANAVERAL USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
BS-3N	JAPAN	J	AP30/E/28 AP30A/E/24	(11.7-12.2 GHz) (17.3-18.1 GHz)	J	BS-3N	109.85 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	02.11.1992	From : 09.1994 To: 09.1994	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	02.11.1992	From: 08.07.1994 To: 08.07.1994	ARIANE 44L	GUIANA SPACE CENTER/GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
KOREASAT-1 (Analogue)	REPUBLIC OF KOREA	KOR	AP30/E/12 AP30/E/27, Part B AP30A/E/9 AP30A/E/25, Part B	(11.7-12.2 GHz) (14.5-14.8 GHz)	---	KOREASAT-1 (Analogue)	116 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	17.03.1997	From : 01.07.1997 To: 31.12.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	20.08.1997	From: 04.09.1999 To: 05.09.1999	ARIANE 4	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
KOREASAT-1 (Digital)	REPUBLIC OF KOREA	KOR	AP30/E/12(Add.1) AP30/E/40, Part B AP30A/E/9(Add.1) AP30A/E/36, Part B	(11.7-12.2 GHz) (14.5-14.8 GHz)	---	KOREASAT-1 (Digital)	116 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	17.03.1997	From : 01.07.1997 To: 31.12.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	20.08.1997	From: 04.09.1999 To: 05.09.1999	ARIANE 4	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
KOREASAT-2 (Digital)	REPUBLIC OF KOREA	KOR	AP30/E/22(Add.1) AP30/E/22(Add.1)(Corr.1) AP30(Res. 533)/E/22(Add.1)(Corr.1) AP30(Res. 533)/E/22(Add.1)(Corr.2) AP30A/E/18(Add.1) AP30A(Res. 533)/E/18(Add.1)	(11.7-12.2 GHz) (14.5-14.8 GHz)	---	KOREASAT-2 (Digital)	113 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	30.12.1991	From : 01.10.1995 To: 31.12.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
MCDONNELL DOUGLAS	20.08.1992	From: 14.01.1996 To: 15.01.1996	DELTA 2	CAPE CANAVERAL USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
DBL	LUXEMBOURG	LUX	AP30/E/15 AP30/E/15(Add.1) AP30/E/15(Add.2) AP30A/E/22 AP30A/E/22(Add.1)	(11.7-12.5 GHz) (14.5-14.8 GHz)	---	ASTRA-1E	19.20 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	16.10.1992	From : ----- To: 16.04.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	19.10.1995	From: ------- To: --------	ARIANE 42L FLIGHT 79	KOUROU/GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
DBL	LUXEMBOURG	LUX	AP30/E/15 AP30/E/15(Add.1) AP30/E/15(Add.2) AP30A/E/22 AP30A/E/22(Add.1)	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	ASTRA-1F	19.20 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	16.10.1992	From : ----- To: 16.03.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	09.04.1996	From: ------- To: --------	PROTON D1-E FLIGHT 236	BAIKONOUR/KAZ

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
DBL-28.2E	LUXEMBOURG	LUX	AP30/E/51 AP30/E/51(Corr.1) AP30(Res. 533)/E/51 AP30(Res. 533)/E/51(Corr.1) AP30A/E/47 AP30A/E/47(Corr.1) AP30A/E/47(Corr.2) AP30A(Res. 533)/E/47	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	ASTRA-2A	28.2ºE

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	24.11.1995	From : 21.07.1997 To: 22.10.1998	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	17.01.1997	From: 01.08.1997 To: 01.10.1998	PROTON K	BAIKONUR/KAZ

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
BIFROST 2	NORWAY	NOR	AP30/E/23 AP30A/E/19	(11.7-12.5 GHz) (17.3-18.1 GHz)		THOR III	0.80 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMMS	01.08.1998	From : 01.08.1998 To: 01.08.1998	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
BOEING	10.06.1998	From: 10.06.1998 To: 10.06.1998	DELTA 7925	CAPE CANAVERAL LC17A/USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
BIFROST	NORWAY	NOR	AP30/E/20 AP30(Res. 533)/E/20 AP30(Res. 533)/E/20(Corr.1) AP30A/E/16 AP30A(Res. 533)/E/16	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	THOR	0.80 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMMS	20.06.1992	From : 20.06.1992 To: 20.10.1992	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
MCDONNELL DOUGLAS	18.08.1990	From: 18.08.1990 To: 18.08.1990	DELTA 6925	CAPE CANAVERAL USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
SIRIUS-W	SWEDEN	S	AP30/E/21 AP30E/21, Part B AP30/Res. 533)/E21 AP30/Res. 533)/E21(Corr.1) AP30A/E/17 AP30/Res. 533)/E17 AP30A/E17, Part B	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	SIRIUS-W	13 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	--	From : -- To: 01.09.89	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
MCDONNELL DOUGLAS		From: --- To: 01.09.1989	DELTA II	CAPE CANAVERAL USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
SIRIUS-2	SWEDEN	S	AP30/E/65 AP30/E/65(Add.1) AP30(Res. 533)/E/65 AP30(Res. 533)/E/65(Corr.1) AP30(Res. 533)/E/65(Add.1) AP30(Res. 533)/E/65(Add.1)(Corr.1) AP30A/E/61 AP30A/E/61(MOD 1) AP30A/E/61(Add.1) AP30A/E/61(Add.2) AP30A(Res. 533)/E/61 AP30A(Res. 533)/E/61(Add.1) AP30A(Res. 533)/E/61(Add.2)	(11.7-12.5 GHz) (17.3-18.1 GHz)	050	SIRIUS-2	5.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
AEROSPATIALE	04.07.1995	From : 15.06.1997 To: 01.08.1997	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	20.07.1995	From: --- To: 12.11.1997	ARIANE 4	GUIANA SPACE CENTRE GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
SIRIUS-3	SWEDEN	S	AP30/E/66 AP30(Res. 533)/E/66 AP30(Res. 533)/E/66(Corr.1) AP30A/E/62 AP30A(Res. 533)/E/62	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	SIRIUS-3	5.2 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	--.06.1997	From : 15.08.1998 To: 30.09.1998	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	--.06.1997	From: --- To: 05.10.1998	ARIANE 4	GUIANA SPACE CENTRE GUF

ANNEX 2

Administrative due diligence information (Resolution 49)

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
EUROPE*STAR-1B	GERMANY	D	AP30/E/58 AP30A/E/54	(11.7-12.5 GHz) (17.3-18.1 GHz)	102	EUROPE*STAR-1B	45 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	30.12.1991	From: 01.07.1995 To: 01.08.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
MCDONNELL DOUGLAS	20.08.1992	From: 01.08.1995 To: 01.09.1995	DELTA 2	CAPE CANAVERAL USA

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5	FRANCE	F	AP30/E/42 AP30A/E/38	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 2	7.00 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	29.04.1994	From: To:	ATLAS 2A	CAPE CANAVERAL USA

NOTE - The French Administration informs the Bureau that the assignments of the networks RADIOSAT-5 (7º W) and RADIOSAT-5A (7º W) will be brought into use by means of satellites HOT BIRD 2 and* 3, initially brought into use at 13º E to fulfil the mission of the space station EUTELSAT B-13 E. These satellites HOT BIRD 2 and* 3 will thus be redeployed at the orbital position of the space stations RADIOSAT-5 and RADIOSAT-5A for a new mission.

(* and ≡ and/or)

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5	FRANCE	F	AP30/E/42 AP30A/E/38	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 3	7.00 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.12.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	23.12.1994	From: To:	ARIANE 44LP	KOUROU GUF

NOTE - The French Administration informs the Bureau that the assignments of the networks RADIOSAT-5 (7º W) and RADIOSAT-5A (7º W) will be brought into use by means of satellites HOT BIRD 2 and* 3, initially brought into use at 13º E to fulfil the mission of the space station EUTELSAT B-13 E. These satellites HOT BIRD 2 and* 3 will thus be redeployed at the orbital position of the space stations RADIOSAT-5 and RADIOSAT-5A for a new mission.

(* and ≡ and/or)

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5A	FRANCE	F	AP30/E/76 AP30A/E/72	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 2	7.00 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	29.04.1994	From: To:	ATLAS 2A	CAPE CANAVERAL USA

NOTE - The French Administration informs the Bureau that the assignments of the networks RADIOSAT-5 (7º W) and RADIOSAT-5A (7º W) will be brought into use by means of satellites HOT BIRD 2 and* 3, initially brought into use at 13º E to fulfil the mission of the space station EUTELSAT B-13 E. These satellites HOT BIRD 2 and* 3 will thus be redeployed at the orbital position of the space stations RADIOSAT-5 and RADIOSAT-5A for a new mission.

(* and ≡ and/or)

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5A	FRANCE	F	AP30/E/76 AP30A/E/72	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 3	7.00 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	23.12.1994	From: To:	ARIANE 44LP	KOUROU GUF

NOTE - The French Administration informs the Bureau that the assignments of the networks RADIOSAT-5 (7º W) and RADIOSAT-5A (7º W) will be brought into use by means of satellites HOT BIRD 2 and* 3, initially brought into use at 13º E to fulfil the mission of the space station EUTELSAT B-13 E. These satellites HOT BIRD 2 and* 3 will thus be redeployed at the orbital position of the space stations RADIOSAT-5 and RADIOSAT-5A for a new mission.

(* and ≡ and/or)

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
GE-SATCOM-E1	UK	G	AP30/E/110 AP30A/E/106	(11.7-12.5 GHz) (17.3-18.1 GHz)	091	GE-SATCOM-E1	24 W

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE INDUSTR.	05.04.2000	From: 03.10.2003 To: 10.11.2003	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE.	05.04.2000	From: 03.10.2003 To: 10.11.2003	ARIANE 5	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
LSTAR3B	LAOS	LAO	AP30/E/90 AP30A/E/86	(11.7-12.2 GHz) (17.3-17.8 GHz)	LAO STAR	LSTAR3B	116.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS LORAL	26.03.1996	From: 26.03.1996 To: 30.12.2000	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	26.03.1996	From: 26.03.1996 To: 30.12.2000	ARIANE 4	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
LSTAR4B	LAOS	LAO	AP30/E/91 AP30A/E/87	(11.7-12.2 GHz) (17.3-17.8 GHz)	LAO STAR	LSTAR4B	126.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS LORAL	26.03.1996	From: 26.03.1996 To: 30.06.2001	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	26.03.1996	From: 26.03.1996 To: 30.06.2002	ARIANE 4	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
TURKSAT-BSS	TURKEY	TUR	AP30/E/60 AP30A/E/56	(11.7-12.5 GHz) (17.3-18.1 GHz)	003	TURKSAT-2A	42 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE INDUSTR.	31.12.1997	From: 01.04.2000 To: 30.09.2000	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	31.03.1998	From: 15.08.2000 To: 30.09.2000	ARIANE	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
TURKSAT-BSS	TURKEY	TUR	AP30/E/60 AP30A/E/56	(11.7-12.5 GHz) (17.3-18.1 GHz)	003	TURKSAT-2B	42 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE INDUSTR.	31.12.1997	From: 01.04.2000 To: 30.09.2003	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	31.03.1998	From: 15.08.2000 To: 30.09.2003	ARIANE	KOUROU GUF

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29H	USA	USA	AP30/E/93 AP30A/E/89*	(11.7-12.5 GHz) (17.3-18.1 GHz)	120	USASAT-29H	41.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS/LORAL	01.04.1998	From: 01.01.2002 To: 30.06.2002	5

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LAUNCH, LP	15.03.2000	From: 01.07.2002 To: 31.12.2002	ZENIT 3SL	SEA LAUNCH USA

* Feeder link has not yet been coordinated.

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29M	USA	USA	AP30/E/98 AP30A/E/94*	(11.7-12.2 GHz) (17.3-17.8 GHz)	120	USASAT-29M	149.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMM.	10.01.1990	From: 31.08.1995 To: 30.11.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	31.12.1993	From: 15.09.1995 To: 15.12.1995	ATLAS 2A	CAPE CANAVERAL USA

* Feeder link has not yet been coordinated.

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29N	USA	USA	AP30/E/99 AP30A/E/95*	(11.7-12.2 GHz) (17.3-17.8 GHz)	120	USASAT-29N	164.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMM.	09.10.1998	From: 01.07.2002 To: 31.12.2002	6

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LAUNCH, LP	15.03.2000	From: 01.01.2003 To: 30.06.2003	ZENIT 3SL	SEA LAUNCH USA

* Feeder link has not yet been coordinated.

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29O	USA	USA	AP30/E/100 AP30A/E/96*	(11.7-12.2 GHz) (17.3-17.8 GHz)	120	USASAT-29O	173.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMM.	09.10.1998	From: 01.07.2001 To: 31.12.2001	6

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LAUNCH, LP	15.03.2000	From: 01.01.2002 To: 30.06.2002	ZENIT 3SL	SEA LAUNCH USA

* Feeder link has not yet been coordinated.

A) Identity of the satellite network

Identity of the satellite network	Name of the administration	Country symbol	Reference Appendices S30 and S30A	Frequency band(s)	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29R	USA	USA	AP30/E/117 AP30A/E/115*	(11.7-12.2 GHz) (17.3-17.8 GHz)	120	USASAT-29R	132.00 E

B) Space manufacturer

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS/LORAL	01.04.1998	From: 01.07.2002 To: 31.12.2002	5

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LAUNCH, LP	15.03.2000	From: 01.07.2003 To: 31.12.2003	ZENIT 3SL	SEA LAUNCH USA

* Feeder link has not yet been coordinated.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 458-E
27 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note by the Secretary-General

REVIEW AND POSSIBLE REVISION OF THE 1997 BROADCASTING-SATELLITE SERVICE PLANS FOR REGIONS 1 AND 3

ADMINISTRATIVE DUE DILIGENCE INFORMATION (RESOLUTION 49) FOR "EXISTING" AND "PART B" SYSTEMS RECEIVED BY THE RADIOCOMMUNICATION BUREAU

Please find attached administrative due diligence information received by the Radiocommunication Bureau under Resolution 49 (WRC-97) from the Administrations responsible for "existing"and "Part B" systems listed in Document CMR2000/238.

Yoshio UTSUMI
Secretary-General

Annex: Administrative due diligence information of the satellite networks received by the Radiocommunication Bureau

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Satellite networks which satisfy the conditions of Principle 3 of Annex 1 to Resolution 532 (WRC-97); i.e. “existing” systems

Satellite networks included in WRC-97 Plans as national assignments for which the 8 years regulatory lapsing period does not apply, which were notified before 12 May 2000 but have not been brought into

Adm.	Satellite Network	Orbital Position	Status	Page
AUS	AUSSAT C 152E BSS	152.0E	Not applicable	
RUS	RST-1	36.0 E	Not applicable	
RUS	RST-2	36.0 E	Not applicable	

Satellite networks successfully completed the procedure of Article 4 of Appendices S30/S30A which were not brought into use before 12 May 2000

Adm.	Satellite Network	Orbital Position	Status	Page
ARS/ARB	ARABSAT-BSS1 (channels 21 – 40 for down-link, channels 20 – 40 for feeder link)	26.0 E	Published	
D	EUROPE*STAR-1B	45.0 E	Yet to be published	25
F	RADIOSAT-5	7.0 W	Yet to be published	26
F	RADIOSAT-5A	7.0 W	Yet to be published	28
G	GE-SATCOM E1	24.0 W	Yet to be published	30
LAO	LSTAR3B	116.0 W	Yet to be published	31
LAO	LSTAR4B	126.0 E	Yet to be published	32
TUR	TURKSAT-BSS	42.0 E	Yet to be published	33
USA	USASAT 29H	41.0 E	Yet to be published	35
USA	USASAT29M	149.0 E	Yet to be published	36
USA	USASAT29N	164.0 E	Yet to be published	37
USA	USASAT29O	173.0 E	Yet to be published	38
USA	USASAT29R	132.0 E	Yet to be published	39

ANNEX 1

Administrative Due Diligence Information (Resolution 49)

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
ARABSAT-BSS1	SAUDI ARABIA	ARS	AP30/E/73 AP30A/E/69 AP30/E/73 Corr-1 AP30A/E/69 Corr-1	(11.7-12. 5 GHz) (17.3-18.1 GHz)	ARS/ARB	ARABSAT-BSS1	26.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
AEROSPATIALE FRANCE	08.11.1996	From : ------ To: 08.12.1998	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANE SPACE	08.11.1996	From: ------ To: 28.02.1999	ARIANE 44L	KOUROU FRENCH GUYANA / F

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-1 (27 MHz Digital)	SPAIN	E	AP30/E/9 Corr-1 AP30A/E/5 Corr-1	(11.7-12.5 GHz) (17.3-18.1 GHz)	031	HISPASAT-1	30.0 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	23.01.1990	From : 23.01.1990 To: 10.09.1992	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANE SPACE	07.02.1990	From: 10.09.1992 To: --------	ARIANE 44 LP	CNT ESPACIAL CUARANI/GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-1 (33 MHz Digital)	SPAIN	E	AP30/E/9 ADD-1 AP30/E/65 ADD-1 Corr-1 AP30(RES.533)/E/9 ADD-1 AP30(RES.533)/E/9 ADD-1 Corr-1 AP30A/E/5 ADD-1 AP30A(RES.533)/E/5 ADD-1	(11.7-12.5 GHz) (17.3-18.1 GHz)	031	HISPASAT-1 (33 MHz Digital)	30.0 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	23.01.1990	From : 23.01.1990 To: 10.09.1992	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	07.02.1990	From: 10.09.1992 To: ---	ARIANE 44 LP	CNT ESPACIAL GUARANI GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-2	SPAIN	E	AP30/E/14 AP30/E/47 PART B AP30/E/14 Corr-1 AP30/E/14 Corr-2 AP30(RES.533)/E/14 AP30(RES.533)/E/14 Corr-1 AP30A/E/11 AP30A/E/43 PART B AP30A/E/11 Corr-1 AP30A(RES.533)/E/11	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	HISPASAT-2	30 0 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE	12.12.1997	From : 12.12.1997 To: 12.10.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	19.12.1997	From: 01.12.1999 To: 31.03.2000	ATLAS II AS	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
HISPASAT-3	SPAIN	E	AP30/E/103 AP30(RES.533)/E/103 AP30(RES.533)/E/103 Corr-1	(11.7-12.5 GHz)	---	HISPASAT-3	30 0 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE	12.12.1997	From : 12.12.1997 To: 12.10.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	19.12.1997	From: 03.02.00 To:	ATLAS II AS	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
NILESAT-1S	TELECOM REGULATORY AUTHORITY	EGY	AP30/E/41 AP30A/E/37	(11.7-12.5 GHz)	THE EGYPTIAN SATELLITE CO. NILESAT	NILESAT-1S	7 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	15.10.1995	From: 10.1997 To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE		From: 28.04.1998 To:	ARIANE 4	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
EUTELSAT B-13E	FRANCE	F/EUT	AP30/E/26 AP30/E/26 Corr-1 AP30/E/26 ADD-1 AP30(RES.533)/E/26 AP30(RES.533)/E/26 Corr-1 AP30A/E/23 AP30A/E/23 Corr-1 AP30A/E/23 ADD-1 AP30A(RES.533)/E/23	(11.7-12.5 GHz) (17.3-18.1 GHz)	EUT	HOT BIRD 2	13.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From : --- To: 27.09.1996	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	29.04.1994	From: --- To: 21.11.1996	ATLAS IIA	CAPE CANAVERAL/USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
EUTELSAT B-13E	FRANCE	F/EUT	AP30/E/26 AP30/E/26 Corr-1 AP30/E/26 ADD-1 AP30(RES.533)/E/26 AP30(RES.533)/E/26 Corr-1 AP30A/E/23 AP30A/E/23 Corr-1 AP30A/E/23 ADD-1 AP30A(RES.533)/E/23	(11.7-12.5 GHz) (17.3-18.1 GHz)	EUT	HOT BIRD 3	13.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.12.1994	From : --- To: 25.06.1997	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	23.12.1994	From: --- To: 02.09.1997	ARIANE 44LP	KOUROU/GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
EUTELSAT B-36E	FRANCE	F/EUT	AP30/E/63 AP30(Res.533)/E/63 AP30(Res.533)/E/63 Corr-1 AP30A/E/59 AP30A(Res.533)/E/59	(11.7-12.5 GHz) (17.3-18.1 GHz)	EUT	W 4	36.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
AEROSPATIALE	01.08.1995	From : 31.10.1997 To: 31.01.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
INTERN. LAUNCH SERVICE	10.10.1999	From: 14.04.2000 To: 14.05.2000	ATLAS IIIA	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
BS-3N	JAPAN	J	AP30/E/28 AP30A/E/24	(11.7-12.2 GHz) (17.3-18.1 GHz)	J	BS-3N	109.85 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCCHED MARTIN	02.11.1992	From : 09.1994 To: 08.07.1994	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANE SPACE	02.11.1992	From: 08.07.1994 To: 08.07.1994	ARIANE 44L	GUIANA SPACE CENTER / GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
KOREASAT-1 (Analog)	REPUBLIC OF KOREA	KOR	AP30/E/12 AP30/E/27 Part B AP30A/E/9 AP30A/E/25 Part B	(11.7-12.2 GHz) (14.5-14.8 GHz)	---	KOREASAT-1 (Analog)	116 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	17.03.1997	From : 01.07.1997 To: 31.12.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	20.08.1997	From: 04.09.1999 To: 05.09.1999	ARIANE 4	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
KOREASAT-1 (Digital)	REPUBLIC OF KOREA	KOR	AP30/E/12 ADD-1 AP30/E/40 Part B AP30A/E/9 ADD-1 AP30A/E/36 Part B	(11.7-12.2 GHz) (14.5-14.8 GHz)	---	KOREASAT-1 (Digital)	116 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	17.03.1997	From : 01.07.1997 To: 31.12.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	20.08.1997	From: 04.09.1999 To: 05.09.1999	ARIANE 4	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
KOREASAT-2 (Digital)	REPUBLIC OF KOREA	KOR	AP30/E/22 ADD-1 AP30/E/22 ADD-1 Corr-1 AP30(RES.533)/E/22 ADD-1 Corr-1 AP30(RES.533)/E/22 ADD-1 Corr-2 AP30A/E/18 ADD-1 AP30A(RES.533)/E/18 ADD-1	(11.7-12.2 GHz) (17.3-18.1 GHz)	---	KOREASAT-2 (Digital)	113 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	30.12.1991	From : 01.10.1995 To: 31.12.1999	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
MCDONNELL DOUGLAS	20.08.1992	From: 14.01.1996 To: 15.01.1996	DELTA 2	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
DBL	LUXEMBOURG	LUX	AP30/E/15 AP30/E/15 ADD1 AP30/E/15 ADD2 AP30A/E/22 AP30A/E/22 ADD1	(11.7-12.5 GHz) (14.5-14.8 GHz)	---	ASTRA-1E	19.20 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	16.10.1992	From : ----- To: 16.04.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANE SPACE	19.10.1995	From: ------- To: --------	ARIANE 42L FLIGHT 79	KOUROU/GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
DBL	LUXEMBOURG	LUX	AP30/E/15 AP30/E/15 ADD1 AP30/E/15 ADD2 AP30A/E/22 AP30A/E/22 ADD1	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	ASTRA-1F	19.20 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	16.10.1992	From : ----- To: 16.03.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	09.04.1996	From: ------- To: --------	PROTON D1-E FLIGHT 236	BAIKONOUR/KAZ

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
DBL-28.2E	LUXEMBOURG	LUX	AP30/E/51 AP30/E/51 Corr-1 AP30(RES.533)/E/51 AP30(RES.533)/E/51 Corr-1 AP30A/E/47 AP30A/E/47 Corr-1 AP30A/E/47 Corr-2 AP30A(RES.533)/E/47	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	ASTRA-2A	28.2ºE

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	24.11.1995	From : 21.07.1997 To: 22.10.1998	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ILS	17.01.1997	From: 01.08.1997 To: 01.10.1998	PROTON K	BAIKONUR/KAZ

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
BIFROST 2	NORWAY	NOR	AP30/E/23 AP30A/E/19	(11.7-12.5 GHz) (17.3-18.1 GHz)		THOR III	0.80 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGUES SPACE & COMMS	01.08.1998	From : 01.08.1998 To: 10.06.1998	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
BOEING	10.06.1998	From: 10.06.1998 To: 10.06.1998	DELTA 7925	CAPE CANAVERAL LC17A/USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
BIFROST	NORWAY	NOR	AP30/E/20 AP30(RES.533)/E/20 AP30(RES.533)/E/20 Corr-1 AP30A/E/16 AP30A(RES.533)/E/16	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	THOR	0.80 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGUES SPACE & COMMS	20.06.1992	From : 20.06.1992 To: 20.10.1992	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
MCDONNELL DOUGLAS	18.08.1990	From: 18.08.1990 To: 18.08.1990	DELTA 6925	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
SIRIUS-W	SWEDEN	S	AP30/E/21 AP30E/21 part B AP30/RES533)/E21 AP30/RES533)/E21 Corr-1 AP30A/E/17 AP30/RES533)/E17 AP30A/E17 Part B	(11.7-12.5 GHz) (17.3-18.1 GHz)	050	SIRIUS-w	5.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGES	--	From : -- To: 01.09.89	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
CM DONNELL DOUGLAS	20.07.1995	From: --- To: 12.11.1997	DELTA II	CAPE CANAVERAL

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
SIRIUS-2	SWEDEN	S	AP30/E/65 AP30/E/65 ADD-1 AP30(RES.533)/E/65 AP30(RES.533)/E/65 Corr-1 AP30(RES.533)/E/65 ADD-1 AP30(RES.533)/E/65 ADD-1 Corr-1 AP30A/E/61 AP30A/E/61 MOD-1 AP30A/E/61 ADD-1 AP30A/E/61 ADD-2 AP30A(RES.533)/E/61 AP30A(RES.533)/E/61 ADD-1 AP30A(RES.533)/E/61 ADD-2	(11.7-12.5 GHz) (17.3-18.1 GHz)	050	SIRIUS-2	5.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
AEROSPATIALE	04.07.1995	From : 15.06.1997 To: 01.08.1997	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	20.07.1995	From: --- To: 12.11.1997	ARIANE 4	GUIANA SPACE CENTRE GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
SIRIUS-3	SWEDEN	S	AP30/E/66 AP30(RES.533)/E/66 AP30(RES.533)/E/66 Corr-1 AP30A/E/62 AP30A(RES.533)/E/62	(11.7-12.5 GHz) (17.3-18.1 GHz)	---	SIRIUS-3	5.2 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES	--.06.1997	From : 15.08.1998 To: 30.09.1998	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	--.06.1997	From: --- To: 05.10.1998	ARIANE 4	GUIANA SPACE CENTRE GUF

ANNEX 2

Administrative Due Diligence Information (Resolution 49)

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
EUROPE*STAR-1B	GERMANY	D	AP30/E/58 AP30A/E/54	(11.7-12.5 GHz) (17.3-18.1GHz)	102	EUROPE*STAR-1B	45 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
LOCKHEED MARTIN	30.12.1991	From: 01.07.1995 To: 01.08.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
MAC DONNEL DOUGLAS	20.08.1992	From: 01.08.1995 To: 01.09.1995	DELTA 2	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5	FRANCE	F	AP30/E/42 AP30A/E/38	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 2	7.00 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	29.04.1994	From: To:	ATLAS 2A	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5	FRANCE	F	AP30/E/42 AP30A/E/38	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 3	7.00 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.12.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	23.12.1994	From: To:	ARIANE 44LP	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5A	FRANCE	F	AP30/E/76 AP30A/E/72	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 2	7.00 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	29.04.1994	From: To:	ATLAS 2A	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
RADIOSAT-5A	FRANCE	F	AP30/E/76 AP30A/E/72	(11.7-12.5 GHz) (17.3-18.1 GHz)	008	HOT BIRD 3	7.00 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
MATRA MARCONI SPACE	13.04.1994	From: To:	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	29.04.1994	From: To:	ATLAS 2A	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
GE-SATCOM-E1	UK	G	AP30/E/110 AP30A/E/106	(11.7-12.5 GHz) (17.3-18.1 GHz)	091	GE-SATCOM-E1	24 W

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE INDUSTR	05.04.2000	From: 03.10.2003 To: 10.11.2003	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ALCATEL SPACE INDUST	05.04.2000	From: 03.10.2003 To: 10.11.2003	ARIANE 5	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
LSTAR3B	LAOS	LAO	AP30/E/90 AP30A/E/86	(11.7-12.2 GHz) (17.3-17.8 GHz)	LAO STAR	LSTAR3B	116.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS LORAL	26.03.1996	From: 26.03.1996 To: 30.12.2000	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	26.03.1996	From: 26.03.1996 To: 30.12.2000	ARIANE 4	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
LSTAR4B	LAOS	LAO	AP30/E/91 AP30A/E/87	(11.7-12.2 GHz) (17.3-17.8 GHz)	LAO STAR	LSTAR4B	126.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS LORAL	26.03.1996	From: 26.03.1996 To: 30.06.2001	2

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	26.03.1996	From: 26.03.1996 To: 30.06.2001	ARIANE 4	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
TURKSAT-BSS	TURKEY	TUR	AP30/E/60 AP30A/E/56	(11.7-12.5 GHz) (17.3-18.1 GHz)	003	TURKSAT-2A	42 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE INDUS	31.12.1997	From: 01.04.2000 To: 30.09.2000	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	31.03.1998	From: 15.08.2000 To: 30.09.2000	ARIANE	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
TURKSAT-BSS	TURKEY	TUR	AP30/E/60 AP30A/E/56	(11.7-12.5 GHz) (17.3-18.1 GHz)	003	TURKSAT-2B	42 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
ALCATEL SPACE INDUST	31.12.1997	From: 01.04.2000 To: 30.09.2000	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
ARIANESPACE	31.03.1998	From: 15.08.2000 To: 30.09.2000	ARIANE	KOUROU GUF

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29H	USA	USA	AP30/E/93 AP30A/E/89	(11.7-12.5 GHz) (17.3-18.1 GHz)	120	USASAT-29H	41.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS/LORAL	01.04.1998	From: 01.01.2002 To: 30.06.2002	5

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LUNCH, LP	15.03.2000	From: 01.07.2002 To: 31.12.2002	ZENIT 3SL	SEA LUNCH USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29M	USA	USA	AP30/E/98 AP30A/E/94	(11.7-12.2 GHz) (14.0-14.5 GHz)	120	USASAT-29M	149.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMM.	10.01.1990	From: 31.08.1995 To: 30.11.1995	1

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
LOCKHEED MARTIN	31.12.1993	From: 15.09.1995 To: 15.12.1995	ATLAS 2A	CAPE CANAVERAL USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29N	USA	USA	AP30/E/99 AP30A/E/95	(11.7-12.2 GHz) (17.3-18.1 GHz)	120	USASAT-29N	164.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMM.	09.10.1998	From: 01.07.2002 To: 31.12.2002	6

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LUNCH, LP	15.03.2000	From: 01.01.2003 To: 30.06.2003	ZENIT 3SL	SEA LUNCH USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29O	USA	USA	AP30/E/100 AP30A/E/96	(11.7-12.2 GHz) (17.3-18.1 GHz)	120	USASAT-29O	173.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
HUGHES SPACE & COMM.	09.10.1998	From: 01.07.2002 To: 31.12.2002	6

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LUNCH, LP	15.03.2000	From: 01.01.2002 To: 30.06.2002	ZENIT 3SL	SEA LUNCH USA

A) IDENTITY OF THE SATELLITE NETWORK

Identity of the satellite network	Name of the administration	Country symbol	Reference App. S30 and S30A:	Frequency band(s):	Name of the operator	Name of the satellite	Orbital characteristics
USASAT-29R	USA	USA	AP30/E/117 AP30A/E/115	(11.7-12.2 GHz) (17.3-18.1 GHz)	120	USASAT-29R	132.00 E

B) SPACE MANUFACTURER

Name of the spacecraft manufacturer	Date of execution of the contract	Contractual "delivery window"	Number of satellites procured
SPACE SYSTEMS/LORAL	01.04.1998	From: 01.07.2002 To: 31.12.2002	5

C) Launch services provider

Name of the launch vehicle provider	Date of execution of the contract	Anticipated launch or in-orbit delivery window	Name of the launch vehicle	Name and location of the launch facility
SEA LUNCH, LP	15.03.2000	From: 01.07.2003 To: 31.12.2003	ZENIT 3SL	SEA LUNCH USA

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 459-E
28 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

R.2 **PLENARY MEETING**

SECOND 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 5	B.2/395	**ARTICLE S21** – S21.5 – Table S21-2 – S21.5A – S21.6 – Table S21-4 – S21.16.2 – S21.16.10
		APPENDIX S18
		RESOLUTION 122 (Rev.WRC-2000)
		RESOLUTION 126 (WRC-97)
		RESOLUTION 342 (Rev.WRC-2000)
		RESOLUTION [COM5/4] (WRC-2000)
		RESOLUTION [COM5/11] (WRC-2000)
		RESOLUTION [COM5/14] (WRC-2000)
COM 4	B.4/397	**RESOLUTION 5 (Rev.WRC-2000)**
		RESOLUTION 20 (Rev.WRC-2000)
		RESOLUTION 27 (Rev.WRC-2000)
		RESOLUTION 51 (Rev.WRC-2000)
		RESOLUTION 124 (Rev.WRC-2000)
		RESOLUTION 127 (Rev.WRC-2000)
		RESOLUTION 728 (Rev.WRC-2000)
		RESOLUTION [GT PLEN-2/1] (Rev.WRC-2000)

Annex: 31 pages

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

MOD

S21.5 3) The power delivered by a transmitter to the antenna of a station in the fixed or mobile services shall not exceed +13 dBW in frequency bands between 1 GHz and 10 GHz, or +10 dBW in frequency bands above 10 GHz, except as cited in No. **S21.5A**.

MOD

TABLE **S21-2** *(end)*

Frequency band	Service	Limit as specified in Nos.
18.6-18.8 GHz	Earth exploration-satellite Space research	**S21.5A**

ADD

S21.5A As an exception to the power levels given in No. **S21.5**, the sharing environment within which the Earth exploration-satellite (passive) and space research (passive) services shall operate in the band 18.6-18.8 GHz is defined by the following limitations on the operation of the fixed service: the power of each RF carrier frequency delivered to the input of each antenna of a station in the fixed service in the band 18.6-18.8 GHz shall not exceed –3 dBW.

MOD

S21.6 4) The limits given in Nos. **S21.2**, **S21.3**, **S21.4**, **S21.5** and **S21.5A** apply, where applicable, to the services and frequency bands indicated in Table **S21-2** for reception by space stations where the frequency bands are shared with equal rights with the fixed or mobile services:

MOD

TABLE **S21-4** *(end)*

Frequency band	Service*	Limit in dB(W/m²) for angle of arrival (δ) above the horizontal plane			Reference bandwidth
		0°-5°	5°-25°	25°-90°	
31.8-32.3 GHz	Space research	–120 [16]	–120 + 0.75(δ – 5) [16]	–105	1 MHz
32.0-33.0 GHz	Inter-satellite	–135	–135 + (δ – 5)	–115	1 MHz
37-38 GHz	Space research, non-geostationary-satellite orbit	–120 [16]	–120 + 0.75(δ – 5) [16]	–105	1 MHz
37-38 GHz	Space research, geostationary-satellite orbit	–125	–125 + (δ – 5)	–105	1 MHz

MOD

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[8] **S21.16.2** In addition to the limits given in Table **S21-4**, in the band 18.6-18.8 GHz the sharing environment within which the Earth exploration-satellite (passive) and space research (passive) services shall operate is defined by the following limitations on the operation of the fixed-satellite service: the power flux-density across the 200 MHz band 18.6-18.8 GHz produced at the surface of the Earth by emissions from a space station under assumed free-space propagation conditions shall not exceed –95 dB(W/m^2), except for less than 5% of time, when the limit may be exceeded by up to 3 dB. The provisions of No. **S21.17** do not apply in this band.

ADD

[16] **S21.16.10** During the launch and near-Earth operational phase of deep space facilities, non-GSO space research service systems shall not exceed a pfd value of:

$$-115 \text{ dB(W/m}^2\text{)} \qquad \text{if } \delta < 5°$$

$$-115 + 0.5\,(\delta - 5) \text{ dB(W/m}^2\text{)} \qquad \text{if } 5° \leq \delta \leq 25°$$

$$-105 \text{ dB(W/m}^2\text{)} \qquad \text{if } \delta > 25°$$

in any 1 MHz band, where δ is the angle of arrival above the horizontal plane.

APPENDIX S18

Table of transmitting frequencies in the VHF maritime mobile band

(See Article **S52**)

MOD

NOTE – For assistance in understanding the Table, see notes *a)* to *o)* below.

MOD

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public correspondence
		Ship stations	Coast stations		Single frequency	Two frequency	
60		156.025	160.625			x	x
01		156.050	160.650			x	x
61	*m), o)*	156.075	160.675		x	x	x
02	*m), o)*	156.100	160.700		x	x	x
62	*m), o)*	156.125	160.725		x	x	x
03	*m), o)*	156.150	160.750		x	x	x
63	*m), o)*	156.175	160.775		x	x	x
04	*m), o)*	156.200	160.800		x	x	x
64	*m), o)*	156.225	160.825		x	x	x
05	*m), o)*	156.250	160.850		x	x	x
65	*m), o)*	156.275	160.875		x	x	x
06	*f)*	156.300		x			
66		156.325	160.925			x	x
07		156.350	160.950			x	x
67	*h)*	156.375	156.375	x	x		
08		156.400		x			
68		156.425	156.425		x		
09	*i)*	156.450	156.450	x	x		
69		156.475	156.475	x	x		
10	*h)*	156.500	156.500	x	x		
70	*j)*	156.525	156.525	Digital selective calling for distress, safety and calling			

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public corres-pondence
		Ship stations	Coast stations		Single frequency	Two frequency	
11		156.550	156.550		x		
71		156.575	156.575		x		
12		156.600	156.600		x		
72	*i)*	156.625		x			
13	*k)*	156.650	156.650	x	x		
73	*h), i)*	156.675	156.675	x	x		
14		156.700	156.700		x		
74		156.725	156.725		x		
15	*g)*	156.750	156.750	x	x		
75	*n)*	156.775			x		
16		156.800	156.800	DISTRESS, SAFETY AND CALLING			
76	*n)*	156.825			x		
17	*g)*	156.850	156.850	x	x		
77		156.875		x			
18	*m)*	156.900	161.500		x	x	x
78		156.925	161.525			x	x
19		156.950	161.550			x	x
79		156.975	161.575			x	x
20		157.000	161.600			x	x
80		157.025	161.625			x	x
21		157.050	161.650			x	x
81		157.075	161.675			x	x
22	*m)*	157.100	161.700		x	x	x
82	*m), o)*	157.125	161.725		x	x	x
23	*m), o)*	157.150	161.750		x	x	x
83	*m), o)*	157.175	161.775		x	x	x
24	*m), o)*	157.200	161.800		x	x	x
84	*m), o)*	157.225	161.825		x	x	x

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public corres-pondence
		Ship stations	Coast stations		Single frequency	Two frequency	
25	*m), o)*	157.250	161.850		x	x	x
85	*m), o)*	157.275	161.875		x	x	x
26	*m), o)*	157.300	161.900		x	x	x
86	*m), o)*	157.325	161.925		x	x	x
27		157.350	161.950			x	x
87		157.375			x		
28		157.400	162.000			x	x
88		157.425			x		
AIS 1	*l)*	161.975	161.975				
AIS 2	*l)*	162.025	162.025				

Notes referring to the Table

Specific notes

MOD

m) These channels may be operated as single frequency channels, subject to special arrangement between interested or affected administrations.

ADD

o) These channels may be used to provide bands for initial testing and the possible future introduction of new technologies, subject to special arrangement between interested or affected administrations. Stations using these channels or bands for the testing and the possible future introduction of new technologies shall not cause harmful interference to, and shall not claim protection from, other stations operating in accordance with Article **S5**.

MOD

RESOLUTION 122 (Rev.WRC-2000)

Use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz by high altitude platform stations (HAPS) in the fixed service and by other services and the potential use of bands in the range 18-32 GHz by HAPS in the fixed service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the band 47.2-50.2 GHz is allocated to the fixed, mobile and fixed-satellite services on a co-primary basis;

b) that WRC-97 made provision for operation of HAPS, also known as stratospheric repeaters, within the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;

c) that ITU 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 ITU Constitution);

d) that systems based on new technologies using high altitude platforms will be able to provide high-capacity, competitive services to urban and rural areas;

e) that the development of any service requires major investment and that manufacturers and operators should be given the confidence to make the necessary investment;

f) that high altitude platform systems are in an advanced stage of development and some countries have notified such systems to ITU in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;

g) that WRC-97 adopted a definition of HAPS in Article **S1**, modified No. **S11.24** and added No. **S11.26** providing for notices relating to assignments for HAPS in the bands 47.2-47.5 GHz and 47.9-48.2 GHz and that the Radio Regulations Board issued a provisional rule of procedure concerning notification periods in No. **S11.24/1228** in February 1997;

h) that in spite of the urgency attached to the development of such systems, technical, sharing and regulatory issues should be further studied in order to achieve the most efficient use of the spectrum available for these systems;

i) that while the decision to deploy HAPS can be taken on a national basis, such deployment may affect neighbouring administrations, particularly in small countries;

j) that technical studies have been undertaken on the characteristics of a system using HAPS in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz and on the coordination and sharing requirements between systems using HAPS and systems in the conventional fixed service, radio astronomy and in other services, but that further studies are still in progress on the potential for interference between such systems;

k) that the radio astronomy service has primary allocations in the bands 42.5-43.5 GHz and 48.94-49.04 GHz;

l) that results of ITU-R studies have been presented which indicate that in WRC-97 designated bands at 47.2-47.5 GHz and 47.9-48.2 GHz, sharing between fixed-service systems using HAPS and other conventional fixed-service systems in the same area will require appropriate interference mitigation techniques to be developed and implemented;

m) that No. **S5.552** urges administrations to reserve fixed-satellite service use of the band 47.2-49.2 GHz for feeder links for the broadcasting-satellite service, and that ITU-R studies indicate that HAPS in the fixed service may share with broadcasting-satellite feeder links;

n) that ITU-R studies in the bands 47.2-47.5 GHz and 47.9-48.2 GHz indicate that sharing between fixed-service systems using HAPS and the fixed-satellite service could be feasible under certain limitations, such as geographical separation between HAPS-based systems and FSS earth stations;

o) that since the 47 GHz bands are more susceptible to rain attenuation in certain areas of Region 3, the range 18-32 GHz has been proposed for Region 3 for possible identification of additional spectrum in ITU-R, and preliminary ITU-R studies are in progress for these bands;

p) that the 18-32 GHz range is already heavily used by a number of different services and a number of other types of applications in the fixed service;

q) that Nos. **S5.5SSS** and **S5.5RRR** permit the use of HAPS in the fixed service in the bands 27.5-28.35 GHz and 31.0-31.3 GHz in certain countries on a non-interference, non-protection basis in order to address issues of rain attenuation associated with the 47 GHz bands referred to in *considering b)* above;

r) that technical, sharing and regulatory issues should be studied in order to determine criteria for the operation of HAPS in the bands referred to in *considering q)* above;

s) that the 31.3-31.8 GHz band is allocated to the radio astronomy, EESS (passive) and space research (passive) services and the 31.8-32.3 GHz band is allocated to the space research (deep space) service, and that there is a need to appropriately protect these services from unwanted emissions, taking into account No. **S5.340** and the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769,

resolves

1 to urge administrations to facilitate coordination between HAPS in the fixed service operating in the bands 47.2-47.5 GHz and 47.9-48.2 GHz and other co-primary services in their territory and adjacent territories;

2 that, on a provisional basis, the procedures of Article **S9** shall be used for coordination between satellite systems and systems using HAPS in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;

3 to invite WRC-03 to review the results of the studies specified below and consider refinement of the regulatory provisions that might facilitate a broader application of these high altitude platform technologies,

requests ITU-R

1 to study the regulatory provisions that might be needed in order to address those cases where the deployment of HAPS in the territory of one administration may affect neighbouring administrations;

2 to continue to carry out studies on the appropriate technical sharing criteria for the situations referred to in *considering j)* above;

3 to conduct studies, as a matter of urgency, and taking into account the requirements of other fixed-service systems and other services, on the feasibility of identifying suitable frequencies, in addition to the 2 x 300 MHz paired band at 47 GHz, for the use of HAPS in the fixed service in the range 18-32 GHz in Region 3, focusing particularly, but not exclusively, on the bands 27.5-28.35 GHz and 31.0-31.3 GHz,

instructs the Director of the Radiocommunication Bureau

1 that notices concerning HAPS that were received by the Bureau prior to 22 November 1997, and provisionally recorded in the Master International Frequency Register in accordance with the provisional rule of procedure issued by the Board, shall be maintained;

2 that from 22 November 1997, and pending review of the sharing studies in *considering j)* and review of the notification process by WRC-03, the Bureau shall accept notices in the bands 47.2-47.5 GHz and 47.9-48.2 GHz only for HAPS in the fixed service and for feeder links for the broadcasting-satellite service, shall continue to process notices for fixed-satellite service networks (except for feeder links for the broadcasting-satellite service) for which complete information for advance publication has been received prior to 27 October 1997, and shall inform the notifying administrations accordingly.

SUP

RESOLUTION 126 (WRC-97)

Use of the frequency band 31.8-33.4 GHz for high-density systems in the fixed service

MOD

RESOLUTION 342 (Rev.WRC-2000)

New technologies to provide improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the agenda of this conference included the consideration of the use of new technologies for the maritime mobile service in the band 156-174 MHz and the consequential revision of Appendix **S18**;

b) Recommendation **318 (Mob-87),** particularly *noting b)* and *c)* thereof;

c) that Appendix **S18** identifies frequencies to be used for distress and safety communications on an international basis;

d) that the introduction of new technology in the maritime mobile service shall not disrupt distress and safety communications in the VHF band including those established by the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended;

e) that the date for full implementation of GMDSS was 1 February 1999;

f) that ITU-R is conducting studies on improving efficiency in the use of this band, and that these studies are still ongoing;

g) that changes made in Appendix **S18** should not prejudice the future use of these frequencies or the capabilities of systems or new applications required for use by the maritime mobile service;

h) that the congestion on Appendix **S18** frequencies calls for the implementation of efficient new technologies;

i) that the use of new technology on maritime VHF frequencies will make it possible to better respond to the emerging demand for new services;

j) that ITU-R has approved Recommendation ITU-R M.1312 relating to a long-term solution for improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service;

k) that ITU-R has approved Recommendation ITU-R M.1371 relating to technical characteristics for a universal shipborne automatic identification system using time-division multiple access in the VHF maritime mobile band;

l) that there is a need to maintain some duplex channels for specific applications,

noting

a) that the global maritime market may not be of a sufficient size to warrant the development of a new system solely for the maritime service;

b) that digital systems have been successfully implemented in the land mobile service,

noting also

that this conference has modified Appendix **S18**, including the addition of Note *o)*, to permit the possible use on a voluntary basis of various channels or bands created by the conversion of some duplex channels to simplex channels, for the initial testing and the possible future introduction of new technologies,

resolves

1 that, in order to provide full worldwide interoperability of equipment on ships, there should be one technology, or more than one interoperable worldwide technology, implemented under Appendix **S18**;

2 that, as soon as the ITU-R studies are complete, a future competent conference should consider any necessary changes to Appendix **S18** to enable the use of new technologies by the maritime mobile service,

invites ITU-R

to finalize the following studies:

a) identify the future requirements of the maritime mobile service;

b) identify suitable technical characteristics of the system or interoperable systems to replace existing technology;

c) identify necessary modifications to the table of frequencies contained in Appendix **S18**;

d) recommend a transition plan for the introduction of new technologies;

e) recommend how new technologies can be introduced while ensuring compliance with the distress and safety requirements,

instructs the Secretary-General

to communicate this resolution to the International Maritime Organization and the International Association of Lighthouse Authorities.

ADD

RESOLUTION [COM5/4] (WRC-2000)

Consideration by a future competent world radiocommunication conference of issues dealing with sharing and adjacent-band compatibility between passive and active services above 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the changes made to the Table of Frequency Allocations by this conference in bands above 71 GHz were based on the requirements known at the time of the conference;

b) that the passive service spectrum requirements above 71 GHz are based on physical phenomena and therefore are well known, and are reflected in the changes made to the Table of Frequency Allocations by this conference;

c) that several bands above 71 GHz are already used by EESS (passive) and SRS (passive) because they are unique bands for the measurement of specific atmospheric parameters;

d) that there is currently only limited knowledge of requirements and implementation plans for the active services that will operate in bands above 71 GHz;

e) that, in the past, technological developments have led to viable communication systems operating at increasingly higher frequencies, and that this can be expected to continue so as to make communication technology available in the future in the frequency bands above 71 GHz;

f) that, in the future, alternative spectrum needs for the active and passive services should be accommodated when the new technologies become available;

g) that, following the revisions to the Table of Frequency Allocations by this conference, sharing studies may be required for services in some bands above 71 GHz;

h) that interference criteria for passive sensors have been developed and are given in Recommendation ITU-R SA.1029;

i) that protection criteria for radio astronomy have been developed and are given in Recommendation ITU-R RA.769;

j) that several satellite downlink allocations have been made in bands adjacent to those allocated to the radio astronomy service;

k) that, sharing criteria for active and passive services in bands above 71 GHz have not yet been fully developed within ITU-R;

l) that, in order to ensure protection of passive services above 71 GHz, this conference avoided making allocations to both active and passive services in some bands such as 100-102 GHz, 148.5-151.5 GHz and 226-231.5 GHz, so as to prevent potential sharing problems,

recognizing

that, to the extent practicable, the burden of sharing among active and passive services should be equitably distributed among the services to which allocations are made,

resolves

that a future competent conference should consider the results of ITU-R studies with a view to revising the Radio Regulations, as appropriate, in order to accommodate the emerging requirements of active services, taking into account the requirements of the passive services, in bands above 71 GHz,

urges administrations

to note the possibility of changes to Article **S5** to accommodate emerging requirements for active services, as indicated in this resolution, and to take this into account in the development of national policies and regulations,

invites ITU-R

1 to continue its studies to determine if and under what conditions sharing is possible between active and passive services in the bands above 71 GHz, such as, but not limited to, 100-102 GHz, 116-122.25 GHz, 148.5-151.5 GHz, 174.8-191.8 GHz, 226-231.5 GHz and 235-238 GHz;

2 to study means of avoiding adjacent-band interference from space services (downlinks) into radio astronomy bands above 71 GHz;

3 to take into account the principles of burden-sharing to the extent practicable in their studies;

4 to complete the necessary studies when the technical characteristics of the active services in these bands are known;

5 to develop Recommendations specifying sharing criteria for those bands where sharing is feasible,

instructs the Secretary-General

to bring this resolution to the attention of the international and regional organizations concerned.

ADD

RESOLUTION [COM5/11] (WRC-2000)

Development of the technical basis for determining the coordination area for coordination of a receiving earth station in the space research service (deep space) with transmitting stations of high-density systems in the fixed service in the 31.8-32.3 GHz and 37-38 GHz bands

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the band 31.8-32.3 GHz is allocated to the space research service for deep space operations only, the band 37-38 GHz is allocated to the space research service (space-to-Earth), and both bands are allocated to the fixed service for the use of high-density applications and to other services on a primary basis;

b) that the 31.8-32.3 GHz band offers unique advantages in support of deep-space missions;

c) that space research service earth stations operating in these bands employ very high-gain antennas and very low-noise amplifiers in order to receive weak signals from deep space;

d) that fixed-service stations in these bands are expected to be deployed in large numbers over urban areas of large geographical extent;

e) that studies are being initiated to characterize short-term (of the order of 0.001% of the time, commensurate with the protection criteria given in Recommendations ITU-R SA.1396 and ITU-R SA.1157) anomalous propagation from transmitting stations dispersed over a large geographical area to a single receiving earth station (area-to-point propagation);

f) that preliminary ITU-R studies have indicated that the coordination distance between a space research service (deep space) earth station and a single urban area may be of the order of 250 km;

g) that there are currently three space research service (deep space) earth stations in operation or planned for operation near Goldstone (United States), Madrid (Spain) and Canberra (Australia), and there are up to ten more earth stations planned in the future,

noting

that Resolution **[COM4/1]** provides a mechanism to update Appendix **S7** as required,

resolves to invite ITU-R

to develop, as a matter of urgency, the technical basis for determining the coordination area for coordination of a receiving earth station in the space research service (deep space) with transmitting stations of high-density systems in the fixed service in the 31.8-32.3 GHz and 37-38 GHz bands,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

ADD

RESOLUTION [COM5/14] (WRC-2000)

Feasibility of use by high altitude platform stations in the fixed and mobile services in the frequency bands above 3 GHz allocated exclusively for terrestrial radiocommunication

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that ITU 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 ITU Constitution);

b) that systems based on new technologies using high altitude platform stations (HAPS) can potentially be used for various applications such as the provision of high-capacity, competitive services to urban and rural areas;

c) that WRC-97 made provision for the use of HAPS within the fixed service in the bands 47.2-47.5 GHz and 47.9-48.2 GHz (see also Resolution **122 (Rev.WRC-2000)**;

d) that in view of the altitude at which HAPS are placed, the area visible from a HAPS may be within a country or also include neighbouring countries;

e) that some administrations intend to operate systems using HAPS in the bands allocated exclusively by the Table of Frequency Allocations or by footnotes for terrestrial radiocommunication such as the fixed and mobile services,

recognizing

a) ITU-R studies relating to geometrical coordination distance for the visible distance from HAPS, as described in Recommendation ITU-R F.1501,

resolves

to recommend to WRC-03 to review the feasibility of facilitating the implementation of systems using HAPS in the fixed and mobile services in bands above 3 GHz allocated exclusively by the Table of Frequency Allocations or by footnotes for terrestrial radiocommunication,

invites ITU-R

to carry out, as a matter of urgency, regulatory and technical studies to determine the feasibility of facilitating systems using HAPS in the fixed and mobile services in bands above 3 GHz allocated exclusively by the Table of Frequency Allocations or by footnotes for terrestrial radiocommunication, taking account of existing use and future requirements in these bands, and any impact on allocations in adjacent bands,

encourages administrations

to contribute actively to the sharing studies in accordance with this resolution.

MOD

RESOLUTION 5 (Rev.WRC-2000)

Technical cooperation with the developing countries in the study of propagation in tropical areas

The World Radiocommunication Conference (Istanbul, 2000),

having noted

that the assistance provided for the developing countries by the Union in the field of telecommunications in cooperation with other United Nations specialized agencies, such as the United Nations Development Programme (UNDP), augurs well for the future,

aware

a) of the fact that the developing countries, particularly those in tropical areas, require adequate knowledge of radiowave propagation in their territories in order to make rational and economical use of the radio-frequency spectrum;

b) of the importance of propagation in radiocommunications;

c) of the importance of the work of 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 instruct 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;

2 to assist these countries, if necessary with the collaboration of international and regional organizations such as the Asia-Pacific Broadcasting Union (ABU), Arab States Broadcasting Union (ASBU), African Telecommunication Union (ATU) 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-frequency 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 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.

MOD

RESOLUTION 20 (Rev.WRC-2000)

Technical cooperation with developing countries in the field of aeronautical telecommunications

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the allocations of the frequency bands and the provisions concerning various aeronautical mobile services have been revised several times by recent conferences;

b) that some of these frequency bands and provisions support the worldwide implementation of new aeronautical telecommunication systems;

c) that on the other hand, some of these frequency bands and provisions support existing aeronautical systems that may be affected by the revision;

d) that, as a consequence of *a)*, *b)* and *c)*, technological modernization will be necessary in order to maintain and improve the safety and regularity of international civil aviation, the accuracy and security of aeronautical radionavigation and the efficiency of distress and rescue systems;

e) that the developing countries may require assistance in improving the training of technical staff, as well as in introducing new systems, in coping with technological modernization and enhancing the operation of aeronautical telecommunications,

recognizing

a) the value of the assistance which, in conjunction with other international organizations, the Union has provided and may continue to provide to developing countries in the field of telecommunications;

b) that Resolution 20 (Mob-87) adopted by the World Administrative Radio Conference for the Mobile Services (Geneva, 1987) provides a good basis for the technical cooperation with developing countries in the field of aeronautical telecommunications that has been undertaken by the International Civil Aviation Organization,

resolves to instruct the Secretary-General

1 to encourage the International Civil Aviation Organization (ICAO) to continue its assistance to developing countries which are endeavouring to improve their aeronautical telecommunications, in particular by providing them with technical advice for the planning, establishment, operation and maintenance of equipment, as well as help with the training of staff, essentially in matters relating to the new technologies;

2 for this purpose, to seek the continued collaboration of ICAO, the United Nations Conference for Trade and Development (UNCTAD) and other specialized agencies of the United Nations, as appropriate;

3 to continue to give special attention to seeking the aid of the United Nations Development Programme (UNDP) and other sources of financial support, to enable the Union to render sufficient and effective technical assistance in the field of aeronautical telecommunications,

invites the developing countries

so far as possible, to give a high level of priority to and include in their national programmes of requests for technical assistance projects relating to aeronautical telecommunications and to support multinational projects in that field.

MOD

RESOLUTION 27 (Rev.WRC-2000)

Use of incorporation by reference in the Radio Regulations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the principles of incorporation by reference were adopted by the WRC-95, revised by WRC-97 and further refined by this conference (see Annexes 1 and 2 to this resolution);

b) that there are provisions in the Radio Regulations containing references which fail to distinguish adequately whether the status of the referenced text is mandatory or non-mandatory;

noting

that references to resolutions or recommendations of a world radiocommunication conference (WRC) require no special procedures, and are acceptable for consideration, since such texts will have been agreed by a WRC,

resolves

1 that for the purposes of the Radio Regulations, the term “incorporation by reference” shall only apply to those references intended to be mandatory;

2 that when introducing new instances of incorporation by reference:

– only texts which are relevant to a specific WRC agenda item may be considered;

– for the correct method of reference, the principles set out in Annex 1 to this resolution and the guidance contained in Annex 2 to this resolution shall be applied;

3 that the procedure described in Annex 3 to this resolution shall be applied during WRCs for the adoption of texts for incorporation by reference;

4 that all texts incorporated by reference at the conclusion of each WRC shall be collated and published in a volume of the Radio Regulations (see Annex 3 to this resolution),

instructs the Director of the Radiocommunication Bureau

to bring this resolution to the attention of the Radiocommunication Assembly and the ITU-R study groups,

urges administrations

to prepare proposals to future conferences in order to clarify the status of references, where ambiguities remain regarding the mandatory or non-mandatory status of the references in question, and where they are relevant to specific agenda items.

MOD

ANNEX 1 TO RESOLUTION 27 (Rev.WRC-2000)

Principles of incorporation by reference

1 For the purposes of the Radio Regulations, the term “incorporation by reference” shall apply only to those references intended to be mandatory.

2 Where the relevant texts are brief, the referenced material should be placed in the body of the Radio Regulations rather than using incorporation by reference.

3 Texts which are of a non-mandatory nature or which refer to other texts of a non-mandatory nature shall not be considered for incorporation by reference.

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 text incorporated by reference shall have the same treaty status as the Radio 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 text incorporated by reference must be submitted for adoption by a competent WRC in accordance with *resolves* 3;

4.4 all texts incorporated by reference shall be published following a WRC, in accordance with *resolves* 4.

5 If, between WRCs, a text incorporated by reference (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the earlier version incorporated by reference until such time as a competent WRC agrees to incorporate the new version. The mechanism for considering such a step is given in Resolution **28 (Rev.WRC-2000)**.

6 Where references are non-mandatory, it is not necessary to establish specific conditions in applying the texts quoted. In such cases, reference should be made using the terminology “the most recent version” of a Recommendation.

MOD

ANNEX 2 TO RESOLUTION 27 (Rev.WRC-2000)

Application of incorporation by reference

When introducing new instances of incorporation by reference in the provisions of the Radio Regulations or reviewing existing instances of incorporation by reference, administrations and ITU-R should address the following factors in order to ensure that the correct style of reference is employed for the intended purpose:

1 whether each reference is mandatory, i.e. incorporated by reference, or non-mandatory;

2 mandatory references shall use clear linking language, i.e. “shall”;

3 non-mandatory references, or ambiguous references that are determined to be of a non-mandatory character, shall use appropriate linking language, e.g. “should” or “may”;

4 mandatory references shall be explicitly and specifically identified, e.g. “Recommendation ITU-R M.541-8”;

5 if the intended reference material is, as a whole, unsuitable as treaty-status text, the reference shall be limited to just those portions of the material in question which are of a suitable nature, e.g. “Annex A to Recommendation ITU-R Z.123-4”.

SUP

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

Provisions of the Radio Regulations referring to ITU-R and ITU-T Recommendations

ADD

ANNEX 3 TO RESOLUTION 27 (Rev.WRC-2000)

Procedures applicable by WRC for the adoption of texts for incorporation by reference

The referenced texts be made available to delegations in sufficient time for all administrations to consult them in their final English, Spanish and French versions. A single copy of the texts will be made available to each administration as a conference document.

During the course of each WRC, a list of the texts incorporated by reference shall be developed and maintained by the committees. This list shall be published as a conference document in line with developments during the conference.

Following the end of each WRC, the Bureau and General Secretariat will update the volume of the Radio Regulations serving as the repository of texts incorporated by reference in line with developments at the conference as recorded in the above-mentioned document.

SUP

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

List of ITU-R Recommendations referred to in the Radio Regulations[1]

MOD

RESOLUTION 51 (Rev.WRC-2000)

Transitional arrangements relating to the advance publication and coordination of satellite networks

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that as a result of the review under Resolution 18 (Kyoto, 1994) of the Plenipotentiary Conference, 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 WRC-97 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 WRC-97, and it is necessary to provide for some transitional measures for the treatment of this information by the Radiocommunication Bureau;

d) that WRC-97 decided 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, were to be applied by the Bureau and by administrations on a provisional basis from 22 November 1997;

e) that WRC-97 decided that, for satellite networks which were subject to coordination for which the API had been received by the Bureau prior to 22 November 1997 but the coordination data had not been received by the Bureau prior to that date, the responsible administration would have until 22 November 1999 or the end of the period pursuant to the application of No. **1056A**, whichever date came earlier, to submit the coordination data in accordance with the applicable provisions of the Radio Regulations; otherwise the Bureau would cancel the relevant API in accordance with No. **1056A** or No. **S9.5D** as applicable;

f) that WRC-97 decided that the revised Appendix **S4** with respect to the API for satellite networks which were subject to coordination under Section II of Article **S9** was to be applied as of 22 November 1997,

resolves

that, for satellite networks for which the API was received by the Bureau prior to 22 November 1997, the maximum allowed time period from the date of publication of the API to bring the relevant frequency assignments into use shall be six years plus the extension pursuant to No. **1550** (see also Resolution **49 (WRC-97)**).

MOD

RESOLUTION 124 (Rev.WRC-2000)

Protection of the fixed service in the frequency band 8 025-8 400 MHz sharing with geostationary-satellite systems of the Earth exploration-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that prior to WRC-97, the band 8 025-8 400 MHz was allocated to the Earth exploration-satellite service (space-to-Earth) on a secondary basis in Regions 1 and 3, except for those countries listed in former No. **S5.464**;

b) that the power flux-density limits given in Table **S21-4** of Article **S21** apply to emissions from space stations of the Earth exploration-satellite service (space-to-Earth);

c) that, for those administrations where the secondary allocation applied before WRC-97, geostationary orbital avoidance was not required for the fixed service and, therefore, the power flux-density limits given in Table **S21-4** of Article **S21** may give rise to excessive interference to the fixed service;

d) that WRC-97 adopted provisional power flux-density limits as specified in No. **S5.462A** which are lower than those shown in Table **S21-4** of Article **S21** to protect the fixed service;

e) that, prior to WRC-97, no studies had been conducted in this frequency band by ITU-R on the power flux-density values to apply to space stations of geostationary-satellite systems in the Earth exploration-satellite service where geostationary orbital avoidance had not been implemented by stations of the fixed service,

considering further

a) that the band 8 025-8 400 MHz is used extensively by the fixed service in accordance with ITU-R radio-frequency channel arrangements for the 8 GHz band (see Recommendation ITU-R F.386) and is also used by some countries for television outside broadcast applications;

b) that Recommendation ITU-R F.1502, which was developed in response to Resolution 124 (WRC-97) and approved by the Radiocommunication Assembly (Istanbul, 2000), recommends power flux-density limits different from those in No. **S5.462A**,

resolves

to invite a future competent world radiocommunication conference to review No. **S5.462A**, taking into account Recommendation ITU-R F.1502, and to take appropriate action.

MOD

RESOLUTION 127 (Rev.WRC-2000)

Studies relating to consideration of allocations in bands around 1.4 GHz for feeder links of the non-geostationary-satellite systems in the mobile-satellite service with service links operating below 1 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the agenda of WRC-97 included consideration of the adoption of additional allocations for the non-geostationary (non-GSO) mobile-satellite service (MSS);

b) that the Report of the 1999 Conference Preparatory Meeting (CPM-99) stated that the Radiocommunication Bureau has identified 25 non-GSO MSS networks as at 26 November 1999 at frequencies below 1 GHz, at some stage 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, but also noted that interference to radio astronomy can be avoided using various techniques including low-power transmitter levels, choice of modulation, symbol shaping, output filtering and band limiting filters, the use of which can minimize the band separation necessary to meet the recommended interference threshold levels for out-of-band emissions;

d) that factors taken into account by 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 Gaussian filtered minimum shift keying, 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;

e) that factors taken into account by post-CPM-97 activities concerning sharing with the radiolocation service 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;

f) that, since CPM-97, ITU-R studies have been carried out, containing theoretical analyses, with a view to determining if the operation of non-GSO MSS feeder links in bands around 1.4 GHz would be compatible with the Earth exploration-satellite (passive), radio astronomy and space research (passive) services;

g) that the theoretical analyses have indicated that sufficient reduction of out-of-band and spurious emissions could be achieved to protect the sensitive science services in the band 1 400-1 427 MHz;

h) that it is necessary to conduct additional tests and measurements of feeder-link transmissions from systems having the characteristics, performance and reliability of equipment that would be used in operational systems;

i) that such additional tests and measurements will be completed prior to WRC-03,

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 services,

noting

a) that Resolution **214 (Rev.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, since WRC-95, ITU-R studies have been carried out 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,

invites ITU-R, as a matter of urgency,

1 to continue studies, and to carry out additional tests and demonstrations to validate the studies on operational and technical means to facilitate sharing, in portions of the band 1 390-1 393 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 carry out additional tests and demonstrations to validate the studies on operational and technical means to facilitate sharing, in portions of the band 1 429-1 432 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 carry out additional studies, including the measurement of emissions from equipment that would be employed in operational systems 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;

resolves

to recommend that WRC-03 consider, on the basis of completion of studies referred to in *invites ITU-R* 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.

MOD

RESOLUTION 728 (Rev.WRC-2000)

Studies relating to consideration of allocations in the broadcasting band 470-862 MHz to non-geostationary mobile-satellite services

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the agenda of this conference included consideration of the adoption of additional allocations for non-geostationary mobile-satellite services (non-GSO MSSs);

b) that the Report of the 1999 Conference Preparatory Meeting (CPM-99) stated that the Radiocommunication Bureau has identified at least 22 non-GSO MSS networks as at 28 April 1999 at frequencies below 1 GHz, at some stage 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 Recommendations ITU-R BT.655-4, ITU-R BT.417-4 and ITU-R 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;

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 transition period of parallel operation of analogue and digital television networks the usage of this band for television will increase;

j) that ITU-R studies are currently under way to determine television broadcasting requirements under Question ITU-R 268/11 and sound broadcasting requirements under Question ITU-R 224/10,

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 additional 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, and including consideration of digital television systems and parallel transmissions during the transition period;

2 to recommend that [a future competent conference/WRC-05/06] 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 the non-GSO MSS,

urges administrations

to participate actively in such studies, with the involvement of interested parties.

ADD

RESOLUTION [GT PLEN-2/1] (WRC-2000)

Consideration by a future competent world radiocommunication conference of issues dealing with allocations to the mobile, fixed, radiolocation, Earth exploration-satellite (active), and space research (active) services in the frequency range 5 150-5 725 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that there is a need to provide globally harmonized frequencies in the bands 5 150-5 350 MHz and 5 470-5 725 MHz for the mobile service for wireless access systems including radio local area networks (RLANs);

b) that there is a need for frequencies for fixed wireless access applications in the fixed service in Region 3 in the band 5 250-5 350 MHz;

c) that there is a need for additional spectrum for the Earth exploration-satellite service (active) and space research service (active) in the frequency range 5 460-5 570 MHz;

d) that ongoing studies in ITU-R indicate that sharing in the band 5 150-5 350 MHz between RLANs and space services is feasible under specified conditions;

e) that there is a need to upgrade the status of frequency allocations to the radiolocation service in the frequency range 5 350-5 650 MHz,

recognizing

a) that sharing criteria between existing services and the proposed new allocations should be established;

b) that it is important to protect the existing primary services having allocations in the frequency range 5 150-5 725 MHz;

c) that the existing and new allocations are interdependent, particularly with respect to the relationship between the terrestrial and the space services,

resolves

that, on proposals from administrations and taking into account the results of studies in ITU-R and the Conference Preparatory Meeting, [WRC-03] should consider:

1 allocation of frequencies to the mobile service in the bands 5 150-5 350 MHz and 5 470-5 725 MHz for the implementation of wireless access systems including RLANs;

2 a possible allocation in Region 3 to the fixed service in the band 5 250-5 350 MHz, while fully protecting the worldwide Earth exploration-satellite (active) and space research (active) services;

3 additional primary allocations for the Earth exploration-satellite service (active) and space research service (active) in the frequency range 5 460-5 570 MHz;

4 review, with a view to upgrading, of the status of frequency allocations to the radiolocation service in the frequency range 5 350-5 650 MHz,

invites ITU-R

to conduct, and complete in time for [WRC-03], the appropriate studies leading to technical and operational recommendations to facilitate sharing between the services referred to in the *resolves* and existing services.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 460-E
28 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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**
COM 5	445	**ARTICLE S21** – Table S21-4 – S21.16.6 – S21.16.6*bis* – S21.16.8 – S21.16.9 **ARTICLE S22** – S22.5B – S22.5C – S22.5C.1, D.1, F.1 – Table S22-1A – Table S22-1B – Table S22-1C – Table S22-1D – S22.5CA – S22.5D – S22.5D.1 – Table S22-2 – S22.5E – S22.5E.1 – S22.5F – S22.5F.1 – Table S22-3, Part A – Table S22-3, Part B – S22.5G – S22.5H – S22.5I – Table S22-4, Part A – Table S22-4, Part B – Table S22-4A – Table S22-4A1 – Table S22-4B

BLUE PAGES

– Table S22-4C
– S22.5J
– S22.5K

APPENDIX S4
– Annex 2A
– Annex 2B

APPENDIX S5
– Table S5-1

RESOLUTION 131 (WRC-97)

RESOLUTION [COM5/19] (WRC-2000)

RESOLUTION [COM5/20] (WRC-2000)

RESOLUTION [COM5/21] (WRC-2000)

Annex: 34 pages

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

MOD

TABLE **S21-4** *(continued)*

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°**	
10.7-11.7 GHz	Fixed-satellite (space-to-Earth), geostationary-satellite orbit	–150	–150 + 0.5(δ – 5)	–140	4 kHz
10.7-11.7 GHz	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	–126	–126 + 0.5(δ – 5)	–116	1 MHz
11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. **S5.494** and **S5.496)** 11.7-12.7 GHz (Region 2) 11.7-12.75 GHz (Region 3)	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	–124	–124 + 0.5(δ – 5)	–114	1 MHz
12.2-12.75 GHz[7] (Region 3) 12.5-12.75 GHz[7] (Region 1 countries listed in Nos. **S5.494** and **S5.496**)	Fixed-satellite (space-to-Earth), geostationary-satellite orbit	–148	–148 + 0.5(δ – 5)	–138	4 kHz
15.43-15.63 GHz	Fixed-satellite (space-to-Earth)	–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

17.7-19.3 GHz[7, 8]	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth)	–115[12bis] or –115–X[12]	–115 + 0.5(δ – 5)[12bis] or –115 – X + ((10 + X)/20) (δ – 5)[12]	–105[12bis] or –105 [12]	1 MHz
19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz	Fixed-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth) Inter-satellite	–115	–115 + 0.5(δ – 5)	–105	1 MHz

MOD

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[12] **S21.16.6** The function X is defined as a function of the number, N, of satellites in the non-GSO FSS constellation, as follows:

– for N ≤ 50 $X = 0$ (dB)

– for 50 < N ≤ 288 $X = \frac{5}{119}(N - 50)$ (dB)

– for N > 288 $X = \frac{1}{69}(N + 402)$ (dB)

In the band 18.8-19.3 GHz, these limits apply to emissions of any space station in a non-GSO FSS system for which complete coordination or notification information, as appropriate, has been received by the Radiocommunication Bureau after 17 November 1995, and which was not operational by that date.

ADD

[12*bis*] **S21.16.6*bis*** These limits apply to emissions of a space station on a meteorological satellite and on a GSO FSS satellite. They also apply to emissions of any space station in a non-GSO FSS system in the band 18.8-19.3 GHz for which complete coordination or notification information has been received by the Radiocommunication Bureau by 17 November 1995, or which was in operation by that date.

SUP

[14] **S21.16.8**

SUP

[15] **S21.16.9**

ARTICLE S22

Space services[1]

Section II – Control of interference to geostationary-satellite systems

SUP

S22.5B

MOD

S22.5C § 6 1) The equivalent power flux-density[2], epfd↓ 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 in the fixed-satellite service in the frequency bands listed in Tables **S22-1A** to **S22-1D**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Tables **S22-1A** to **S22-1D** 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 specified in Tables **S22-1A** to **S22-1D**, for all pointing directions towards the geostationary-satellite orbit.

MOD

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[2] **S22.5C.1, D.1, F.1** The equivalent power flux-density is defined as the sum of the power flux-densities produced at a GSO receive station on the Earth's surface or in the geostationary orbit, as appropriate, by all the transmit stations within a non-geostationary-satellite system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_a} 10^{\frac{P_i}{10}} \cdot \frac{G_t(\theta_i)}{4.\pi d_i^2} \cdot \frac{G_r(\phi_i)}{G_{r,\max}}\right]$$

where:

N_a: is the number of transmit stations in the non-GSO system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i: is the index of the transmit station considered in the non-GSO system;

P_i: is the RF power at the input of the antenna of the transmit station, considered in the non-GSO system in dBW in the reference bandwidth;

θ_i: is the off-axis angle between the boresight of the transmit station considered in the non-GSO system and the direction of the GSO receive station;

$G_t(\theta_i)$: is the transmit antenna gain (as a ratio) of the station considered in the non-GSO system in the direction of the GSO receive station;

d_i: is the distance in metres between the transmit station considered in the non-GSO system and the GSO receive station;

ϕ_i: is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the ith transmit station considered in the non-GSO system;

$G_r(\phi_i)$: is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the ith transmit station considered in the non-GSO system;

$G_{r,max}$: is the maximum gain (as a ratio) of the antenna of the GSO receive station;

epfd: is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

SUP

TABLE **S22-1**

ADD

TABLE **S22-1A**[3, 5, 6, 6*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ 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[4]
10.7-11.7 in all Regions; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–175.4 –174 –170.8 –165.3 –160.4 –160 –160	0 90 99 99.73 99.991 99.997 100	40	60 cm Recommendation ITU-R S.1428
	–181.9 –178.4 –173.4 –173 –164 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.74 99.857 99.954 99.984 99.991 99.997 99.997 99.9993 100	40	1.2 m Recommendation ITU-R S.1428
	–190.45 –189.45 –187.45 –182.4 –182 –168 –164 –162 –160 –160	0 90 99.5 99.7 99.855 99.971 99.988 99.995 99.999 100	40	3 m Recommendation ITU-R S.1428
	–195.45 –195.45 –190 –190 –172.5 –160 –160	0 99 99.65 99.71 99.99 99.998 100	40	10 m Recommendation ITU-R S.1428

[3] For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

[4] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

5 In addition to the limits shown in Table **S22-1A**, the following single-entry epfd↓ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **S22-1A**.

100% of the time epfd↓ (dB(W/(m^2 · 40 kHz)))	**Latitude (North or South) (°)**
–160	0 < |Latitude| ≤ 57.5
–160 + 3.4 (57.5 – |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
–165.3	63.75 ≤ |Latitude|

6 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

6*bis* In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30B** will be fully protected.

ADD

TABLE **S22-1B**[7, 9, 9*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd↓ dB(W/m^2)**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[8]
17.8-18.6	–175.4 –175.4 –172.5 –167 –164 –164	0 90 99 99.714 99.971 100	40	1 m Recommendation ITU-R S.1428
	–161.4 –161.4 –158.5 –153 –150 –150	0 90 99 99.714 99.971 100	1 000	
17.8-18.6	–178.4 –178.4 –171.4 –170.5 –166 –164 –164	0 99.4 99.9 99.913 99.971 99.977 100	40	2 m Recommendation ITU-R S.1428
	–164.4 –164.4 –157.4 –156.5 –152 –150 –150	0 99.4 99.9 99.913 99.971 99.977 100	1 000	

17.8-18.6	–185.4 –185.4 –180 –180 –172 –164 –164	0 99.8 99.8 99.943 99.943 99.998 100	40	5 m Recommendation ITU-R S.1428
	–171.4 –171.4 –166 –166 –158 –150 –150	0 99.8 99.8 99.943 99.943 99.998 100	1 000	

7 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

8 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

9 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

9*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

ADD

TABLE **S22-1C**[10, 12, 12*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd↓ dB(W/m^2)**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[11]
19.7-20.2	–187.4 –182 –172 –154 –154	0 71.429 97.143 99.983 100	40	70 cm Recommendation ITU-R S.1428
	–173.4 –168 –158 –140 –140	0 71.429 97.143 99.983 100	1 000	

19.7-20.2	–190.4 –181.4 –170.4 –168.6 –165 –160 –154 –154	0 91 99.8 99.8 99.943 99.943 99.997 100	40	90 cm Recommendation ITU-R S.1428
	–176.4 –167.4 –156.4 –154.6 –151 –146 –140 –140	0 91 99.8 99.8 99.943 99.943 99.997 100	1 000	
19.7-20.2	–196.4 –162 –154 –154	0 99.98 99.99943 100	40	2.5 m Recommendation ITU-R S.1428
	–182.4 –148 –140 –140	0 99.98 99.99943 100	1 000	
	–200.4 –189.4 –187.8 –184 –175 –164.2 –154.6 –154 –154	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	40	5 m Recommendation ITU-R S.1428
	–186.4 –175.4 –173.8 –170 –161 –150.2 –140.6 –140 –140	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	1 000	

[10] For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

[11] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS networks.

[12] For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

[12*bis*] A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

ADD

TABLE **S22-1D**[13, 15, 16, 16*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	epfd↓ 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[14]
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–165.841 –165.541 –164.041 –158.6 –158.6 –158.33 –158.33	0 25 96 98.857 99.429 99.429 100	40	30 cm Recommendation ITU-R BO.1443 Annex 1
	–175.441 –172.441 –169.441 –164 –160.75 –160 –160	0 66 97.75 99.357 99.809 99.986 100	40	45 cm Recommendation ITU-R BO.1443 Annex 1
	–176.441 –173.191 –167.75 –162 –161 –160.2 –160 –160	0 97.8 99.371 99.886 99.943 99.971 99.997 100	40	60 cm Recommendation ITU-R BO.1443 Annex 1
	–178.94 –178.44 –176.44 –171 –165.5 –163 –161 –160 –160	0 33 98 99.429 99.714 99.857 99.943 99.991 100	40	90 cm Recommendation ITU-R BO.1443 Annex 1

	–182.44 –180.69 –179.19 –178.44 –174.94 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.68 99.68 99.85 99.915 99.94 99.97 99.99 99.998 100	40	120 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–184.941 –184.101 –181.691 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.571 99.946 99.974 99.993 99.999 100	40	180 cm Recommendation ITU-R BO.1443 Annex 1
	–187.441 –186.341 –183.441 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.786 99.957 99.983 99.994 99.999 100	40	240 cm Recommendation ITU-R BO.1443 Annex 1
	–191.941 –189.441 –185.941 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.857 99.914 99.951 99.983 99.991 100	40	300 cm Recommendation ITU-R BO.1443 Annex 1

13 For BSS antenna diameters 180 cm, 240 cm and 300 cm, in addition to the single-entry limits shown in Table **S22-1D**, the following single-entry 100% of the time epfd↓ limits also apply in the frequency bands listed in Table **S22-1D**:

100% of the time epfd↓ (dB(W/(m^2 · 40 kHz)))	**Latitude (North or South) (°)**
–160	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160 + 3.4\,(57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \leq \lvert \text{Latitude} \rvert \leq 63.75$
–165.3	$63.75 \leq \lvert \text{Latitude} \rvert$

14 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

15 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

16 For a BSS earth station antenna diameter of 240 cm, in addition to the single-entry 100% of the time epfd↓ limit specified in note 13 to this table, a single-entry 100% of the time operational epfd↓ limit is specified in Table **S22-4C**.

16*bis* In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30** will be fully protected.

ADD

S22.5CA 2) The limits given in Tables **S22-1A** to **S22-1D** may be exceeded on the territory of any country whose administration has so agreed.

MOD

S22.5D 3) The equivalent power flux-density[2], epfd↑, produced at any point in the geostationary-satellite orbit by emissions from all the earth stations in a non-GSO FSS system in the frequency bands listed in Table **S22-2**, 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 equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth specified in Table **S22-2**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary-satellite orbit.

(SUP)

3 **S22.5D.1**

MOD

TABLE **S22-2**[17*bis*]

Limits to the epfd↑ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↑ dB(W/m^2)	Percentage of time epfd↑ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna beamwidth and reference radiation pattern[17]
12.50-12.75 12.75-13.25 13.75-14.5	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.3-18.1 (Regions 1 and 3) 17.8-18.1 (Region 2)*	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
27.5-28.6	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10
29.5-30.0	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10

[17] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. For the case of Ls = –10, the values a = 1.83 and b = 6.32 should be used in the equations in Annex 1 to Recommendation ITU-R S.672-4 for single-feed circular beams. In all cases of Ls, the parabolic main beam equation should start at zero.

[17*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30A** will be fully protected.

* This epfd↑ level also applies to the frequency band 17.3-17.8 GHz to protect BSS feeder links in Region 2 from non-GSO FSS Earth-to-space transmissions in Regions 1 and 3.

SUP

S22.5E

(SUP)

[4] **S22.5E.1**

(SUP)

[5] **S22.5F.1**

MOD

S22.5F 4) The equivalent power flux-density[2], $epfd_{is}$, produced at any point in the geostationary-satellite orbit by emissions from all the space stations in a non-GSO FSS system 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 specified 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 specified in Table **S22-3**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary orbit.

MOD

TABLE **S22-3**[18*bis*]

Limits to the $epfd_{is}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{is}$ dB(W/m^2)**	**Percentage of time during which $epfd_{is}$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[18]
10.7-11.7 (Region 1) 12.5-12.75 (Region 1) 12.7-12.75 (Region 2)	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.8-18.4	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20

[18] Under this section, this reference pattern is to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. In applying the equations of Annex 1 to Recommendation ITU-R S.672-4, the parabolic main beam equation should start at zero.

[18*bis*] In meeting these limits, the administration intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30A** will be fully protected.

SUP

S22.5G

ADD

S22.5H 5) The limits specified in Nos. **S22.5C** to **S22.5D** and **S22.5F** apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau after 22 November 1997. The limits in Tables **S22-4A**, **S22-4B** and **S22-4C** do not apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau before 22 November 1997.

ADD

S22.5I 6) An administration operating a non-GSO FSS system which is in compliance with the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** 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 coordination or notification information, as appropriate, for the non-GSO system and of the complete coordination information for the GSO network, provided that the epfd↓ radiated by the non-GSO FSS system into any operating GSO FSS earth station does not exceed the operational and additional operational limits given in Tables **S22-4A**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite. Except as otherwise agreed between concerned administrations, an administration operating a non-GSO FSS system that is subject to the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** and which radiates epfd↓ into any operating GSO FSS earth station at levels in excess of the operational or additional operational limits given in Tables **S22-4A**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite, shall be considered to be in violation of its obligations under No. **S22.2**.

SUP

TABLE **S22-4**

PART A

PART B

ADD

TABLE **S22-4A**[20, 22, 22*bis*]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna diameter[21] (m)	Orbital inclination of GSO satellite (degrees)
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (prior to 31 December 2005)	–163 –166 –167.5 –169.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–160 –163 –164.5 –166.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (from 31 December 2005)	–161.25 –164 –165.5 –167.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–158.25 –161 –162.5 –164.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5

20 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

21 For antenna diameters between the values given in this table, the limits are given by linear interpolation using a linear scale for epfd↓ in decibels and a logarithmic scale for antenna diameter in metres.

22 In addition to the operational limits shown in Table **S22-4A**, the additional operational limits in Table **S22-4A1** apply to certain GSO FSS earth station antenna sizes in the frequency bands listed in Table **S22-4A**.

22*bis* The operational limits on the epfd↓ radiated by non-GSO FSS systems shall be the values given in note 5 to Table **S22-1A** or Table **S22-4A**, whichever are the more stringent.

ADD

TABLE **S22-4A1**

Additional operational limits on the epfd↓ radiated by non-GSO FSS systems into 3 m and 10 m GSO FSS earth station antennas

epfd↓ (dB(W/(m^2 · 40 kHz)))	Percentage of time during which epfd↓ may not be exceeded	Receive GSO earth station antenna diameter (m)
–182 –179 –176 –171 –168 –165 –163 –161.25 –161.25	99.9 99.94 99.97 99.98 99.984 99.993 99.999 99.99975 100	3
–185 –183 –179 –175 –171 –168 –166 –166	99.97 99.98 99.99 99.996 99.998 99.999 99.9998 100	10

ADD

TABLE **S22-4B**[23]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna gain (dBi)	Orbital inclination of GSO satellite (degrees)
19.7-20.2	–157 –157 –155	100 100 100	40 40 40	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
19.7-20.2	–143 –143 –141	100 100 100	1 000 1 000 1 000	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–164 –162	100 100	40 40	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–150 –148	100 100	1 000 1 000	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5

[23] For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

[24] The operational limit applies to non-GSO systems operating at altitudes of 7 000 km or above in order to protect GSO FSS systems employing adaptive coding.

ADD

TABLE **S22-4C**[25]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd↓ dB(W/m^2)**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Receive GSO earth station antenna diameter (m)**	**Orbital inclination of GSO satellite (degrees)**
12.2-12.7 GHz in Region 2	–167	100	40	2.4	≤ 0.5

[25] These limits apply into GSO earth stations located in Region 2 west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.]

ADD

S22.5J 7) In case of force majeure, telecommand and ranging carriers transmitted to non-GSO FSS satellites are not subject to the limits given in Table **S22-2**.

ADD

S22.5K 8) Administrations operating or planning to operate non-GSO FSS systems in the bands listed in Tables **S22-1A** to **S22-1D** of No. **S22.5C** will apply the provisions of Resolution **[COM5/6] (WRC-2000)** to ensure that the actual aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables **[COM5/6]-1A** to **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**. In the event that an administration operating a GSO network in conformity with the Radio Regulations identifies epfd levels from non-GSO FSS systems which may be in excess of the aggregate limits contained in Tables **[COM5/6]-1A** to **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**, the administrations responsible for the non-GSO FSS systems will apply the provisions contained in *resolves* 2 of Resolution **[COM5/6] (WRC-2000)**.

APPENDIX S4

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter SIII

ANNEX 2A

Characteristics of satellite networks, earth stations or radio astronomy stations[2]

A General characteristics to be provided for the satellite network, earth station or radio astronomy station

ADD

(To be inserted in section A.4 *b)*)

In addition, if the stations operate in a frequency band subject to Nos. **S22.5C**, **D** or **F**:

6) new data elements required to characterize properly the orbital operation of the non-GSO satellite systems:

a) for each range of latitudes, provide:

– the maximum number of non-GSO satellites transmitting with overlapping frequencies to a given location; and

– the associated range of latitudes;

b) the minimum altitude of the space station above the surface of the Earth at which any satellite will transmit;

bbis) an indicator identifying if the space station uses station-keeping to maintain a repeating ground track;

c) where the space station uses station-keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same locations with respect to the Earth and each other;

d) an indicator identifying if the space station should be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term;

e) for a space station that is to be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term, the precession rate in degrees/day, measured counter-clockwise in the equatorial plane;

NOC

2

f) the longitude of the ascending node for the *j*-th orbital plane, measured counter-clockwise in the equatorial plane from the Greenwich meridian to the point where the satellite orbit makes its south-to-north crossing of the equatorial plane ($0° \leq \Omega_j < 360°$) (NOTE 1);

g) the time at which the satellite is at the location defined by Ω_j (NOTE 1);

h) the tolerance of the longitude of the ascending node.

NOTE 1 - Currently non-GSO space stations are referenced by the "right ascension of ascending node" (A.4b5 Ω_j) to the first point of Aries. However, for the evaluation of epfd, a reference to a point on the Earth is used and hence the "longitude of the ascending node" is required. All satellites in the constellation should use the same reference time.

7) new data elements required to characterize properly the performance of the non-GSO satellite systems:

a) the maximum number of non-GSO satellites receiving simultaneously with overlapping frequencies from the associated earth stations within a given cell;

b) the average number of associated earth stations with overlapping frequencies per square kilometre within a cell;

c) the average distance between co-frequency cells;

d) for the exclusion zone about the geostationary orbit, provide:

– the type of zone;

– the width of the zone in degrees.

ADD

A.14 Spectrum masks

For stations operating in a frequency band subject to Nos. **S22.5C**, **D** or **F**:

a) for each e.i.r.p. mask used by the non-GSO space station, provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

b) for each associated earth station e.i.r.p. mask provide:

– the type of mask;

– the mask identification code;

– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid;

– the minimum elevation angle at which any associated earth station can transmit to a non-GSO satellite;

– the minimum angular separation between the GSO arc and the associated earth station main-beam axis at which the associated earth station can transmit towards a non-GSO satellite;

c) for each pfd mask used by the non-GSO space station, provide:

– the type of mask;

– the mask identification code;

– the mask pattern of the power flux-density defined in three dimensions;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid.

(The space-station pfd mask is defined by the maximum power flux-density generated by any space station in the interfering non-GSO system as seen from any point on the surface of the Earth.)

ADD

A.15 Commitment regarding compliance with additional operational epfd↓ limits

For non-geostationary satellite systems operating in the fixed-satellite service in the bands 10.7-11.7 GHz (in all Regions), 11.7-12.2 GHz (Region 2), 12.2-12.5 GHz (Region 3), and 12.5-12.75 GHz (Regions 1 and 3), a commitment that the system filed will meet the additional operational epfd↓ limits that are specified in Table **S22-4A** under No. **S22.5I**.

ADD

(To be inserted in section C.9)

d) For stations operating in a frequency band subject to **S22.5C**, **D** or **F**, provide:

– the type of mask;

– the mask identification code.

ANNEX 2B

Table of characteristics to be submitted for space and radio astronomy services

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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[11]	X	X	X	A.5	
A.6				X	X	X[11]	X	X	X	A.6	
A.7.a						X[11]		X		A.7.a	
A.7.b						X[11]		X		A.7.b	
A.7.c						X[11]				A.7.c	
A.7.d						X[11]		X		A.7.d	
A.8							X			A.8	

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.

A – General characteristics of the satellite network or the earth station *(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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service under Appendix S30B	Items in Appendix	Radio astronomy
A.9							X			A.9	
A.10						X[11]				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				X	X	X				A.13	
A.14					X					A.14	
A.15					X					A.15	
A.16				X							

[11] Not required for coordination under Nos. **S9.7A or S9.7B**.

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]			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[11]				B.5.b	
B.5.c						X[12]				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.

[11] Not required for coordination under Nos. **S9.7A** or **S9.7B**.

[12] In the case of coordination under No. **S9.7A**, the reference radiation pattern is to be provided.

[*] The application of this column is suspended pending the decision of WRC-99.

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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[11]				C.8.b	
C.8.c			O	X[6]	X[6]	X[6, 11]				C.8.c	
C.8.d				X[2]	X[2]					C.8.d	
C.8.e			O	X[6]	X[6]	X[6, 11]				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	
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 – Characteristics to be provided for each group of frequency assignments for a satellite antenna beam or an earth station antenna *(end)*

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

[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**.

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

[11] Not required for coordination under Nos. **S9.7A or S9.7B**.

* 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

ADD

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **S9.7A** GSO earth station/ non-GSO system	A specific earth station in a geostationary-satellite network in the fixed-satellite service in respect of a non-geostationary-satellite system in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meet all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency band 10.7-12.75 GHz or greater than or equal to 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher;	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination does not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
			c) emission bandwidth of 250 MHz or higher for the frequency bands below 12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and iii) the epfd↓ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency band 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of the time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/ (m^2 · 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude;	iii) use the epfd↓ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
			b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m^2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude		

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.7B** non-GSO system/ GSO earth station	A non-geostationary-satellite system in the fixed-satellite service in respect of a specific earth station in a geostationary-satellite network in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meet all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency band 10.7-12.75 GHz or greater than or equal to 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher; c) emission bandwidth of 250 MHz or higher for the frequency bands below 12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination does not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit

TABLE S5-1 (*end*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
			iii) the epfd$_{\downarrow}$ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency bands 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of the time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/(m^2· 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude; b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of the time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m^2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude	iii) use the epfd$_{\downarrow}$ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	

SUP

RESOLUTION 131 (WRC-97)

Power flux-density limits applicable to non-geostationary fixed-satellite service systems for protection of terrestrial services in the bands 10.7-12.75 GHz and 17.7-19.3 GHz

ADD

RESOLUTION [COM5/19] (WRC-2000)

Use of the frequency band 1 164-1 215 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that in accordance with the Radio Regulations, the band 960-1 215 MHz is allocated on a primary basis to the aeronautical-radionavigation service in all the ITU Regions;

b) that this conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 164-1 215 MHz, with a provisional limit on the aggregate power flux-density produced by all the space stations within all radionavigation-satellite systems at the Earth's surface of –115 dB(W/m^2) in any 1 MHz band for all angles of arrival;

c) that it is likely that no radionavigation-satellite service systems will be fully operational in this band before the next WRC;

d) that only a few radionavigation-satellite service systems are expected to be deployed in this band;

e) that it is unlikely that more than two systems will have overlapping frequencies,

noting

a) that the studies conducted to date by ICAO to ensure protection of current operation of distance measuring equipments (DME) indicate that a provisional power flux-density value for the radionavigation-satellite service allocation in this band should be in the range of –115 to –119 dB(W/m^2) in any 1 MHz band for the aggregate interference from all space stations of all radionavigation-satellite service systems operating in the same band;

b) that no methodology is available to derive an aggregate power flux-density for all radionavigation-satellite service space stations of one system from the aggregate power flux-density for all systems given in No. **S5.328A**,

resolves

1 that the provisional power flux-density limit given in No. **S5.328A** shall be applied for all radionavigation-satellite service (space-to-Earth) systems as of 2 June 2000;

2 to invite WRC-03 to review the results of the studies in *invites ITU-R* 1 and take appropriate action;

3 that the administrations planning to implement radionavigation-satellite service systems in this band shall consult each other in order to ensure that the provisional aggregate power flux-density limit is not exceeded;

4 that, as of 3 June 2000, when notifying frequency assignments to a satellite network in the radionavigation-satellite service in the bands 1 164-1 215 MHz, the responsible administration shall provide the calculated values of the aggregate power flux-density, as defined in No. **S5.328A**, in addition to the relevant characteristics listed in Appendix **S4**,

invites ITU-R

1 to conduct, as a matter of urgency and in time for WRC-03, the appropriate technical, operational and regulatory studies on the overall compatibility between the radionavigation-satellite service and the aeronautical radionavigation service in the band 960-1 215 MHz, including an assessment of the need for an aggregate power flux-density limit, and revision, if necessary, of the provisional pfd limit given in No. **S5.328A** concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 164-1 215 MHz;

2 to report to CPM before WRC-03 on the conclusions of these studies,

instructs the Radiocommunication Bureau

as of the end of WRC-03, to review and, if necessary, revise any finding previously made on the compliance with the limit of a radionavigation-satellite service (space-to-Earth) system for which notification information has been received before the end of WRC-03; this review shall be based on the values as revised, if necessary, by WRC-03,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Secretary-General

to communicate the contents of this resolution to the ICAO for such actions as it may consider appropriate and to invite ICAO to participate actively in the study activity identified under *invites ITU-R* 1.

ADD

RESOLUTION [COM5/20] (WRC-2000)

Use of the frequency band 1 215-1 300 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 260-1 300 MHz;

b) that in the band 1 215-1 260 MHz radionavigation-satellite service (space-to-Earth) systems have been successfully operated for a considerable time in a band used by radars;

c) the importance of the radionavigation service authorized in certain countries in accordance with No. **S5.331** and of the radiolocation service, and the need for adequate protection and continued operation of these services throughout the band 1 215-1 300 MHz,

resolves

1 that no additional constraints shall be placed on radionavigation-satellite service (space-to-Earth) systems operating in the band 1 215-1 260 MHz;

2 to invite WRC-03 to review the results of the studies in *invites ITU-R* 1 and take appropriate action,

invites ITU-R

1 to conduct, as a matter of urgency and in time for WRC-03, the appropriate technical, operational and regulatory studies, including an assessment of the need for a power flux-density limit concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 215-1 300 MHz in order to ensure that the radionavigation-satellite service (space-to-Earth) will not cause harmful interference to the radionavigation and the radiolocation services;

2 to report to CPM before WRC-03 on the conclusions of these studies,

instructs the Secretary-General

to communicate the contents of this resolution to ICAO for such actions as it may consider appropriate and to invite ICAO to participate actively in the study activity identified under *invites ITU-R* 1.

ADD

RESOLUTION [COM5/21] (WRC-2000)

Studies on compatibility between stations of the radionavigation-satellite service (Earth to space) and the radiolocation service operating in the frequency band 1 300-1 350 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has added a primary allocation to the radionavigation-satellite service (Earth-to-space) in the 1 300-1 350 MHz band;

b) that this conference has raised the status of the radiolocation service from secondary to primary in the 1 300-1 350 MHz band;

c) that studies to determine compatibility between airborne radar systems operating in the radiolocation service and the radionavigation-satellite service have not yet been carried out;

d) that there is a potential for interference between ground-based beacons in the radionavigation-satellite service and airborne radiolocation systems;

e) that airborne radiolocation systems can be protected with the implementation of adequate separation distances, if necessary;

f) that a maximum of twenty ground-based beacons in the radionavigation satellite service are expected to be deployed globally,

resolves to invite ITU-R

to conduct, as a matter of urgency, the appropriate studies to ensure that stations of the radionavigation-satellite service (Earth-to-space) in the band 1 300-1 350 MHz do not cause harmful interference to the operation of airborne radiolocation systems and to develop, if needed, appropriate recommendations,

urges administrations

to participate actively in these studies by submitting contributions to ITU-R.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 461-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Chairperson of Working Group 1 of the Plenary to Committee 4

ANNEX 2 OF APPENDICES S30 AND S30A

In reply to your note contained in Document 432, GT PLEN-1 can supply the following response:

While recognizing the value of the addition of the underlined text in the attachment to your note, GT PLEN-1 is not in a position to include the same text in Annex 2 of Appendices S30 and S30A since the data elements of these annexes are now proposed to be contained in Appendix S4 as mentioned in Document 434.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 2 to Document 462-E 29 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

B.8(Add.2) **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 5	451	**ARTICLE S5** – Table of allocations 34.2-40.5 GHz – S5.547 – S5.NGSO – Table of allocations 40.5-55.78 GHz – S5.551B – S5.551C – S5.551D – S5.551E – S5.RAS

Annex: 4 pages

ARTICLE S5

Frequency allocations

MOD

34.2-40.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
37-37.5	FIXED MOBILE SPACE RESEARCH (space-to-Earth) S5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) S5.547 S5.NGSO	
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) S5.547 S5.NGSO	
39.5-40	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) S5.547 S5.NGSO	
40-40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	

MOD

S5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 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 Resolutions **[COM5/11] (WRC-2000)** and **[COM5/27] (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz, administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution **[COM5/28] (WRC-2000)**).

ADD

S5.NGSO In the bands 37.5-40 GHz and 42-42.5 GHz, non-GSO fixed-satellite service systems should employ power control or other methods of downlink fade compensation of the order of 10 dB, such that the satellite transmissions are at power levels required to meet the desired link performance while reducing the level of interference to the fixed service. The use of downlink fade compensation methods are under study by ITU-R (see Resolution **[COM5/28] (WRC-2000)**).

40.5-55.78 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547	**40.5-41** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile [Mobile-satellite (space-to-Earth)] S5.547	**40.5-41** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile [S5.551C] S5.547
41-42 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547 S5.RAS	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547 S5.RAS	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile [S5.551C] S5.551F S5.547 S5.RAS
42-42.5 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.RAS S5.547 S5.NGSO	**42-42.5** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547 S5.NGSO S5.RAS	**42-42.5** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile [S5.551C] S5.551F S5.547 S5.NGSO S5.RAS
42.5-43.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY S5.149 S5.547	

SUP

S5.551B

MOD

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.

SUP

S5.551D

SUP

S5.551E

ADD

S5.RAS In order to protect the radio astronomy service in the band 42.5-43.5 GHz, the aggregate power flux-density in the 42.5-43.5 GHz band produced by all the space stations in any non-GSO FSS (space-to-Earth) or BSS (space-to-Earth) system operating in the 41.5-42.5 GHz band shall not exceed –167 dB(W/m^2) in any 1 MHz band at the site of a radio astronomy station for more that 2% of the time. The power flux-density in the band 42.5-43.5 GHz produced by any GSO FSS (space-to-Earth) or BSS (space-to-Earth) station operating in the band 42.0-42.5 GHz shall not exceed –167 dB(W/m^2) in any 1 MHz band at the site of a radio astronomy station. These limits are provisional and will be reviewed in accordance with Resolution **128 (Rev.WRC-2000)**.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 1 to Document 462-E 29 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

B.8(Add.1) **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 5	451	**ARTICLE S5** – Table of allocations band 470-890 MHz band 890-1 350 MHz – S5.CCC – Table of allocations band 1 525-1 610 MHz band 1 610-1 660 MHz band 1 660-1 710 MHz band 1 710-2 170 MHz band 2 170-2 520 MHz band 2 520-2 700 MHz – S5.388 – S5.XXX – S5.AAA – S5.SSS – S5.BBB

Annex: 8 pages

MOD

470-890 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
470-790 BROADCASTING S5.149 S5.291A S5.294 S5.296 S5.300 S5.302 S5.304 S5.306 S5.311 S5.312	**470-512** BROADCASTING Fixed Mobile S5.292 S5.293	**470-585** FIXED MOBILE BROADCASTING S5.291 S5.298
	512-608 BROADCASTING S5.297	**585-610** FIXED MOBILE BROADCASTING RADIONAVIGATION S5.149 S5.305 S5.306 S5.307
	608-614 RADIO ASTRONOMY Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)	**610-890** FIXED MOBILE S5.XXX BROADCASTING S5.149 S5.305 S5.306 S5.307 S5.311 S5.320
	614-806 BROADCASTING Fixed Mobile S5.293 S5.309 S5.311	
790-862 FIXED BROADCASTING S5.312 S5.314 S5.315 S5.316 S5.319 S5.321	**806-890** FIXED MOBILE S5.XXX BROADCASTING S5.317 S5.318	
862-890 FIXED MOBILE except aeronautical mobile S5.XXX BROADCASTING S5.322 S5.319 S5.323		

MOD

890-1 350 MHz

<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="3">890-942
FIXED
MOBILE except aeronautical mobile S5.XXX
BROADCASTING S5.322
Radiolocation

S5.323</td><td>890-902
FIXED
MOBILE except aeronautical mobile S5.XXX
Radiolocation
S5.318 S5.325</td><td rowspan="3">890-942
FIXED
MOBILE S5.XXX
BROADCASTING
Radiolocation

S5.327</td></tr>
<tr><td>902-928
FIXED
Amateur
Mobile except aeronautical mobile
Radiolocation S5.CCC
S5.150 S5.325 S5.326</td></tr>
<tr><td>928-942
FIXED
MOBILE except aeronautical mobile S5.XXX
Radiolocation
S5.325</td></tr>
<tr><td>942-960
FIXED
MOBILE except aeronautical mobile S5.XXX
BROADCASTING S5.322
S5.323</td><td>942-960
FIXED
MOBILE S5.XXX</td><td>942-960
FIXED
MOBILE S5.XXX
BROADCASTING

S5.320</td></tr>
</table>

ADD

S5.CCC *Different category of service:* in Cuba, the allocation of the band 902-915 MHz to the land mobile service is on a primary basis.

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) S5.SSS Earth exploration-satellite Mobile except aeronautical mobile S5.349 S5.341 S5.342 S5.350 S5.351 S5.352A S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) S5.SSS Earth exploration-satellite Mobile S5.349 S5.341 S5.351 S5.352A S5.354
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A S5.SSS Earth exploration-satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530-1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	
1 535-1 559	MOBILE-SATELLITE (space-to-Earth) S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.356 S5.357 S5.357A S5.359 S5.362A	

MOD

1 610-1 660 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION S5.149 S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) S5.149 S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) S5.149 S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) S5.341 S5.355 S5.359 S5.363 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) S5.341 S5.364 S5.365 S5.366 S5.367 S5.368 S5.370 S5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) Radiodetermination-satellite (Earth-to-space) S5.341 S5.355 S5.359 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.372
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.357A S5.359 S5.362A S5.374 S5.375 S5.376	

MOD

1 660-1 710 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 660-1 660.5	MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 S5.362A S5.376A	

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE S5.380 S5.AAA S5.BBB S5.149 S5.341 S5.385 S5.386 S5.387 S5.388	
1 930-1 970 FIXED MOBILE S5.BBB S5.388	**1 930-1 970** FIXED MOBILE S5.BBB Mobile-satellite (Earth-to-space) S5.388	**1 930-1 970** FIXED MOBILE S5.BBB S5.388
1 970-1 980	FIXED MOBILE S5.BBB S5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.388 S5.389A S5.389B S5.389F	
2 010-2 025 FIXED MOBILE S5.BBB S5.388	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.388 S5.389C S5.389D S5.389E S5.390	**2 010-2 025** FIXED MOBILE S5.BBB S5.388
2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) S5.392	
2 110-2 120	FIXED MOBILE S5.BBB SPACE RESEARCH (deep space) (Earth-to-space) S5.388	
2 120-2 160 FIXED MOBILE S5.BBB S5.388	**2 120-2 160** FIXED MOBILE S5.BBB Mobile-satellite (space-to-Earth) S5.388	**2 120-2 160** FIXED MOBILE S5.BBB S5.388
2 160-2 170 FIXED MOBILE S5.BBB S5.388 S5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.388 S5.389C S5.389D S5.389E S5.390	**2 160-2 170** FIXED MOBILE S5.BBB S5.388

MOD

2 170-2 520 MHz

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	
2 200-2 290	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) S5.392	
2 290-2 300	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
2 300-2 450 FIXED MOBILE Amateur Radiolocation S5.150 S5.282 S5.395	**2 300-2 450** FIXED MOBILE RADIOLOCATION Amateur S5.150 S5.282 S5.393 S5.394 S5.396	
2 450-2 483.5 FIXED MOBILE Radiolocation S5.150 S5.397	**2 450-2 483.5** FIXED MOBILE RADIOLOCATION S5.150 S5.394	
2 483.5-2 500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.SSS Radiolocation S5.150 S5.371 S5.397 S5.398 S5.399 S5.400 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.SSS RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) S5.398 S5.150 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.SSS RADIOLOCATION Radiodetermination-satellite (space-to-Earth) S5.398 S5.150 S5.400 S5.402
2 500-2 520 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA MOBILE-SATELLITE (space-to-Earth) S5.403 S5.SSS 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 S5.AAA MOBILE-SATELLITE (space-to-Earth) S5.403 S5.SSS S5.404 S5.407 S5.414 S5.415A	

MOD

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 520-2 655 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403 S5.405 S5.408 S5.412 S5.417 S5.418	**2 520-2 655** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403	**2 520-2 535** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.403 S5.415A **2 535-2 655** FIXED S5.409 S5.411 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.418
2 655-2 670 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.412 S5.417 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420
2 670-2 690 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA MOBILE-SATELLITE (Earth-to-space) S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 S5.AAA MOBILE-SATELLITE (Earth-to-space) S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 S5.AAA MOBILE-SATELLITE (Earth-to-space) S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.419 S5.420 S5.420A

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 they are allocated. The bands should be made available for IMT-2000 in accordance with Resolution **212 (Rev.WRC-97)**. (See also Resolution **[COM5/24] (WRC-2000)**.)

ADD

S5.XXX Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution **[COM5/25] (WRC-2000)**). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.AAA The bands, or portions of the bands, 1 710-1 885 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution **[COM5/24] (WRC-2000)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.SSS For the use of the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-97)** and **[COM5/26] (WRC-2000)**.

ADD

S5.BBB In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution **[COM5/13] (WRC-2000)**. The use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 462-E
28 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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 5	451	**ARTICLE S21** – Table S21-4 – S21.16.4 – S21.16.10 – S21.16.FSS – S21.16.BSS **RESOLUTION 128 (Rev.WRC-2000)** **RESOLUTION 129 (WRC-97)** **RESOLUTION 133 (WRC-97)** **RESOLUTION 134 (WRC-97)** **RESOLUTION 213 (Rev.WRC-95)** **RESOLUTION 220 (WRC-97)** **RESOLUTION 726 (WRC-97)** **RESOLUTION [COM5/13] (WRC-2000)** **RESOLUTION [COM5/24] (WRC-2000)** **RESOLUTION [COM5/25] (WRC-2000)** **RESOLUTION [COM5/26] (WRC-2000)** **RESOLUTION [COM5/27] (WRC-2000)** **RESOLUTION [COM5/28] (WRC-2000)** **RESOLUTION [COM5/29] (WRC-2000)** **RESOLUTION [COM5/30] (WRC-2000)**

BLUE PAGES

COM 5	456	**ARTICLE S22** – S22.VI.1 – S22.VI.2 – S22.26 – S22.27 – S22.28 – S22.30 – S22.30.1 – S22.31 – S22.31.1 – S22.32 – S22.33 – S22.34 – S22.34.1 – S22.35 – S22.36 – S22.37 – S22.38 – S22.39 **APPENDIX S4** – A.16 **RESOLUTION 538 (WRC-97)** **RESOLUTION [COM5/17] (WRC-2000)**
COM 5	408A1	**RESOLUTION [COM5/6] (WRC-2000)**

Annex: 41 pages

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

ADD

Table S21-4 *(end)*

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°**	
37.5-40.0 GHz	Fixed-satellite (Non-geostationary) Mobile-satellite (Non-geostationary)	–120 [10, 16, FSS]	–120 + 0.75(δ-5) [10, 16, FSS]	–105 [10, 16, FSS]	1 MHz
37.5-40.0 GHz	Fixed-satellite (Geostationary) Mobile-satellite (Geostationary)	–127 [16, FSS]	**5°-20°**: –127 + (4/3)(δ-5) [16, FSS] **20°-25°**: –107 + 0.4(δ-20) [16, FSS]	–105 [16, FSS]	1 MHz
40-40.5 GHz	Fixed-satellite	–115	–115 + 0.5(δ-5)	–105	1 MHz
40.5-42.0 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-geostationary)	–115 [10, 16, FSS, BSS]	–115 + 0.5(δ-5) [10,16, FSS, BSS]	–105 [10, 16, FSS, BSS]	1 MHz
40.5-42.0 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	–120 [16, FSS, BSS]	**5°-15°**: –120 + (δ-5) [16, FSS, BSS] **15°-25°**: –110 + 0.5(δ-15) [16, FSS, BSS]	–105 [16, FSS, BSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-geostationary)	–120 [10, 16, FSS, BSS]	–120 + 0.75(δ-5) [10, 16, FSS, BSS]	–105 [10, 16, FSS, BSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	–127 [16, FSS, BSS]	**5°-20°**: –127 + (4/3)(δ-5) [16, FSS, BSS] **20°-25°**: –107 + 0.4(δ-20) [16, FSS, BSS]	–105 [16, FSS, BSS]	1 MHz

MOD

10 **S21.16.4** The values given in this table entry shall apply to emissions of space stations of non-geostationary satellites in networks operating with 99 or fewer satellites. Further study concerning the applicability of these values is necessary in order to apply them to networks operating with 100 or more satellites.

ADD

16 **S21.16.10** Except to the extent provided in footnote S21.16.FSS, these values are provisional and shall be applied subject to Resolution **[COM5/28] (WRC-2000)**.

ADD

FSS **S21.16.FSS** In the bands 37.5-40 and 40.5-42.5 GHz, notwithstanding any further studies, the power flux-density limits in this table shall be applied to stations in the fixed-satellite service for which complete coordination (GSO) or notification information (non-GSO), as appropriate, has been received by the Bureau after 2 June 2000 and before the end of WRC-03.

ADD

BSS **S21.16.BSS** The values given in this box are provisional and need confirmation by a future conference.

MOD

RESOLUTION 128 (Rev.WRC-2000)

Protection of the radio astronomy service in the 42.5-43.5 GHz band

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 added a primary allocation to the fixed-satellite service (FSS) (space-to-Earth) in the band 40.5-42.5 GHz in Regions 2 and 3 and in certain countries in Region 1, that this conference has extended this allocation to include all of 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 there is also a worldwide primary allocation to the broadcasting-satellite service (BSS) in the 40.5-42.5 GHz band;

c) that unwanted emissions from GSO BSS and FSS (space-to-Earth) space stations in the band 42-42.5 GHz may result in harmful interference to the radio astronomy service in the band 42.5-43.5 GHz;

d) that aggregate unwanted emissions from non-GSO BSS and FSS (space-to-Earth) space stations 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;

e) that various technical and operational means may be used to reduce unwanted emissions from these space stations;

f) that a limited number of radio astronomy stations worldwide require protection in the band 42.5-43.5 GHz, and that there may be means to limit the susceptibility of radio astronomy stations to interference,

recognizing

a) that WRC-97 required that FSS systems not be implemented in the band 41.5-42.5 GHz band 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;

b) that this conference has established provisional power flux-density limits for out-of-band emissions from BSS and FSS stations in accordance with No. **S5.RAS**,

resolves

that, notwithstanding any further studies, the power flux-density limits in No. **S5.RAS** shall be applied to BSS and FSS stations for which complete coordination (GSO) or notification (non-GSO) information, as appropriate, has been received by the Bureau after the end of WRC-2000 and before the end of WRC-03,

invites ITU-R

1 to study, as a matter of urgency and in time for WRC-03, the provisional power flux-density limits given in No. **S5.RAS**;

2 to identify technical and operational measures in the band 41.5-42.5 GHz, including possible mitigation techniques, that may be implemented 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 BSS and FSS space stations, as well as measures that may be implemented to reduce the susceptibility of stations in the radio astronomy service to harmful interference,

urges administrations

1 to participate actively in the aforementioned studies by submitting contributions to ITU-R;

2 when planning to implement BSS or FSS space stations in the band 41.5-42.5 GHz for which complete coordination (GSO) or notification (non-GSO) has been received prior to this conference, to take into consideration the provisions of No. **S5.RAS** in order to protect the radio astronomy service in the band 42.5-43.5 GHz,

recommends

that WRC-03 take appropriate action based on those studies.

SUP

RESOLUTION 129 (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

SUP

RESOLUTION 133 (WRC-97)

Sharing between the fixed service and other services in the band 37-40 GHz

SUP

RESOLUTION 134 (WRC-97)

Use of the frequency band 40.5-42.5 GHz by the fixed-satellite service

SUP

RESOLUTION 213 (Rev.WRC-95)

Sharing studies concerning possible use of the band 1 675-1 710 MHz by the mobile-satellite service

SUP

RESOLUTION 220 (WRC-97)

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)

SUP

RESOLUTION 726 (WRC-97)

Frequency bands above 30 GHz available for high-density applications in the fixed service

ADD

RESOLUTION [COM5/13] (WRC-2000)

Use of high altitude platform stations providing IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2

The World Radiocommunication Conference 2000 (Istanbul, 2000),

considering

a) that the bands 1 885-2 025 MHz and 2 110-2 200 MHz are identified in No. **S5.388** as intended for use on a worldwide basis for IMT-2000, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000;

b) that a high altitude platform station (HAPS) is defined in No. **S1.66A** as "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";

c) that HAPS may offer a new means of providing IMT-2000 services with minimal network infrastructure as they are capable of providing service to a large footprint together with a dense coverage;

d) that the use of HAPS as base stations within the terrestrial component of IMT-2000 is optional for administrations, and that such use should not have any priority over other terrestrial IMT-2000 use;

e) that, in accordance with No. **S5.388** and Resolution **212 (Rev.WRC-97)**, administrations may use the bands identified for IMT-2000, including the bands referred to in this resolution, for stations of other primary services to which they are allocated;

f) that these bands are allocated to the fixed and mobile services on a co-primary basis;

g) that ITU-R has studied sharing and coordination between HAPS and other stations within IMT-2000, has considered compatibility of HAPS within IMT-2000 with some services having allocations in the adjacent bands, and has established Recommendation ITU-R M.1456;

h) that ITU-R did not address sharing and coordination between HAPS and some existing systems, particularly PCS (personal communications service), MMDS (multichannel multipoint distribution service) and systems in the fixed service, which are currently operating in some countries in the bands 1 885-2 025 MHz and 2 110-2 200 MHz;

i) that, in accordance with No. **S5.BBB**, HAPS may be used as base stations within the terrestrial component of IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2; the use by

IMT-2000 applications using HAPS as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations,

recognizing

that the values in *resolves* 1 may not be appropriate for the protection of some stations operating in these bands in the fixed and mobile services,

resolves

1 that:

a) for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, a HAPS operating as a base station to provide IMT-2000 shall not exceed a provisional co-channel power flux-density (pfd) of –121.5 dB (W/(m^2 · MHz)) at the Earth's surface outside an administration's borders unless agreed otherwise by the administration of the affected neighbouring country;

b) a HAPS operating as a base station to provide IMT-2000, in order to protect fixed stations from interference, shall not exceed the following provisional values of out-of-band pfd at the Earth's surface in the bands 2 025-2 110 MHz:

– –165 dB(W/(m^2 · MHz)) for angles of arrival (θ) less than 5° above the horizontal plane;

– –165 + 1.75 (θ – 5) dB (W/(m^2 · MHz)) for angles of arrival between 5° and 25° above the horizontal plane; and

– –130 dB(W/(m^2 · MHz)) for angles of arrival between 25° and 90° above the horizontal plane;

2 that, as of the end of WRC-03, such a HAPS shall operate only in accordance with such limits as are confirmed or, if appropriate, revised by WRC-03, irrespective of its date of bringing into use;

3 that administrations wishing to implement HAPS within a terrestrial IMT-2000 system shall comply with the following:

a) for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, administrations using HAPS as base stations within IMT-2000 shall use antennas that comply with the following antenna pattern:

$G(\psi) = G_m - 3(\psi/\psi_b)^2$	dBi	for	$0° \le \psi \le \psi_1$
$G(\psi) = G_m + L_N$	dBi	for	$\psi_1 < \psi \le \psi_2$
$G(\psi) = X - 60\log(\psi)$	dBi	for	$\psi_2 < \psi \le \psi_3$
$G(\psi) = L_F$	dBi	for	$\psi_3 < \psi \le 90°$

where:

$G(\psi)$: gain at the angle ψ from the main beam direction (dBi)

G_m: maximum gain in the main lobe (dBi)

ψ_b: one-half of the 3 dB beamwidth in the plane considered (3 dB below G_m) (degrees)

L_N: near side-lobe level in dB relative to the peak gain required by the system design, and has a maximum value of –25 dB

L_F: far side-lobe level, G_m – 73 dBi

$\psi_1 = \psi_b \sqrt{-L_N / 3}$ degrees

$\psi_2 = 3.745\ \psi_b$ degrees

$X = G_m + L_N + 60\log(\psi_2)$ dBi

$\psi_3 = 10^{(X - L_F)/60}$ degrees

The 3 dB beamwidth ($2\psi_b$) is again estimated by:

$(\psi_b)^2 = 7442/(10^{0.1Gm})$ degrees^2

where G_m is the peak aperture gain (dBi);

b) for the purpose of protecting mobile earth stations within the satellite component of IMT-2000 from interference, a HAPS operating as a base station to provide IMT-2000, shall not exceed an out-of-band pfd of –165 dB (W/(m^2 · 4 kHz)) at the Earth's surface in the bands 2 160-2 200 MHz in Region 2 and 2 170-2 200 MHz in Regions 1 and 3;

4 that administrations wishing to implement HAPS within a terrestrial IMT-2000 system shall, prior to their bringing into use, take into account in their bilateral coordination with affected neighbouring administrations the operation and growth of existing and planned systems in the fixed and mobile services having allocations on a primary basis;

5 that, for the purpose of protecting fixed service stations operating in neighbouring countries from co-channel interference, administrations wishing to implement HAPS within a terrestrial IMT-2000 system shall, pending the review by WRC-03 of the studies mentioned below, take full account of the relevant ITU-R Recommendations relating to protection values for fixed stations (see Recommendation ITU-R F.758),

invites ITU-R

to complete, as a matter of urgency, additional studies on sharing criteria for HAPS with other systems in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 in Region 2, and in adjacent bands, and to report on the results of these studies in time for consideration of WRC-03 to allow revision of the values in *resolves* 1, [as well as to advise on other relevant regulatory, operational and technical matters].

ADD

RESOLUTION [COM5/24] (WRC-2000)

Additional frequency bands identified for IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that IMT-2000 is the ITU vision of global mobile access and is scheduled to start service around the year 2000, subject to market and other considerations;

b) that IMT-2000 is an advanced mobile communication applications concept intended to provide telecommunication services on a worldwide scale regardless of location, network or terminal used;

c) that IMT-2000 will provide access to a wide range of telecommunication services supported by fixed telecommunication networks (e.g. PSTN/ISDN), and to other services which are specific to mobile users;

d) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations, including Recommendation ITU-R M.1457, which contains the detailed specifications of the radio interfaces of IMT-2000;

e) that the evolution of IMT-2000 is being studied within ITU-R;

f) that the review of IMT-2000 spectrum requirements at this conference has concentrated on the bands below 3 GHz;

g) that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000, in No. **S5.388** and under the provisions of Resolution **212 (Rev.WRC-97)**;

h) that since WARC-92 there has been a tremendous growth in mobile communications including an increasing demand for wideband multimedia capability;

i) that ITU-R studies forecasted that of the order of 160 MHz of spectrum, in addition to that already identified for IMT-2000 in No. **S5.388** and in addition to the spectrum used for first- and second-generation mobile systems in all three ITU Regions, will be needed in order to meet the projected requirements of IMT-2000 in those areas where the traffic is the highest by 2010;

j) that this conference has identified additional frequency bands in No. **S5.AAA** for IMT-2000 in order to meet the additional spectrum requirement projected by ITU-R;

k) that the bands identified for IMT-2000 are currently used by either first- or second-generation mobile systems or applications of other radiocommunication services;

l) that Recommendation ITU-R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000;

m) that harmonized worldwide bands for IMT-2000 are desirable in order to achieve global roaming and the benefits of economies of scale;

n) that the bands 1 710-1 885 MHz and 2 500-2 690 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;

o) that, for technical reasons, the existing applications in the bands identified for IMT-2000 require spectrum below 3 GHz;

p) that technological advancement and market demand will promote innovation and accelerate the delivery of advanced communication applications to consumers;

q) that changes in technology may lead to the further development of communication applications, including IMT-2000,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services having allocations in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met;

c) that Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 in order to meet the needs of developing countries,

noting

a) Resolutions **[COM5/25] (WRC-2000)** and **[COM5/26] (WRC-2000)**, which also relate to IMT-2000;

b) that the sharing implications between services sharing the bands identified for IMT-2000 in No. **S5.AAA** will need further study in ITU-R;

c) that studies regarding the availability of the bands 1 710-1 885 MHz and 2 500-2 690 MHz for IMT-2000 are being conducted in many countries, the results of which could have implications for the use of those bands in those countries;

d) that, due to differing requirements, not all administrations may need all of the IMT-2000 bands identified at this conference, or, due to the usage by and investment in existing services, may not be able to implement IMT-2000 in all of those bands;

e) that the spectrum for IMT-2000 identified by this conference may not completely satisfy the expected requirements of some administrations;

f) that currently operating second-generation mobile communication systems may evolve to IMT-2000 in their existing bands;

g) that services such as fixed, mobile (second-generation systems), space operations, space research and aeronautical mobile are in operation or planned in the band 1 710-1 885 MHz, or in portions of that band;

h) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite and fixed (including multipoint distribution/communication systems) are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;

i) that the identification of several bands for IMT-2000 allows administrations to choose the best band or parts of bands for their circumstances;

j) that ITU-R has identified additional work to address further developments in IMT-2000 and beyond;

k) that the IMT-2000 radio interfaces as defined in Recommendation ITU-R M.1457 are expected to evolve within the framework of ITU-R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation;

l) that the identification of a band for IMT-2000 does not establish priority in the Radio Regulations and does not preclude the use of the band for any application of the services to which they are allocated;

m) that the provisions of Nos. **S5.388**, **S5.AAA** and **S5.XXX** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT-2000, based on national requirements,

recognizing

a) that some administrations are planning to use the band 2 300-2 400 MHz for IMT-2000;

b) that for some administrations the only way of implementing IMT-2000 would be spectrum reframing, requiring significant financial investment;

c) that spectrum for IMT-2000 is identified in Nos. **S5.388**, **S5.AAA** and **S5.XXX**, but this identification does not preclude the use for IMT-2000 of other bands allocated to the mobile service,

resolves

1 to request administrations implementing IMT-2000 or planning to implement IMT-2000 to make available, based on market demand and other national considerations, additional bands or portions of the bands above 1 GHz identified in No. **S5.AAA** for the terrestrial component of IMT-2000; due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT-2000, taking into account the use and planned use of these bands by all services to which these bands are allocated;

2 to acknowledge that the differences in the texts of Nos. **S5.388** and **S5.AAA** do not confer differences in regulatory status,

invites ITU-R

1 to study the implications of sharing of IMT-2000 with other applications and services in the bands 1 710-1 885 MHz and 2 500-2 690 MHz and the implementation, sharing and frequency arrangements of IMT-2000 in the bands 1 710-1 885 MHz and 2 500-2 690 MHz in accordance with Annex 1;

2 to develop harmonized frequency arrangements for operation of the terrestrial component of IMT-2000 in the spectrum mentioned in this resolution, aiming to achieve compatibility with existing frequency arrangements used by the first- and second-generation systems;

3 to continue its studies on further enhancements of IMT-2000, including the provision of Internet Protocol (IP)-based applications that may require unbalanced radio resources between the mobile and base stations;

4 to provide guidance to ensure that IMT-2000 can meet the telecommunication needs of the developing countries and rural areas in the context of the studies referred to above;

5 to include these frequency arrangements and the results of these studies in one or more ITU-R Recommendations,

invites ITU-T

1 to complete its studies of signalling and communication protocols for IMT-2000;

2 to develop a common worldwide intersystem numbering plan and associated network capabilities that will facilitate worldwide roaming,

further invites ITU-R and ITU-T

to commence these studies forthwith,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies and to report the results of the studies before the next competent conference, or within three years, whichever is the earlier,

urges administrations and Sector Members

to submit the necessary contributions and to participate actively in the ITU-R studies.

ANNEX 1 TO RESOLUTION [COM5/24] (WRC-2000)

Request for studies by ITU-R

In response to Resolution [**COM5/24] (WRC-2000)**, studies that address the following should be conducted:

1 sharing implications and possibilities for all services having allocations in the identified frequency bands;

2 harmonized frequency arrangements for the implementation of IMT-2000 in the bands mentioned in this resolution that take into account the services currently using the bands or planning to use the bands and the required compatible frequency arrangements of second-generation systems using these bands, taking into account the need to facilitate the evolution of current mobile systems to IMT-2000;

3 means to facilitate global roaming across different regional band usage within the bands identified for IMT-2000;

4 spectrum demand predictions related to traffic density and timing;

5 planning tools for adaptation of mobile radiocommunication technologies, including IMT-2000, for the needs of developing countries;

6 maintaining a database of national studies and decisions on selection of spectrum for IMT-2000;

7 study of the provision of a fixed wireless access interface using IMT-2000 technologies.

ADD

RESOLUTION [COM5/25] (WRC-2000)

Frequency bands for the terrestrial component of IMT-2000 below 1 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that parts of the band 806-960 MHz are extensively used in the three Regions by first- and second-generation mobile systems;

b) that some administrations are planning to use part of the band 698-806 MHz for IMT-2000;

c) that, in some countries, the band 698-806 MHz is allocated to the mobile service on a primary basis;

d) that first- and second-generation mobile systems in the three Regions operate using various frequency arrangements;

e) that where cost considerations warrant the installation of fewer base stations, such as in sparsely populated areas, bands below 1 GHz are generally suitable for implementing mobile systems including IMT-2000;

f) Recommendation ITU-R M.819 which describes the objectives to be met by IMT-2000 to meet the needs of developing countries,

recognizing

that the evolution of first- and second-generation cellular-based mobile systems to IMT-2000 can be facilitated if they are permitted to use their current frequency bands,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services having allocations in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met,

resolves

to request administrations which are implementing, or planning to implement IMT-2000, to consider the use of bands below 1 GHz and the possibility of evolution of first- and second-generation mobile systems to IMT-2000, in the frequency band identified in No. **S5.XXX**, based on market demand and other national considerations,

invites ITU-R

to study compatibility between mobile systems with different technical characteristics and provide guidance on any impact on spectrum arrangements.

ADD

RESOLUTION [COM5/26] (WRC-2000)

Use of additional frequency bands for the satellite component of IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are identified for use by the satellite component of International Mobile Telecommunications-2000 (IMT-2000) through No. **S5.388** and Resolution **212 (Rev.WRC-97)**;

b) Resolutions **212 (Rev.WRC-97)**, **[COM5/24] (WRC-2000)** and **[COM5/25] (WRC-2000)** on the implementation of the terrestrial and satellite components of IMT-2000;

c) that the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz are allocated on a co-primary basis to the mobile-satellite service and other services in accordance with the Radio Regulations;

d) that distress, urgency and safety communications of the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (R) service have priority over all other mobile-satellite service communications in accordance with Nos. **S5.353A** and **S5.357A**,

recognizing

a) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite, fixed (including point-to-multipoint distribution/communication systems) and mobile are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;

b) that other services such as the mobile service and radiodetermination-satellite service are in operation or planned in the bands 1 525-1 559/1 626.5-1 660.5 MHz and 1 610-1 626.5/2 483.5-2 500 MHz, or in portions of those bands, and that those bands, or portions thereof, are intensively used in some countries by applications other than the IMT-2000 satellite component, and the sharing studies within ITU-R are not finished;

c) that studies of potential sharing and coordination between the satellite component of IMT-2000 and the terrestrial component of IMT-2000, mobile-satellite service applications and other high-density applications in other services such as point-to-multipoint communication/distribution systems in the bands 2 500-2 520 MHz and 2 670-2 690 MHz bands are not finished;

d) that the bands 2 520-2 535 MHz and 2 655-2 670 MHz are allocated to the mobile-satellite, except aeronautical mobile-satellite, service for operation limited to within national boundaries pursuant to Nos. **S5.403** and **S5.420**;

e) Resolution ITU-R 47 on studies under way on satellite radio transmission technologies for IMT-2000,

resolves

1 that, in addition to the frequency bands indicated in *considering a)* and *resolves* 2, the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz may be used by administrations wishing to implement the satellite component of IMT-2000, subject to the regulatory provisions related to the mobile-satellite service in these frequency bands;

2 that the bands 2 500-2 520 MHz and 2 670-2 690 MHz as identified for IMT-2000 in No. **S5.AAA** and allocated to the mobile-satellite service may be used by administrations wishing to implement the satellite component of IMT-2000; however, depending on market developments, it may be possible in the longer term for bands 2 500-2 520 MHz and 2 670-2 690 MHz to be used by the terrestrial component of IMT-2000;

3 that this identification of frequency bands for the satellite component of IMT-2000 does not preclude the use of these bands by any applications of the services to which they are allocated and does not establish priority in the Radio Regulations,

invites ITU-R

1 to study the sharing and coordination issues in the above bands related to use of the mobile-satellite service allocations for the satellite component of IMT-2000 and the use of this spectrum by the other allocated services, including the radiodetermination-satellite service;

2 to report the results of these studies to a future world radiocommunication conference,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies.

ADD

RESOLUTION [COM5/27] (WRC-2000)

Development of the technical basis for coordination of radio astronomy stations with transmitting high-density fixed systems in the fixed service, in the band 42.5-43.5 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has decided that the band 42.5-43.5 GHz, which is allocated to the fixed service, should become available for high-density applications;

b) that the 42.5-43.5 GHz band is also allocated to the radio astronomy service on a primary basis worldwide, and is used intensively for both continuum and spectral line observations, at a limited number of sites;

c) that radio astronomy observatories operating in the band are generally located far from urban population centres, employ very high-gain antennas and very low-noise amplifiers to receive extremely weak cosmic radio emissions over which astronomers have no control;

d) that high-density fixed system (HDFS) stations are expected to be deployed in large numbers over areas of large geographical extent in urban population centres;

e) that studies are being initiated to characterize short-term anomalous propagation from transmitting stations dispersed over a large geographical area to a single receiving earth station (area-to-point propagation);

f) that no studies are yet available on the coordination distance that may be required to protect a radio astronomy station from HDFS transmissions associated with a single urban population centre, but that, based on preliminary studies made at lower frequencies, a provisional coordination distance of 250 km may be appropriate,

resolves to invite ITU-R

to conduct studies on the coordination distance between radio astronomy stations operating in the 42.5-43.5 GHz band and HDFS stations with a view to developing ITU-R Recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

ADD

RESOLUTION [COM5/28] (WRC-2000)

Power flux-density limits in the bands 37.5-42.5 GHz for the fixed-satellite service, broadcasting-satellite service and mobile-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has established power flux-density limits in accordance with the provisions of Nos. **S21.16.10** and **S21.16.FSS** for the fixed-satellite service (FSS) (space-to-Earth) in the bands 37.5-40.0 GHz and 40.5-42.5 GHz, and the mobile-satellite service (MSS) (space-to-Earth) in the band 39.5-40 GHz;

b) that, in the band 37.5-42.5 GHz, Recommendation ITU-R SF.1484 recommends power flux-density limits for non-GSO FSS systems;

c) that, in the bands 37.5-40 GHz and 40.5-42.5 GHz, the power flux-density limits adopted by this conference for GSO FSS systems are based on ITU-R studies;

d) that this conference has harmonized the allocation to FSS in the band 40.5-42.5 GHz across all the Regions;

e) that there exists an allocation to BSS on a co-primary basis in the band 40.5-42.5 GHz;

f) that there are only provisional power flux-density limits for BSS in the range 40.5-42.5 GHz;

g) that, although sharing is feasible between FSS earth stations and terrestrial stations provided that 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;

h) that the band 40-40.5 GHz has not been identified as being available for high-density applications in the fixed service,

noting

a) that Recommendation ITU-R SF.1484 indicates that some fixed service systems employing small net fade margins and which operate at elevation angles greater than 10° in the band 37.5-40 GHz may not be fully protected from interference from FSS systems without imposing undue constraints on FSS systems;

b) that the fixed service parameters for sharing studies are given in Recommendation ITU-R F.758;

c) that new studies taking account of high-density fixed service deployments with new characteristics (as documented in Recommendation ITU-R F.1498) in some countries have been presented and discussed at this conference;

d) that the new studies submitted to this conference, in which requirements are identified for the protection of high-density fixed service systems vis-à-vis GSO FSS and non-GSO FSS systems, but on which consensus has not been reached, indicate clear-sky pfd protection requirements that are about 13.5 dB more stringent at elevation angles above 25° than the table entries in Table **S21-4** for the band 37.5-40 GHz;

e) that No. **S5.NGSO** may provide additional protection to the fixed service,

recognizing

a) that some downlink fade compensation techniques, such as adaptive power control, could reduce the operational power flux-density levels of satellite networks under normal operating conditions while enhancing the ability of FSS networks to overcome rain fading;

b) that there is a need for further study to determine the percentage of time during which fade conditions will require downlink fade compensation techniques;

c) that, within the range 39.5-42 GHz, some administrations plan to deploy FSS systems using ubiquitous very small aperture terminals,

recognizing further

a) that the use of downlink fade compensation techniques by satellite systems may affect the performance of fixed service and FSS links operating in unfaded conditions in the same frequency band;

b) that the use of downlink fade compensation techniques affects the design of FSS links,

resolves

1 that the limits in Table **S21-4** for the bands 37.5-40 GHz and 40.5-42.5 GHz, as revised by this conference, shall be applied for verification purposes by the Radiocommunication Bureau and by administrations as of 2 June 2000 in accordance with the provisions of Nos. **S21.16.10** and **S21.16.FSS**;

2 that, taking into account *recognizing a)*, in the interim period before WRC-03, before an administration brings into use in Region 2 a frequency assignment for a GSO FSS network in the 37.5-40 GHz band, it shall seek the agreement of any administration in Region 2 on whose territory the power flux-density produced exceeds the values in Table **S21-4** minus 12 dB,

urges administrations

1 to meet the requirements of No. **S5.NGSO**;

2 when considering regulatory provisions in relation to the band 40-40.5 GHz, to take into account that there were a number of proposals to WRC-2000 to identify the band 40-40.5 GHz for high-density applications in the FSS,

invites ITU-R

1 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the bands 37.5-40 GHz and 42-42.5 GHz from FSS and MSS space-to-Earth transmissions;

2 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the band 40.5-42 GHz from FSS space-to-Earth transmissions, taking into account the requirements of the FSS and *recognizing c)*;

3 to study technical and operational characteristics and power flux-density values for the BSS in the range 40.5-42.5 GHz;

4 in conducting studies under *invites ITU-R* 1, 2 and 3 above, to take into account the need to ensure a proper balance in terms of the impact on both the fixed service and space services sharing the same band;

5 to conduct, as a matter of urgency and taking into account the *considering* paragraphs above, studies on mitigation techniques to improve sharing conditions between the space services referred to under *considering* above and fixed service systems, taking account of the impact on both the systems of these space services and the fixed service systems;

6 to undertake, as a matter of urgency, studies on the appropriate criteria and techniques for addressing interference from transmitters of the fixed service into earth station receivers in high-density applications in the FSS having allocations in the bands 39.5-40 GHz and 40.5-42.5 GHz and intended for operation in the same geographic area;

7 in the bands 37.5-40 GHz and 42-42.5 GHz, to study the nominal clear-sky power flux-density levels, and the percentage of time during which they may be exceeded to overcome fading conditions between the satellite and one or more geographically separated earth stations, in order to protect the fixed service while permitting operation of FSS earth stations using, for example, coordinated large antennas, taking into account the balance of constraints on both FSS systems and the fixed service;

8 to report on the results of these studies in time for WRC-03,

recommends

that WRC-03 take appropriate action based on the results of these studies.

ADD

RESOLUTION [COM5/29] (WRC-2000)

Sharing studies for, and possible additional allocations to, the mobile-satellite service (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has considered proposals for an allocation to the mobile-satellite service (MSS) (space-to-Earth) in Regions 1 and 3 in the frequency band 1 518-1 525 MHz;

b) that ITU-R has established that, so as to meet projected MSS requirements in the frequency range 1-3 GHz, spectrum of the order of two times 123 MHz will be required by 2005 and of the order of two times 145 MHz will be required by 2010;

c) that the frequency band 1 492-1 525 MHz is allocated to the MSS (space-to-Earth) in Region 2 on a primary basis, except in the United States;

d) that the frequency band 1 518-1 525 MHz is allocated to the fixed service on a primary basis in all three Regions, to the mobile service on a primary basis in Regions 2 and 3, and to the mobile, except aeronautical mobile, service on a primary basis in Region 1;

e) that, in Belarus, the Russian Federation and Ukraine, the band 1 429-1 535 MHz is allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within their national territories under the provisions of No. **S5.342**;

f) that, in Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service under the provisions of No. **S5.343**;

g) that, as an alternative allocation in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **S5.343**) under the provisions of No. **S5.344**;

h) that there has been further development of point-to-multipoint systems in the fixed service since the time of ITU-R studies that formed the basis for the power flux-density (pfd) values for use as coordination thresholds for the protection of fixed service systems in the band 1 492-1 525 MHz that are contained in Appendix **S5**;

i) that there is a need to review the pfd values in Appendix **S5** in order to ensure that they are adequate to protect these new point-to-multipoint systems operating in the fixed service;

j) that the proposed allocation to the MSS (space-to-Earth) is intended for satellite downlink operations, which, due to their potentially widespread emissions upon the Earth from either geostationary or non-geostationary systems, could have an impact on the terrestrial mobile service, including aeronautical mobile and aeronautical mobile telemetry, in all three Regions;

k) in response to Resolution **220 (WRC-97)**, ITU-R studies concluded that sharing between the MSS and the radionavigation-satellite service was not feasible in the band 1 559-1 610 MHz,

recognizing

a) that there remains an unsatisfied need for additional downlink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.5 GHz allocations;

b) that Recommendation ITU-R F.1338, for an adjacent frequency band, includes an allowance for consideration of pfd values other than those specified therein for use as coordination thresholds for the fixed service;

c) that Recommendation ITU-R M.1459 contains criteria for the protection of aeronautical mobile telemetry with respect to geostationary satellites in the MSS;

d) that additional information on the characteristics of systems in both the MSS and aeronautical mobile telemetry would facilitate studies on sharing between these services,

noting

that Resolution **[COM5/30] (WRC-2000)** addresses sharing studies for the possible additional allocations to the MSS (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz,

resolves to invite ITU-R

1 to study, as a matter of urgency, sharing between the MSS and aeronautical mobile telemetry in all the Regions in the band 1 518-1 525 MHz, taking into account, *inter alia*, Recommendation ITU-R M.1459;

2 to review, as a matter of urgency, the pfd levels used as coordination thresholds for MSS (space-to-Earth) with respect to the protection of point-to-multipoint fixed-service systems in the band 1 518-1 525 MHz in Regions 1 and 3, taking into account the work already done in Recommendations ITU-R M.1141 and ITU-R M.1142 and the characteristics of fixed-service systems contained in Recommendations ITU-R F.755-2 and ITU-R F.758-1, and the sharing methodologies contained in Recommendations ITU-R F.758-1, ITU-R F.1107 and ITU-R F.1108;

3 in the event that the studies of the specific frequency bands referred to in this resolution lead to an unsatisfactory conclusion, to carry out sharing studies in order to recommend alternative MSS (space-to-Earth) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to recommend that WRC-03 consider making new allocations to the MSS (space-to-Earth), on a global basis, preferably in the vicinity of the existing allocation around 1.5 GHz,

urges administrations

to participate actively in these studies, with the involvement of terrestrial and satellite interests.

ADD

RESOLUTION [COM5/30] (WRC-2000)

Sharing studies for, and possible additional allocations to, the mobile-satellite service (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that ITU-R has established that, so as to meet projected mobile-satellite service (MSS) requirements in the frequency range 1-3 GHz, spectrum of the order of two times 123 MHz will be required by 2005 and of the order of two times 145 MHz will be required by 2010;

b) that, at this conference, proposals have been made for worldwide allocation of the band 1 683-1 690 MHz to the MSS (Earth-to-space);

c) that the frequency band 1 675-1 710 MHz is allocated to the MSS (Earth-to-space) in Region 2 on a co-primary basis;

d) that the band 1 683-1 690 MHz is mainly used by the meteorological-satellite (MetSat) and meteorological aids (MetAids) services;

e) that, while there are only a limited number of main MetSat earth stations operating in this band in all three Regions, there are a large number of MetSat earth stations operating in Regions 2 and 3, and the locations of many of these stations are unknown;

f) that use of these stations in Regions 2 and 3 by government, commercial and private users for public safety and enhancement of national economies is on the increase;

g) that sharing between MetSat and MSS in the band 1 675-1 690 MHz is feasible if appropriate separation distances are maintained by means of coordination under No. **S9.11A**;

h) that sharing between MetSat and MSS may not be feasible in those countries where a large number of MetSat stations are deployed;

i) that Recommendation ITU-R SA.1158-2 indicates that additional studies are required in order to determine the criteria for coordination between MSS and the MetSat service for GVAR/S-VISSR stations operated in the band 1 683-1 690 MHz in Regions 2 and 3;

j) that sharing of the band 1 690-1 710 MHz between MSS and MetSat is not feasible;

k) that co-channel sharing between MSS and MetAids is not feasible;

l) that co-frequency sharing between MetAids and MetSat services is not feasible;

m) that WMO has identified future spectrum requirements for MetAids operations as 1 675-1 683 MHz in the band 1 675-1 700 MHz, but some administrations will continue to require spectrum in the range 1 683-1 690 MHz for MetAids operations;

n) that MSS operation should not constrain current and future development of the MetSat service, as specified in No. **S5.377**;

o) that new coordination parameters for MetSat earth stations have been adopted at this conference which will require a review of assumptions made in earlier ITU-R studies,

recognizing

that there remains an unsatisfied need for additional uplink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.6 GHz allocations,

noting

a) that no further study is required on sharing between the services identified under *considering* above and MSS in the bands 1 675-1 683 MHz and 1 690-1 710 MHz;

b) that Resolution **[COM5/29] (WRC-2000)** addresses sharing studies for possible additional allocations to MSS (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz,

resolves to invite ITU-R

1 to complete, as a matter of urgency and in time for WRC-03, the technical and operational studies on the feasibility of sharing between MSS and MetSat, by determining appropriate separation distances between mobile earth stations and MetSat stations, including GVAR/S-VISSR stations, in the band 1 683-1 690 MHz, as stated in Recommendation ITU-R SA.1158-2;

2 to assess, with the participation of WMO, the current and future spectrum requirements of the MetAids service, taking into account improved characteristics, and of the MetSat service in the band 1 683-1 690 MHz, taking into account future developments;

3 in the event that the studies of the specific frequency band referred to in this resolution lead to an unsatisfactory conclusion, to carry out sharing studies in order to recommend alternative MSS (Earth-to-space) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to recommend that WRC-03 consider making new allocations to the MSS (Earth-to-space), on a global basis, preferably in the vicinity of the existing allocation around 1.6 GHz,

urges

administrations and interested parties such as WMO to participate actively in these studies by submitting contributions,

instructs the Secretary-General

to bring this resolution to the attention of WMO.

ARTICLE S22

Space services[1]

MOD

Section VI – Off-axis power limits on earth stations of a geostationary-satellite network in the fixed-satellite service[11, 12]

MOD

_____

[11] **S22.VI.1** The provisions of this section shall not be used for coordination of, or to evaluate interference between, GSO FSS networks (see No. **S9.50.1**).

ADD

[12] **S22.VI.2** Although the provisions of this section cover off-axis power limitations in all directions, the radiation pattern of GSO FSS earth station antennas in more than two orthogonal planes is not required.

MOD

S22.26 § 9 The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station of a geostationary-satellite network shall not exceed the following values for any off-axis angle φ which is 3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p.*
3° ≤ φ ≤ 7°	(42 – 25 log φ) dB(W/40 kHz)
7° < φ ≤ 9.2°	21 dB(W/40 kHz)
9.2° < φ ≤ 48°	(45 – 25 log φ) dB(W/40 kHz)
48° < φ ≤ 180°	3 dB(W/40 kHz)

MOD

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.*
3° ≤ φ ≤ 7°	(56 – 25 log φ) dBW
7° < φ ≤ 9.2°	35 dBW
9.2° < φ ≤ 48°	(59 – 25 log φ) dBW
48° < φ ≤ 180°	17 dBW

MOD

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.*
$3° \leq \varphi \leq 7°$	$(56 - 25 \log \varphi)$ dBW
$7° < \varphi \leq 9.2°$	35 dBW
$9.2° < \varphi \leq 48°$	$(59 - 25 \log \varphi)$ dBW
$48° < \varphi \leq 180°$	17 dBW

ADD

S22.30 The e.i.r.p. limits given in Nos. **S22.26**, **S22.27**, **S22.28** and **S22.32** do not apply to earth station antennas in service or ready to be in service[13] prior to 2 June 2000, nor to earth stations associated with a satellite network in the fixed-satellite service for which complete coordination or notification information has been received before 2 June 2000.

ADD

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[13] **S22.30.1** "Ready to be in service" relates to the case where antennas have been installed but the start of service has been delayed due to force majeure.

ADD

S22.31 Telecommand and ranging[x] carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directional receiving antenna on the space station) may exceed the levels given in No. **S22.26** by no more than 16 dB in the frequency bands 12.75-13.25 GHz and 13.75-14.5 GHz. In all other modes of operation, and in case of force majeure, telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in No. **S22.26**.

ADD

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[x] **S22.31.1** Measurement of the distance to the satellite.

ADD

S22.32 § 10 The level of equivalent isotropically radiated power (e.i.r.p.) density emitted by an earth station in a geostationary-satellite network in the 29.5-30 GHz frequency band shall not exceed the following values for any off-axis angle φ which is 3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p. density*
$3° \leq \varphi \leq 7°$	$(28 - 25 \log \varphi)$ dB(W/40 kHz)
$7° < \varphi \leq 9.2°$	7 dB(W/40 kHz)
$9.2° < \varphi \leq 48°$	$(31 - 25 \log \varphi)$ dB(W/40 kHz)
$48° < \varphi \leq 180°$	+1 dB(W/40 kHz)

ADD

S22.33 Not used.

ADD

S22.34 Telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directional receiving antenna on the space station) may exceed the levels given in No. **S22.32** by no more than 10 dB[y] in the frequency band 29.5-30 GHz. In all other modes of operation, and in case of *force majeure*, telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in No. **S22.32**.

ADD

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[y] **S22.34.1** Further studies are required to confirm the value of 10 dB.

ADD

S22.35 For GSO systems in which the earth stations are expected to transmit simultaneously in the same 40 kHz band, e.g. for GSO systems employing CDMA, the maximum e.i.r.p. values given in No. **S22.32** should be decreased by 10log(N) dB, where N is the number of earth stations which are in the receive satellite beam of the satellite with which these earth stations are communicating and which are expected to transmit simultaneously on the same frequency.

ADD

S22.36 Earth stations operating in the frequency band 29.5-30 GHz should be designed in such a manner that 90% of their peak off-axis e.i.r.p. density levels do not exceed the values given in No. **S22.32**. Further study is needed to determine the off-axis angular range over which these exceedences would be permitted, taking into account the interference level into adjacent satellites. The statistical processing of the off-axis e.i.r.p. density peaks should be carried out using the method given in Recommendation ITU-R S.732.

ADD

S22.37 The limits given in Nos. **S22.26** to **S22.28** and **S22.32** apply under clear-sky conditions. During rain-fade conditions, the limits may be exceeded by earth stations when using uplink power control.

ADD

S22.38 Earth stations in the fixed-satellite service operating in the 29.5-30 GHz band, which have lower elevation angles to the geostationary-satellite orbit, will require higher e.i.r.p. levels relative to the same terminals at higher elevation angles to achieve the same power flux-densities at the GSO, due to the combined effect of increased distance and atmospheric absorption. Earth stations with low elevation angles may exceed the levels given in No. **S22.32** by the following amounts:

Elevation angle to GSO (ε)	*Increase in e.i.r.p. density (dB)*
$\varepsilon \leq 5°$	2.5
$5 < \varepsilon \leq 30°$	$0.1(25 - \varepsilon) + 0.5$

ADD

S22.39 The values in No. **S22.32** applicable to the off-axis angle range from 48° to 180° are intended to account for spillover effects.

APPENDIX S4

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter SIII

ADD

A.16 Commitment regarding compliance with off-axis power limits

A commitment that earth stations operating with a geostationary-satellite network in the fixed-satellite service meet the off-axis power limitations given in Nos. **S22.26** to **S22.28** or **S22.32** (as appropriate) under the conditions specified in Nos. **S22.30**, **S22.31** and **S22.34** to **S22.39**, where the earth stations are subject to those power limits.

SUP

RESOLUTION 538 (WRC-97)

Use of the frequency bands covered by Appendices S30/30 and S30A/30A by non-geostationary-satellite systems in the fixed-satellite service

ADD

RESOLUTION [COM5/17] (WRC-2000)

Possible identification of spectrum for non-GSO FSS (Earth-to-space) gateway type operations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted epfd↑ limits that apply to non-GSO FSS in the Earth-to-space direction in portions of the 10.7-30 GHz band, including the 17.3-17.8 GHz band in Regions 1 and 3;

b) that this conference has decided that, due to incompatibilities in the 17.3-17.8 GHz band between non-GSO FSS (Earth-to-space) and existing and planned operations (including broadcasting-satellite and radiolocation services), non-GSO FSS (Earth-to-space) operations are not allowed in Region 2 in this band;

c) that, in the 10-30 GHz band, the amount of spectrum identified for use by non-GSO FSS Earth-to-space transmission is limited compared to the amount of spectrum for space-to-Earth transmission;

d) that non-GSO FSS systems may need additional spectrum in the Earth-to-space direction for very low density gateway type operations that could be constrained by a minimum antenna diameter,

resolves to invite ITU-R

to study the necessity and suitability of frequency bands for non-GSO FSS (Earth-to-space) gateway operations outside those bands allocated to non-GSO FSS subject to No. **S9.11A**, on the basis of the compatibility between this type of non-GSO FSS operation and existing and planned services in these bands,

instructs the Director of the Radiocommunication Bureau

to report the results of these studies to a future competent WRC.

ADD

RESOLUTION [COM5/6] (WRC-2000)

Protection of GSO FSS and GSO BSS networks from the maximum aggregate equivalent power flux-density produced by multiple non-GSO FSS systems in frequency bands where equivalent power flux-density limits have been adopted

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 adopted, in Article **S22**, provisional equivalent power flux-density (epfd) limits to be met by non-GSO FSS systems in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30 GHz;

b) that this conference has revised Article **S22** to ensure the limits contained therein provide adequate protection to GSO systems without placing undue constraints on any of the systems and services sharing these frequency bands;

c) that this conference has decided that a combination of single-entry validation, single-entry operational and, for certain antenna sizes, single-entry additional operational epfd limits, contained in Article **S22**, along with the aggregate limits in Tables **COM5/6-1A** to **COM5/6-1D**, should apply to non-GSO FSS systems in order to protect GSO networks in these bands;

d) that these single-entry validation limits have been derived from aggregate epfd masks contained in Tables **COM5/6-1A** to **COM5/6-1D**, assuming a maximum effective number of non-GSO FSS systems of 3.5;

e) that the aggregate interference caused by all co-frequency non-GSO FSS systems in these bands into GSO FSS systems should not exceed the aggregate epfd levels in Tables **COM5/6-1A** to **COM5/6-1D**;

f) that WRC-97 decided, and this conference has confirmed, that non-GSO FSS systems in the bands in question are to mutually coordinate the use of frequencies in these bands under the provisions of No. **S9.12**;

g) that the orbital characteristics of such systems are likely to be inhomogeneous;

h) that, as a result of this likely inhomogeneity, the aggregate epfd levels from multiple non-GSO FSS systems will not be directly related to the actual number of systems sharing a frequency band, and the number of such systems operating co-frequency is likely to be small;

i) that the possible misapplication of single-entry limits should be avoided,

recognizing

a) that non-GSO FSS systems are likely to need to implement interference mitigation techniques to mutually share frequencies;

b) that, on account of the use of such interference mitigation techniques, it is likely that the number of non-GSO systems will remain small, as will the aggregate interference caused by non-GSO FSS systems into GSO systems;

c) that, notwithstanding *considering d)* and *e)* and *recognizing b)*, there may be instances where the aggregate interference from non-GSO systems could exceed the interference levels given in Tables **COM5/6-1A** to **COM5/6-1D**;

d) that administrations operating GSO systems may wish to ensure that the aggregate epfd produced by all operating co-frequency non-GSO FSS systems in the frequency bands referred to in *considering a)* above into GSO FSS and/or GSO BSS networks does not exceed the aggregate interference levels given in Tables **COM5/6-1A** to **COM5/6-1D**,

resolves

1 that administrations operating or planning to operate non-GSO FSS systems, for which coordination or notification information, as appropriate, was received after 21 November 1997, in the frequency bands referred to in *considering a)* above, individually or in collaboration, shall take all possible steps, including, if necessary, by means of appropriate modifications to their systems, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not cause the aggregate power levels given in Tables **COM5/6-1A** to **COM5/6-1D** to be exceeded (see No. **S22.5K**);

2 that, in the event that the aggregate interference levels in Tables **COM5/6-1A** to **COM5/6-1D** are exceeded, administrations operating non-GSO FSS systems in these frequency bands shall take all necessary measures expeditiously to reduce the aggregate epfd levels to those given in Tables **COM5/6-1A** to **COM5/6-1D**, or to higher levels where those levels are acceptable to the affected GSO administration (see No. **S22.5K)**,

invites ITU-R

1 to develop, as a matter of urgency and in time for the next WRC, a suitable methodology for calculating the aggregate epfd produced by all non-GSO FSS systems operating or planning to operate co-frequency in the frequency bands referred to in *considering a)* above into GSO FSS and GSO BSS networks, which may be used to determine whether the systems are in compliance with the aggregate power levels given in Tables **COM5/6-1A** to **COM5/6-1D**;

2 to continue its studies and to develop, as a matter of urgency, a recommendation on the accurate modelling of interference from non-GSO FSS systems into GSO FSS and GSO BSS networks in the frequency bands referred to in *considering a)* above, in order to assist administrations planning or operating non-GSO FSS systems in their efforts to limit the aggregate epfd levels produced by their systems into GSO networks, and to provide guidance to GSO network designers on the maximum $epfd_{\downarrow}$ levels expected to be produced by all non-GSO FSS systems when accurate modelling assumptions are used;

3 to develop, as a matter of urgency, a recommendation containing procedures to be used among administrations in order to ensure that the aggregate epfd limits given in Tables **COM5/6-1A** to **COM5/6-1D** are not exceeded by operators of non-GSO FSS systems;

4 to attempt to develop measurement techniques to identify the interference levels from non-GSO systems in excess of the aggregate limits given in Tables **COM5/6-1A** to **COM5/6-1D**, and to confirm compliance with these limits,

instructs the Director of the Radiocommunication Bureau

1 to assist in the development of the methodology referred to in *invites ITU-R* 1 above;

2 to report to WRC-03 on the results of studies in *invites ITU-R* 1 and 3 above.

ANNEX 1 TO RESOLUTION [COM5/6] (WRC-2000)

TABLE **COM5/6-1A**[1, 3, 4]

Limits on aggregate epfd$_\downarrow$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd$_\downarrow$ dB(W/m^2)**	**Percentage of time during which epfd$_\downarrow$ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[2]**
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–170 –168.6 –165.3 –160.4 –160 –160	0 90 99 99.97 99.99 100	40	60 cm Recommendation ITU-R S.1428
	–176.5 –173 –164 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.84 99.945 99.97 99.99 99.99 99.9975 100	40	1.2 m Recommendation ITU-R S.1428
	–185 –184 –182 –168 –164 –162 –160 –160	0 90 99.5 99.9 99.96 99.982 99.997 100	40	3 m[3*bis*] Recommendation ITU-R S.1428
	–190 –190 –166 –160 –160	0 99 99.99 99.998 100	40	10 m[3*bis*] Recommendation ITU-R S.1428

1 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

2 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 In addition to the limits shown in Table **COM5/6-1A**, the following aggregate epfd$_\downarrow$ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **COM5/6-1A**:

100% of the time epfd$_\downarrow$ dB(W/(m^2 · 40 kHz))	**Latitude (North or South) (°)**
–160	0 ≤ |Latitude| ≤ 57.5
–160 + 3.4(57.5 – |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
–165.3	63.75 < |Latitude|

3*bis* The values for the 3 m and 10 m antennas are applicable only for the methodology referred to *invites ITU-R* 1.

4 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd$_\downarrow$ levels and logarithmic for the time percentages, with straight lines joining the data points.

TABLE **COM5/6-1B**[1, 3, 3*bis*]

Limits on aggregate epfd$_\downarrow$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd$_\downarrow$ dB(W/m^2)	Percentage of time during which epfd$_\downarrow$ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[2]
17.8-18.6	–170 –170 –164 –164	0 90 99.9 100	40	1 m Recommendation ITU-R S.1428
	–156 –156 –150 –150	0 90 99.9 100	1 000	
17.8-18.6	–173 –173 –166 –164 –164	0 99.4 99.9 99.92 100	40	2 m Recommendation ITU-R S.1428
	–159 –159 –152 –150 –150	0 99.4 99.9 99.92 100	1 000	
17.8-18.6	–180 –180 –172 –164 –164	0 99.8 99.8 99.992 100	40	5 m Recommendation ITU-R S.1428
	–166 –166 –158 –150 –150	0 99.8 99.8 99.992 100	1 000	

1 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

2 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd$_\downarrow$ levels and logarithmic for the time percentages, with straight lines joining the data points.

3*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

TABLE COM5/6-1C[1, 3, 3*bis*]

Limits on aggregate epfd$_\downarrow$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd$_\downarrow$ dB(W/m^2)	Percentage of time during which epfd$_\downarrow$ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[2]
19.7-20.2	–182 –172 –154 –154	0 90 99.94 100	40	70 cm Recommendation ITU-R S.1428
	–168 –158 –140 –140	0 90 99.94 100	1 000	
19.7-20.2	–185 –176 –165 –160 –154 –154	0 91 99.8 99.8 99.99 100	40	90 cm Recommendation ITU-R S.1428
	–171 –162 –151 –146 –140 –140	0 91 99.8 99.8 99.99 100	1 000	
19.7-20.2	–191 –162 –154 –154	0 99.933 99.998 100	40	2.5 m Recommendation ITU-R S.1428
	–177 –148 –140 –140	0 99.933 99.998 100	1 000	
19.7-20.2	–195 –184 –175 –161 –154 –154	0 90 99.6 99.984 99.9992 100	40	5 m Recommendation ITU-R S.1428
	–181 –170 –161 –147 –140 –140	0 90 99.6 99.984 99.9992 100	1 000	

1 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

2 Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd$_\downarrow$ levels and logarithmic for the time percentages, with straight lines joining the data points.

3*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

TABLE **COM5/6-1D**[2, 3]

Limits on aggregate epfd↓ radiated by non-GSO FSS systems in certain frequency bands

30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	**epfd$_\downarrow$ dB(W/m^2)**	**Percentage of time during which epfd$_\downarrow$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[1]**
11.7- 12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–160.4 –160.1 –158.6 –158.6 –158.33 –158.33	0 25 96 98 98 100	40	30 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–170 –167 –164 –160.75 –160 –160	0 66 97.75 99.33 99.95 100	40	45 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–171 –168.75 –167.75 –162 –161 –160.2 –160 –160	0 90 97.8 99.6 99.8 99.9 99.99 100	40	60 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–173.75 –173 –171 –165.5 –163 –161 –160 –160	0 33 98 99.1 99.5 99.8 99.97 100	40	90 cm Recommendation ITU-R BO.1443 Annex 1

11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz In Region 2	–177 –175.25 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.7 99.82 99.9 99.965 99.993 100	40	120 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–179.5 –178.66 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.81 99.91 99.975 99.995 100	40	180 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–182 –180.9 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.85 99.94 99.98 99.995 100	40	240 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz In Region 1 11.7-12.2 GHz and 12.5-12.75 GHz In Region 3 12.2-12.7 GHz In Region 2	–186.5 –184 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.7 99.83 99.94 99.97 100	40	300 cm Recommendation ITU-R BO.1443 Annex 1

[1] Under this section, reference patterns are to be used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

2 For BSS antenna diameters of 180 cm, 240 cm and 300 cm, in addition to the aggregate limit shown in Table **COM5/6-1D**, the following aggregate 100% of the time $epfd_{\downarrow}$ limit also applies:

100% of the time $epfd_{\downarrow}$ dB(W/(m^2 · 40 kHz))	**Latitude (North or South) (°)**
–160	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160 + 3.4 (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 < \lvert \text{Latitude} \rvert \leq 63.75$
–165.3	$63.75 < \lvert \text{Latitude} \rvert$

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the $epfd_{\downarrow}$ levels and logarithmic for the time percentages, with straight lines joining the data points.

For BSS antenna of diameter 240 cm, in addition to the above aggregate 100% of the time $epfd_{\downarrow}$ limit, a –167 dB(W/(m^2 · 40 kHz)) aggregate 100% of the time operational $epfd_{\downarrow}$ limit also applies to receive antennas located in Region 2, west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.]

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 463-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note from Chairperson, Committee 5

As a result of consideration in Plenary of the allocations proposed in Document B.2 on page 3 for the band 18.6-18.8 GHz the Chairperson of the Plenary requested Committee 5 to review the matter. As a result of this review the footnote below is proposed for addition to those allocations.

ADD

S5.522C In the band 18.6-18.8 GHz, in Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, Libya, Morocco, Oman, Qatar and Syria, fixed service systems in operation at the date of entry into force of the Final Acts of WRC-2000 are not subject to the limits of No. S21.5A.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 464-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 5

(ALLOCATIONS AND ASSOCIATED ISSUES)

Wednesday, 24 May 2000, at 1430 hours

Chairperson: Mr Chris Van DIEPENBEEK (Netherlands)

Subjects discussed		**Documents**
1	Report of the Chairperson of Working Group 5D	274, 275, 305, 306, 368, 371, 374, 376
2	Report of the Chairperson of Working Group 5C	336, 337, 338
3	Report of the Chairperson of Working Group 5B	334, 356, 357, 367
4	Consideration of resolutions and recommendations of earlier conferences (continued)	DT/79

1 Report of the Chairperson of Working Group 5D (Documents 274, 275, 305, 306, 368, 371, 374 and 376)

1.1 The **Chairperson of Working Group 5D** said that the working group had completed its work and had already presented the documents relating to agenda items 1.12 and 1.14. The remaining documents related to item 1.13. Some contained proposals for new regulatory provisions and included regulatory language, which would require liaison with Committee 4. No problems were envisaged in that connection.

Document 306

1.2 The **Chairperson of Working Group 5D**, introducing Document 306, said that the CPM Report (Document 3, Annex) had identified the need to incorporate some of the provisions of Resolutions 130 (WRC-97) and 538 (WRC-97) into the Radio Regulations and, as a result, various proposals had been made to clarify the provisions of Articles S5 and S9. Document 306 proposed small modifications to various provisions of Article S9 to provide simple entry points for cases where coordination was required under WRC-2000 resolutions. Changes to Table S5-1 of Appendix S5 were also proposed. In the "case" column for Nos. S9.12A and S9.13, it would be left to the secretariat to check and insert the appropriate references. In the "frequency bands" column for No. S9.13, the words "see modifications by 4A" should be added in square brackets. Lastly, Document 306 proposed a new footnote S9.35.1 to Article S9 to confirm that the Bureau would publish detailed results of its examination of filings for non-GSO systems.

1.3 Document 306 was **approved**.

Document 274

1.4 The **Chairperson of Working Group 5D**, introducing Document 274, stated that draft new Resolution [COM5/3] noted the emerging interest in the bands 37.5-50.2 GHz and requested ITU-R to continue studies in those bands.

1.5 Draft new Resolution [COM5/3] (Frequency sharing in the range 37.5-50.2 GHz between GSO FSS networks and non-GSO FSS systems), contained in Document 274, was **approved**.

Document 275

1.6 The **Chairperson of Working Group 5D**, introducing Document 275, said that throughout the work of Joint Task Group 4-9-11, the GSO FSS and BSS operators had expressed concern that some non-GSO systems might attempt to bypass the Radio Regulations by submitting multiple filings for each non-GSO FSS system. Draft new Resolution [COM5/2] requested ITU-R to study the problem further and propose means of preventing the misapplication of non-GSO FSS single entry limits in Article S22. In response to a suggestion by the **delegate of Mexico** as to the possibility of developing rules of procedure, he added that the purpose of the request to ITU-R was to ensure completion of the studies in time for consideration at the next conference when appropriate recommendations could be approved, thereby avoiding the need for rules of procedure.

1.7 Draft new Resolution [COM5/2] (WRC-2000) (Criteria and process for resolution of possible misapplication of non-GSO FSS single-entry limits in Article S22 [Rev.WRC-2000]), contained in Document 275, was **approved**.

1.8 The **Chairperson** said that the draft new resolution would be passed on to the Budget Control Committee in view of the tasks it required of the Bureau.

Document 368

1.9 The **Chairperson of Working Group 5D**, introducing Document 368, said that draft new Resolution [COM5/9] was intended to provide the additional protection deemed necessary by ITU-R studies undertaken since 1997 in cases where certain specific large earth station antennas operated in the GSO FSS. The requirement was a specialized one and covered only a small number of sites around the world.

1.10 Draft new Resolution [COM5/9] (Transitional measures for coordination between certain specific GSO FSS receive earth stations and non-GSO FSS transmit space stations in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz where epfd↓ limits apply) together with its Annex 1, contained in Document 368, was **approved**.

1.11 The **Chairperson** said that on account of the tasks it required of the Bureau, the draft new resolution would be referred to the Budget Control Committee.

Document 374

1.12 The **Chairperson of Working Group 5D**, introducing Document 374, said that draft new Resolution [COM5/7] incorporated proposals for further study by ITU-R on ways of verifying compliance of non-GSO networks with the relevant limits, guidelines to be used by designers of non-GSO networks in relation to interference in those networks, and guidelines in relation to coordination between non-GSO systems.

1.13 The **Chairperson** proposed that the *requests the Director of the Radiocommunication Bureau* section be deleted to avoid consequential interpretation, staffing and budgetary problems.

1.14 It was so **agreed**.

1.15 Draft new Resolution [COM5/7] (Further studies on the sharing conditions between GSO networks and non-geostationary-satellite systems in the fixed-satellite service and between non-geostationary-satellite systems in the fixed-satellite service) contained in Document 374, as amended, was **approved**.

Document 376

1.16 The **Chairperson of Working Group 5D** introduced Document 376 which contained draft new Resolution [COM5/6]. Based closely on example Resolution WWW in Annex 2 to Chapter 3 of the CPM Report, the resolution addressed the need identified in ITU-R studies and the CPM Report for GSO systems to be protected both from single non-GSO FSS systems and from the aggregate interference produced by multiple non-GSO FSS systems. The reference in square brackets in *considering f)* required checking. The square brackets in *resolves* 1 could be removed. In Annex 1, the sentence in square brackets in footnote 3 to Table COM5/6-1D and the comment thereto depended on the outcome of discussions in Working Group 1 of the Plenary and would be amended in cooperation with the secretariat before the resolution was submitted to the Plenary meeting.

1.17 In response to requests for clarification by the **delegate of France**, he proposed that in *resolves* 2, “or to reduce such interference to levels that are acceptable” should be amended to read “or to higher levels where those levels are acceptable”, and that in Annex 1, footnote 3*bis* to Table COM 5/6-1A, the words “the aggregation methodologies” should be replaced by “the methodology”.

1.18 It was so **agreed**.

1.19 Draft new Resolution [COM5/6] (Protection of GSO FSS and GSO BSS networks from the maximum aggregate equivalent power flux-density produced by multiple non-GSO FSS systems in frequency bands where epfd limits have been adopted) together with its Annex 1, contained in Document 376, as amended, was **approved**.

1.20 The **Chairperson** said that the draft new resolution would be passed on to the Budget Control Committee in view of the tasks it required of the Bureau.

Document 371

1.21 The **Chairperson of Working Group 5D** said that in the light of proposals regarding sharing between GSO FSS and terrestrial services in the band 11.7-12.2 GHz in Region 2, the working group proposed modification to footnote S5.488 and a draft new Resolution [COM5/18] on the protection of terrestrial services in all Regions from Region 2 GSO FSS networks in that band.

1.22 Following a request for clarification by the **delegate of Russia**, and comments by the **delegate of Canada** regarding the applicability of the Article S9 and S22 provisions in question, the **Chairperson** suggested that in draft new Resolution [COM5/18], *considering e)* should be amended to read "that the protection of the fixed-satellite service in Region 2 from the fixed-satellite service in that Region is assured either by S9 (S9.7 or S9.12) or S22".

1.23 It was so **agreed**.

1.24 The **delegate of the United States** proposed that, in *instructs the Radiocommunication Bureau*, the words "having a primary allocation to terrestrial services" should be inserted after "any administration" to be consistent with the text of the *resolves* section.

1.25 It was so **agreed**.

1.26 The proposed modification to footnote S5.488 and draft new Resolution [COM5/18], contained in Document 371, as amended, were **approved**.

Document 305

1.27 The **Chairperson of Working Group 5D** said that WRC-2000 had received proposals to change the very delicate balance of the constraints on the various services in the band 13.75-14 GHz. In view of different opinions that existed both within some administrations and between administrations as regards the different services sharing the band and their respective needs, the working group proposed that a possible compromise would be to modify footnotes S5.502 and S5.503 and to approve a Resolution [COM5/10] calling for further studies to review sharing conditions in that band. In connection with footnote S5.502, some administrations were of the view that a minimum antenna diameter of 4.5 metres should not be mandatory. In connection with footnote S5.503, one administration had proposed no change. The document represented a very fragile compromise and any changes in the proposals could quickly destroy both the compromise and the underlying goodwill. The committee should make every effort to maintain the text as drafted. In Document 245, Working Group 2 of the Plenary had requested Committee 5 to communicate the results of its work on those issues as quickly as possible in order to facilitate its consideration of the draft agenda for WRC-03.

1.28 The **delegate of Malaysia** opposed the proposed compromise. Many administrations wanted to relax the mandatory nature of the provisions governing power and antenna diameter, which were intended to protect FSS systems from radio allocations which in fact they did not have. He therefore proposed that the word "shall" in the proposed modification to footnote S5.502 should be replaced by "should". The **delegates of Bulgaria**, **Indonesia**, **Tonga** and **Viet Nam** supported that proposal.

1.29 The **delegate of Spain**, supported by the **delegate of Cuba**, pointed out, in relation to the 85 dBW value, that in the Spanish version “no debe” should be amended to “no debería” in order to be consistent with the wording of the English text. His delegation was among those that opposed a mandatory 4.5 metre minimum antenna diameter.

1.30 The **Chairperson** said that the Spanish text would be aligned with the English.

1.31 The **delegate of the United Arab Emirates** was also opposed to a mandatory antenna diameter. Administrations that had no radiolocation or radionavigation services allocated in the band in question should have the flexibility to use any diameter size they wished, in order to use the spectrum more efficiently.

1.32 The **delegates of Israel, the United Kingdom, the Netherlands, the United States, Germany, France** and **Japan**, the latter speaking on behalf of 16 APT countries, expressed the view that the minimum FSS earth station antenna diameter of 4.5 metres should be a mandatory requirement and that the text as proposed in Document 305 should therefore remain unchanged.

1.33 The **Chairperson,** noting the divergence of views between those seeking a relaxation in the regulations on earth station antenna diameter size and those who maintained that relaxed regulations in one country would lead to interference in others and therefore insisted on strict requirements, recalled the highly delicate compromise that had been worked out, after lengthy discussions, in the form of the three-part package now before the committee. He appealed to delegates to accept the package on the understanding that its third part, draft new Resolution [COM5/10], was in fact a response to the concerns of those who favoured relaxed regulations, providing as it did for further studies, to be completed in time for WRC-03. He reminded the committee that Working Group 2 of the Plenary was urgently awaiting Committee 5’s conclusions.

1.34 The **delegate of the United Arab Emirates**, maintaining his Administration’s position that there should be no mandatory requirement, suggested that some additional wording might be added to footnote S5.502 to the effect that an administration operating an antenna with a diameter of less than 4.5 metres should ensure the protection of radionavigation or radiolocation services in its country and neighbouring countries.

1.35 The **delegate of Spain** proposed, in the interest of consensus, that a sentence should be added at the end of the footnote, stating that, pending the outcome of the studies on the band 13.75-14 GHz provided for under draft new Resolution [COM5/10], the operation of an FSS earth station antenna with a diameter of less than 4.5 metres might be authorized by an administration if that administration determined that such operation would not lead to unacceptable interference with other services operating in that band. He further proposed the addition of the words “as a matter of urgency” after “studies” in *resolves* 1 of draft new Resolution [COM5/10].

1.36 The **Chairperson**, summing up, observed that the United Arab Emirates, Malaysia, Tonga, Syria, Bulgaria and Spain had reservations about the approval of the package presented in Document 305. He took it that, subject to those reservations, the committee could agree to approve Document 305.

1.37 Document 305 was **approved**, subject to the reservations expressed.

2 Report of the Chairperson of Working Group 5C (Documents 336, 337 and 338)

Document 338

2.1 The **Chairperson of Working Group 5C** said that the working group had unanimously agreed to delete Resolution 712 (Rev.WRC-95), as indicated in Document 338.

2.2 Document 338 was **approved**.

Document 336

2.3 The **Chairperson of Working Group 5C** introduced Document 336, containing a proposed draft revision of Resolution 723 (WRC-97) relating to consideration by a future competent WRC of issues dealing with allocations to science services.

2.4 The **Chairperson** suggested that, in the *resolves* section, the square brackets should be removed from the dates relating to the 2000 Conference Preparatory Meeting and the 2003 World Radiocommunication Conference.

2.5 It was so **agreed**.

2.6 The **delegate of Sweden** said that he saw no need for *resolves* 3), since it was covered by draft new Resolution [COM5/11] (Document 340), which had already been approved by Committee 5.

2.7 The **delegate of the United Kingdom** said that the subject of *resolves* 4) had not yet been discussed by Working Group 2 of the Plenary. There was therefore a need for liaison with that group on the matter.

2.8 The **delegate of the United States** pointed out that new Resolution [COM5/11] dealt strictly with determination of the coordination area for the space research service (SRS) with respect to high-density applications in the fixed service in the band 31.8-32.3 GHz but did not address the issue of sharing between the SRS and the inter-satellite service referred to in *resolves* 3). With regard to the work of Working Group 2 of the Plenary, *resolves* 4) simply provided the appropriate focus for consideration of space research allocations in the 10-30 GHz band.

2.9 The **Chairperson** said that while some of the issues under discussion appeared on the list of items for consideration by Working Group 2 of the Plenary he saw no difficulty in Committee 5 proceeding with approval of the draft revised resolution; the working group could take up specific issues, if necessary.

2.10 The **delegate of Sweden** requested clarification of the intention behind *resolves* 3). Having heard the explanation by the **delegate of the United States** that it concerned sharing between the inter-satellite service and the space research service, he proposed the insertion of the words “taking into account the coexistence between the two services” after “inter-satellite service” in order to clarify the wording.

2.11 The **Chairperson** said that he took it that the amendment proposed by the delegate of Sweden was acceptable, and that the committee wished some information to be provided to Working Group 2 of the Plenary regarding items on the list for its consideration.

2.12 It was so **agreed**.

2.13 Draft revised Resolution 723 (WRC-97), as amended, was **approved**.

Document 337

2.14 The **Chairperson of Working Group 5C** said that the country footnotes contained in Document 337 had been carefully compiled so as to reflect the use of the allocations in question by HAPS. He recalled that in draft revised Resolution 122 (WRC-97) already approved by the committee (Document 340), references to those footnotes were in square brackets, which would be dealt with at the Plenary level.

2.15 The **delegate of Germany** proposed the deletion of the words "For Region 3" at the beginning of footnotes S5.5SSS and S5.5RRR.

2.16 It was so **agreed**.

2.17 The **Chairperson** indicated that Mongolia should not be mentioned separately, but placed after Maldives in the list of countries.

2.18 The **delegate of Sweden** said that footnote S5.5RRR was somewhat confusing. He failed to see how the band in question could be shared between HAPS and the space research service, as was apparently the case in Mongolia. The **Chairperson** said he considered that to be a domestic matter for Mongolia to resolve.

2.19 Document 337, as amended, was **approved**.

2.20 The **Chairperson of Working Group 5C**, reporting on the progress of work, said that the working group had thus completed its consideration of agenda items 1.5, 1.16, 1.17 and part of 1.4. Some difficulties remained in finding a solution to the 40 GHz issue under agenda item 1.4.

3 Report of the Chairperson of Working Group 5B (Documents 334, 356, 357 and 367)

Document 334

3.1 The **Chairperson of Working Group 5B** said that, as reflected in Document 334, the working group had considered the proposals submitted concerning the feasibility of allocation in the space-to-Earth direction to the mobile-satellite service in a portion of the 1 559-1 567 MHz frequency range and did not propose a change to the Radio Regulations in that band.

3.2 Document 334 was **approved**.

Document 356

3.3 The **Chairperson of Working Group 5B**, introducing Document 356, said that the modifications proposed by Sub-Working Group 5B-1 to Article S15 included references to frequencies used for safety and regularity in flight identified in Appendix S27, and encouraged acceleration of reporting and action on interference. The modifications proposed to Resolution 207 (Mob-87) clarified the current situation, placed greater emphasis on the study of technical and regulatory solutions to assist in the mitigation of interference, encouraged greater efforts to prevent unauthorized use, and invited the Radiocommunication Bureau to take action with a view to ensuring the timely distribution of monitoring data. The suggested changes to Resolution 207 were in accordance with the proposed modifications to Article S15.

3.4 The **delegate of Senegal** having drawn attention to a small error in the French text relating to MOD S15.28, the **Chairperson** said that the French text would be aligned with the English and the document would be transmitted to Committee 3 as it contained instructions to the Bureau and therefore might have financial implications.

3.5 Document 356 was **approved** on that understanding.

Document 357

3.6 The **Chairperson of Working Group 5B**, introducing Document 357, said that the modifications proposed to Article S52 and Appendix S17 were designed to improve protection of distress and safety communications. The use of digital safety calling was encouraged and it was suggested that national frequencies be used where possible. Furthermore, it was proposed that routine calling on the 12 MHz and 16 MHz channels should cease as soon as possible. In draft new Resolution [COM5/12], ITU-R was invited to study the interference to the distress and safety frequencies in the above-mentioned channels caused by routine calling and to report thereon to the next WRC. The working group further suggested that Resolution 346 (WRC-97) remain unchanged.

3.7 The **delegate of the United States** said that several parts of the text caused difficulty. In particular it had not yet been clearly established that interference was caused as claimed. Agreement had been reached on the understanding that a study would be carried out on that issue and the findings reviewed by WRC-03. Yet the proposed text stated that the use of the frequencies concerned would cease no later than 31 December 2003. That date was predicated on the assumption that WRC-03 would conclude that the alleged problems had been demonstrated by testing and studies. If Document 357 were approved in its present form, the obligation to cease use of the frequencies in question would be entirely unrelated to a review of the issue by WRC-03. He therefore suggested that the requirement to cease calling on those frequencies should be linked to the review of the matter by a competent WRC.

3.8 The **delegate of Finland**, speaking in his capacity of Chairperson of Sub-Working Group 5B-1, confirmed that there were two aspects to the question: first, that calling should cease by a specific date and, second, that the matter should be studied prior to review by WRC-03. The text of Document 357 was the result of lengthy and thorough discussion in Sub-Working Group 5B-1; it constituted a careful balance that he advocated should not be disturbed by changing any part of the text. He understood that CEPT members were strongly in support of including the issue on the WRC-03 agenda.

3.9 The **delegate of the United States** said that the CEPT members wished to place many items on the agenda of WRC-03 and expressed his apprehension that the present issue might not in fact be included. He stressed that a time lapse of six months after review of the matter by a competent WRC should be allowed for calling on those frequencies to cease. The matter would then be clear.

3.10 The **delegate of Norway** understood the previous speaker's concern but said that a delicate balance had been achieved, based on a definite date. He was strongly against making any change to the wording proposed for Article S52 and Appendix S17 and was confident that he expressed the view of the CEPT group on that score.

3.11 The **delegate of Finland** said that it was essential to know whether the United States would support the inclusion of the item on the agenda of WRC-03.

3.12 The **delegate of the United States** said that he was unable to guarantee that support, given the working methods of Working Group 2 of the Plenary.

3.13 The **Chairperson of Working Group 5B** noted that the third paragraph of Document 357 drew the attention of Working Group 2 of the Plenary to the possible impact of draft new Resolution [COM5/12] on the consideration of agenda items of future conferences.

3.14 The **Chairperson** suggested that it should be placed on record that if the content of Document 357 was not included on the agenda of WRC-03, it would be assumed that the dates applicable to termination of use of the frequencies in question would be six months after the WRC that dealt with the issue.

3.15 The **delegate of Finland** could not agree: a number of administrations had indicated in documents submitted to the present conference the need to use the 12 MHz and 16 MHz frequency bands exclusively for distress and safety communications. The United States was the only administration which did not concur. The issue must not be postponed to an unknown future date.

3.16 The **delegate of the United States** said that no decision could be taken until the conclusions of Working Group 2 of the Plenary were known.

3.17 The **delegate of France** urged that the text be retained without change pending the outcome of discussions in Working Group 2 of the Plenary.

3.18 The **Chairperson** suggested that the committee consider the document on the understanding that the subject could be revisited in the light of the conclusions reached on the matter by Working Group 2 of the Plenary.

3.19 It was so **agreed**.

3.20 The **Chairperson** suggested that *resolves* 4 of draft Resolution [COM5/12] be split into two parts, with one inviting ITU-R to complete a study on the matter before the next WRC and the other inviting WRC-03 to consider the issue.

3.21 It was so **agreed**.

3.22 Document 357 was **approved** as amended, subject to the inclusion of the issue on the agenda of WRC-03.

Document 367

3.23 The **Chairperson of Working Group 5B** said that Sub-Working Group 5B-2 had concluded its work on new allocations to be made to RNSS in the band 5 000-5 030 MHz on a primary basis. The proposed amendments to Article S5 were set out in Document 367, as were two associated resolutions: draft new Resolution [COM5/15] (Studies on compatibility between stations of the radionavigation-satellite service (RNSS) (Earth-to-space) operating in the frequency band 5 000-5 010 MHz, and the international standard system (microwave landing system) operating in the 5 030-5 150 MHz band) called for studies to ensure that there would be no harmful interference caused to the microwave landing system, and draft new Resolution [COM5/16] (Studies on compatibility between the radionavigation-satellite service (RNSS) (space-to-Earth) operating in the frequency band 5 010-5 030 MHz, and the radio astronomy service (RAS) operating in the band 4 990-5 000 MHz addressed studies on compatibility between the RNSS and the radio astronomy service.

3.24 The **delegate of France** drew attention to an editorial error in the French text where the band referred to in ADD S5.444B should read “5 000-5 010 MHz” rather than “5 010-5 030 MHz”.

3.25 The **delegate of Germany**, referring to the last sentence of ADD S5.444B indicating that Resolution [COM5/15] (WRC-2000) applied, said that there was no relevant implementing provision in the resolution. He therefore proposed that the last sentence of ADD S5.444B should be replaced by “See Resolution [COM5/15]”.

3.26 It was so **agreed**.

3.27 The **delegate of France** proposed that, in ADD S5.444C, the term “aggregate power flux-density radiated” should be replaced by “aggregate power flux-density produced at the surface of the Earth”.

3.28 The **Chairperson of Working Group 5B** agreed with regard to the first mention of the term. With regard to the second mention of the term, he suggested that the word “radiated” should be deleted and that the word “into” later in the sentence be replaced by “at”.

3.29 It was so **agreed**.

3.30 The **Chairperson** suggested that in draft Resolution [COM5/15], "*requests ITU-R*" should read "*resolves to request ITU-R*".

3.31 It was so **agreed**.

3.32 The **delegate of France** said that, in *resolves* 3 of draft Resolution [COM5/16], "radiated" should read "produced at the surface of the Earth".

3.33 It was so **agreed**.

3.34 Document 367 was **approved** as amended.

4 Consideration of resolutions and recommendations of earlier conferences (continued) (Document DT/79)

4.1 The **Secretary** said that he had identified a small number of items in the list set out in Document DT/79 that which still required consideration.

4.2 The **Chairperson** said that the delegate of Finland had agreed to study what action was required and to report back to Committee 5 at a subsequent meeting.

The meeting rose at 1740 hours.

The Secretary:
J. LEWIS

The Chairperson:
Chris Van DIEPENBEEK

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 465-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note from Chairperson, Committee 5

REVIEW OF RESOLUTIONS AND RECOMMENDATIONS

Committee 5 was asked to review the status of a number of Resolutions and Recommendations appearing in DT/79. Many of these were considered as part of the consideration of the agenda items that were the responsibility of Committee 5.

Decisions on these have been forwarded to Committee 6 for subsequent consideration of the Plenary. Of those that remain action is required on only one Recommendation.

Recommendation 706 **"Frequency sharing by the Earth exploration-satellite service (passive sensors) and the space research service (passive sensors) with the fixed, mobile except aeronautical mobile, and fixed-satellite services in the band 18.6-18.8 GHz"** should be suppressed.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 466-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents DT/90(Rev.1), DT/97(Rev.1), DT/114 **COMMITTEE 6**

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

GT PLEN-1 has adopted, at its tenth, eleventh and twelfth meetings, the attached texts that are submitted for your consideration with a view to their subsequent submission to the Plenary.

R. ZEITOUN
Chairperson, GT PLEN-1, Box 27

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5]

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[1] **A.S9.1** 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**.

[2] **A.S9.2** These procedures may be applicable to stations on board satellite launching vehicles.

[3] **A.S9.3** See ~~also~~ 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), or new or modified assignments proposed for inclusion in the Regions 1 and 3 List of additional uses, 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~~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);

c) proposed modifications to the Appendix **S30A** Plans for 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), or new or modified assignments proposed for inclusion in the Regions 1 and 3 List of additional uses, 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~~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).

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

[4] **A.S9.4** Resolution **49 (WRC-97)** shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

[5] **A.S9.5** See also Resolutions **51 (WRC-97)**, **130 (WRC-97)** and **538 (WRC-97)**.

Sub-Section IIA – Requirement and request for coordination

SUP

S9.8

SUP

S9.9

SUP

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[12] **S9.8.1** and **S9.9.1**

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S9.17 *f)*[13] for any specific earth station or typical mobile earth station in frequency bands above ~~1 GHz~~100 MHz 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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[13] ~~**S9.17.1** Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending a decision of WRC-99 on the revision of these two Appendices.~~

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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~~coordination under **S9.19**;

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S9.19 *i)* for any transmitting station of a terrestrial service or a transmitting earth station in the fixed-satellite service (Earth-to-space) in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to ~~an~~typical earth station~~s~~ included in the service area of a space station in~~ of~~ the broadcasting-satellite service~~, except where this service is subject to the Appendix **S30** Plans~~;

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ARTICLE S11

Notification and recording of frequency assignments[1, 2, 3]

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[1] **A.S11.1** See also Appendices **S30** and **S30A** as appropriate, 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 in the same Region or in another Region, so far as their relationship to the broadcasting-satellite service, ~~which is subject to Appendix **S30**, is concerned~~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);

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 in the same Region or in another Region, 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).

[2] **A.S11.2** Resolution **49 (WRC-97)** shall also be applied with respect to those satellite networks and satellite systems that are subject to it.

[3] **A.S11.3** See also Resolutions **51 (WRC-97)**, **130 (WRC-97)** and **538 (WRC-97)**.

APPENDIX S5

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article S9

MOD

g) 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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[4] The associated space network characteristics must have been communicated to the Bureau under No. ~~**S9.2B**~~**S9.30** or under paragraph 4.1.3/4.2.6 of Appendix **S30** or 4.1.3/4.2.6 of Appendix **S30A**.

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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**
~~No. **S9.8** GSO/GSO~~	~~A transmitting space station in the fixed-satellite service (FSS) using the GSO in a frequency band shared with the broadcasting-satellite service (BSS) on an equal primary basis, in respect of space stations in the latter service which are subject to the Plans in Appendix **S30**~~	~~11.7-12.2 GHz (Region 2)~~ ~~12.2-12.7 GHz (Region 3)~~ ~~12.5-12.7 GHz (Region 1)~~	~~i) There is an overlap in the necessary bandwidths of the FSS and BSS space stations; and~~ ~~ii) the power flux-density (pfd) of the FSS space station 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 WRC-99 on the revision of these two Appendices.~~

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
~~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 (Region 1)~~ ~~17.7-18.1 GHz (Region 3)~~ ~~17.7-17.8 GHz (Region 2)~~	~~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 an FSS transmitting space station and a receiving space station in the feeder-link plan, exceeds 150° of arc and the free-space pfd of the FSS transmitting space station 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 WRC-99 on the revision of these two Appendices.~~

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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 in 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 MHz, 2 483.5-2 500 MHz 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

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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 WRC-99 on the revision of these two Appendices~~

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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**~~ with the exception of coordination under **S9.19**	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 § 2 of Annex 1 of this Appendix ii) See ~~Recommendations ITU-R IS.847, ITU-R IS.848 and ITU-R IS.849~~ Appendix **S7**	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.19** Terrestrial/ GSO	~~A transmitting station in 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**~~For any transmitting station of a terrestrial service or a transmitting earth station in the fixed-satellite service (Earth-to-space) in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to typical earth stations included in the service area of a space station in the broadcasting-satellite service	Bands listed in No. **S9.11** and the band 11.7-12.7 GHz	i) Necessary bandwidths overlap; and ii) the pfd of the ~~terrestrial~~interfering station at the edge of the BSS service area exceeds the permissible level	Check by using the assigned frequencies and bandwidths	See also Article 6 of Appendix **S30**

APPENDIX S30

MOD

ARTICLE 5

Notification, examination and recording in the Master International Frequency Register of frequency assignments to space stations in the broadcasting-satellite service

5.1 Notification

5.1.1 Whenever an administration intends to bring into use a frequency assignment to a space station in the broadcasting-satellite service, it shall notify this frequency assignment to the Bureau. For this purpose, the notifying administration shall apply the following provisions.

5.1.2 For any notification under § 5.1.1, an individual notice for each frequency assignment shall be drawn up as prescribed in ~~Annex 2~~Appendix **S4**, the various sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also supply any other data it may consider useful.

5.1.3 Each notice must reach the Bureau not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Bureau not later than three months before that date[4].

5.1.4 Any frequency assignment the notice of which reaches the Bureau after the applicable period specified in § 5.1.3 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with § 5.1.3.

5.1.5 Any notice made under § 5.1.1 which does not contain the characteristics specified in ~~Annex 2~~Appendix **S4** shall be returned by the Bureau immediately by airmail to the notifying administration with the relevant reasons.

5.1.6 Upon receipt of a complete notice, the Bureau shall include its particulars, with the date of receipt, in its International Frequency Information Circular (IFIC)~~Weekly Circular~~, which shall contain the particulars of all such notices received since the publication of the previous Circular.

5.1.7 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

5.1.8 Complete notices shall be considered by the Bureau in order of receipt. The Bureau shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Bureau shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Bureau until it has reached a finding with respect to such earlier notice.

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[4] Where appropriate, the notifying administration shall initiate the procedure for modifying the Plan concerned or to include the assignments in the Regions 1 and 3 List in sufficient time to ensure that this limit is observed. For Region 2, see also Resolution **42 (Rev.Orb-88)** and paragraph B of Annex 7.

5.2 Examination and recording

5.2.1 The Bureau shall examine each notice:

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),* *d)* and ~~*d*~~*e)* below);

b) with respect to its conformity with the appropriate Regional Plan or the Regions 1 and 3 List, as appropriate; *or*

c) with respect to the coordination requirements specified in the remarks column of Article 10 or Article 11 of this Appendix; *or*

d)~~*c)*~~ with respect to its conformity with the appropriate Regional Plan or the Regions 1 and 3 List, however, having characteristics differing from those in the appropriate Regional Plan or in the Regions 1 and 3 List, 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 appropriate Regional Plan or in the Regions 1 and 3 List,

– use of other modulating signals in accordance with the provisions of § 3.1.3 of Annex 5,

– use of the assignment for transmission in the fixed-satellite service in accordance with No. **S5.492**,

– in the case of Region 2, use of an orbital position under the conditions specified in paragraph B of Annex 7; *or*

~~*d)*~~*e)* with respect to its conformity with the provisions of Resolution **42 (Rev.Orb-88)**.

5.2.2 Where the Bureau reaches a favourable finding with respect to § 5.2.1 *a),* ~~and~~ 5.2.1 *b)* and 5.2.1 *c)*, the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the appropriate Regional Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.2.1 Where the Bureau reaches a favourable finding with respect to § 5.2.1 *a),* ~~and~~ 5.2.1 *c)* and 5.2.1 *d)*, the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the appropriate Regional Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments, the Bureau shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the appropriate Regional Plan.

5.2.2.2 Where the Bureau reaches a favourable finding with respect to § 5.2.1 *a)* and 5.2.1 *c),* but an unfavourable finding with respect to § 5.2.1 *b)* and 5.2.1 ~~*c*~~*d)*, it shall examine the notice with respect to the successful application of the provisions of Resolution **42 (Rev.Orb-88)**. A frequency assignment for which the provisions of Resolution **42 (Rev.Orb-88)** have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Bureau shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use following the successful application of

the provisions of Resolution **42 (Rev.Orb-88)** and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Bureau shall be indicated by a symbol in Column 13a.

5.2.4 Where the Bureau reaches an unfavourable finding with respect to ~~§ 5.2.1 *a)*, 5.2.1 *b)* and 5.2.1 *c)*,~~:

– § 5.2.1 *a), or*

– § 5.2.1 *c), or*

– §§ 5.2.1 *b)* and 5.2.1 *d)* and 5.2.1 *e)* where applicable,

the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Bureau for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem.

5.2.5 Where the notifying administration resubmits the notice and the finding of the Bureau becomes favourable with respect to the appropriate parts of § 5.2.1, the notice shall be treated as in § 5.2.2, 5.2.2.1 or 5.2.2.2, as appropriate.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Bureau's finding with respect to § 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with § 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in § 5.2.5 is fulfilled. For Regions 1, 2 and 3, in the event that the Bureau has been informed of agreement to modification of the Plan for a specified period of time in accordance with Article 4, 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 invoke this fact to justify the continued use of the frequency beyond the period specified unless it obtains the agreement of the administration(s) concerned.

5.2.7 If a frequency assignment notified in advance of bringing into use in conformity with § 5.1.3 has received a favourable finding by the Bureau with respect to the provisions of § 5.2.1, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

5.2.8 When the Bureau has received confirmation that the frequency assignment has been brought into use, the Bureau shall remove the symbol in the Master Register.

5.2.9 The date in Column 2c shall be the date of bringing into use notified by the administration concerned. ~~It is given for information only.~~

5.3 Cancellation of entries in the Master Register

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under § 5.2.8, the Bureau will make inquiries of the administration not earlier than six months after the expiry of the period specified in § 5.1.3. On receipt of the relevant information, the Bureau will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Bureau within three months, whereupon the entry shall be removed from the Master Register.

APPENDIX S30A

MOD

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[3A]

5.1 Coordination and notification

5.1.1 When an administration wishes to determine whether it is possible to use, at a given location, an amount of power control which is in excess of that contained in column 14 of the Regions 1 and 3 feeder-link Plan, it shall request the Bureau to determine the amount of permissible power control (not to exceed 10 dB) from that given location using the procedure contained in § 3.11 of Annex 3 to this Appendix.

5.1.2 Whenever an administration intends to bring into use a frequency assignment to a transmitting earth station or receiving space station in the fixed-satellite service in the bands between 14.5 GHz and 14.8 GHz and between 17.3 GHz and 18.1 GHz in Regions 1 and 3, and between 17.3 GHz and 17.8 GHz in Region 2, it shall notify this frequency assignment to the Bureau. For this purpose, the notifying administration shall apply the following provisions.

5.1.3 Before an administration in Region 1 or 3 notifies to the Bureau or brings into use any frequency assignment to a transmitting feeder-link earth station in the bands 14.5-14.8 GHz and 17.7-18.1 GHz with an e.i.r.p. greater than the sum of the values specified in columns 13 and 14 of the Plan, it shall effect coordination of this assignment with each administration whose territory lies wholly or partly within the coordination area of the planned earth station using the method detailed in Appendix **S7**.

5.1.4 Before an administration in Region 1 or 3 notifies to the Bureau or brings into use any 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 planned earth station, using the method detailed in Appendix **S7**, in respect of notices concerning stations of the mobile and fixed services in the bands 14.5-14.8 GHz and 17.7-18.1 GHz and of the fixed-satellite service (space-to-Earth) in the band 17.7-18.1 GHz received by the Bureau prior to ~~29 August 1988~~[3 June 2000] for recording in the International Master Frequency Register (Master Register).

5.1.5 If an administration with which coordination is sought under § 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 § 5.1.2 above.

[3A] Notification of assignments to transmit feeder-link earth stations included in the Region 2 Plan, or included in the List, following successful application of Article 4 of this Appendix, shall be effected applying the provisions of Article **S11**.

5.1.6 For any notification under § 5.1.2, an individual notice for each frequency assignment shall be drawn up as prescribed in ~~Annex 2~~Appendix **S4**, the various sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also supply any other data it may consider useful.

5.1.7 Each notice must reach the Bureau not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Bureau not later than three months before that date.

5.1.8 Any frequency assignment the notice of which reaches the Bureau after the applicable period specified in § 5.1.7 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with § 5.1.7.

5.1.9 Any notice made under § 5.1.2 which does not contain the characteristics specified in ~~Annex 2~~Appendix **S4** shall be returned by the Bureau immediately by airmail to the notifying administration with the relevant reasons.

5.1.10 Upon receipt of a complete notice, the Bureau shall include its particulars, with the date of receipt, in its ~~weekly circular~~International Frequency Information Circular (IFIC) which shall contain the particulars of all such notices received since the publication of the previous circular.

5.1.11 The circular shall constitute the acknowledgements to the notifying administration of the receipt of a complete notice.

5.1.12 Complete notices shall be considered by the Bureau in order of receipt. The Bureau shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Bureau shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Bureau until it has reached a finding with respect to such earlier notice.

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), e)* and ~~*e)*~~*f)* below); *and*

b) with respect to its conformity with the appropriate Regional Plan or the Regions 1 and 3 List, as appropriate; *or*

c) with respect to the coordination requirements specified in the remarks column of Article 9 or Article 9A of the Appendix; or

~~*e)*~~*d)* with respect to its conformity with the appropriate Regional Plan or the Regions 1 and 3 List, however, having characteristics differing from those in the Plan or in the Regions 1 and 3 List 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 or in the Regions 1 and 3 List,

– use of other modulating signals in accordance with the provisions of § 3.1.3 to Annex 5 of Appendix **S30**,

– in the case of Region 2, use of an orbital position under the conditions specified in paragraph B of Annex 7 to Appendix **S30**,

– in the case of Regions 1 and 3, use of an orbital position under the conditions specified in § 3.15 of Annex 3[4],

~~*d)*~~*e)* for Region 2, with respect to its conformity with the provisions of Resolution **42 (Rev.Orb-88)**;

~~*e)*~~*f)* for Regions 1 and 3, with respect to its conformity with the provisions of § 5.1.3 and also its conformity with § 5.1.4 or 5.1.5 relating to coordination.

5.2.2 When the Bureau reaches a favourable finding with respect to § 5.2.1 *a)*, 5.2.1 *b)*, 5.2.1 *c)* and 5.2.1 ~~*e)*~~*f)*, the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.2.1 When the Bureau reaches a favourable finding with respect to § 5.2.1 *a)*, 5.2.1 *c)*, 5.2.1 *d)* and 5.2.1 ~~*e)*~~*f)*, the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Bureau shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments, the Bureau shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the Plan.

5.2.2.2 In the case of Region 2, when the Bureau reaches a favourable finding with respect to § 5.2.1 *a)* and 5.2.1 *c)* but an unfavourable finding with respect to § 5.2.1 *b)* and 5.2.1 ~~*c)*~~*d)*, it shall examine the notice with respect to the successful application of the provisions of Resolution **42 (Rev.Orb-88)**. A frequency assignment for which the provisions of Resolution **42 (Rev.Orb-88)** have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Bureau shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution **42 (Rev.Orb-88)** and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. If the finding with respect to § 5.2.1 ~~*d)*~~*e)* where applicable is unfavourable, the notice shall be returned immediately by airmail to the notifying administration.

5.2.2.3 In the case of Regions 1 and 3, when the Bureau reaches a favourable finding with respect to § 5.2.1 *a)* and 5.2.1 *c)* but an unfavourable finding with respect to § 5.2.1 *b)* and 5.2.1 ~~*c)*~~*d)*, the notice shall be returned immediately by airmail to the notifying administration with the Bureau's reasons for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem.

5.2.2.4 In the case of Regions 1 and 3, when the Bureau reaches a favourable finding with respect to § 5.2.1 *a)*, 5.2.1 *b)*, 5.2.1 *c)* and 5.2.1 ~~*c)*~~ *d)* but an unfavourable finding with respect to § 5.2.1 ~~*e)*~~*f)*, the notice shall be returned immediately by airmail to the notifying administration with the Bureau's reasons for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem. If the unfavourable finding under § 5.2.1 ~~*e)*~~*f)*

[4] The Bureau shall also apply this provision to paragraph 5.2.1 ~~*c)*~~*d)* of Appendix **S30** for Regions 1 and 3.

is due to the coordination under § 5.1.3 only not being effected, the administration shall undertake only to bring this assignment into use with an e.i.r.p. level not greater than [the sum of the values specified in columns 13 and 14 of the Regions 1 and 3 Plan.]

5.2.2.5 When an assignment is recorded as a result of a favourable finding with respect to § 5.2.1 ~~*e)*~~*f)*, a remark shall be included indicating that coordination has been effected.

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Bureau shall be indicated by a symbol in Column 13a.

5.2.4 When the Bureau reaches an unfavourable finding with respect to ~~§ 5.2.1 *a)*, 5.2.1 *b)* and 5.2.1 c),~~:

– § 5.2.1 *a), or*

– § 5.2.1 *c), or*

– §§ 5.2.1 *b)* and 5.2.1 *d)* and 5.2.1 *e)* where appropriate,

the notice shall be returned immediately by airmail to the notifying administration with the Bureau's reasons for this finding and with such suggestions as the Bureau may be able to offer with a view to a satisfactory solution of the problem.

5.2.5 When the notifying administration resubmits the notice and the finding of the Bureau becomes favourable with respect to the appropriate parts of § 5.2.1, the notice shall be treated as in § 5.2.2, 5.2.2.1 or 5.2.2.2 as appropriate.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Bureau's finding with respect to § 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with § 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in § 5.2.5 is fulfilled.

5.2.7 If a frequency assignment notified in advance of bringing into use in conformity with § 5.1.3 has received a favourable finding by the Bureau with respect to the provisions of § 5.2.1, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

5.2.8 When the Bureau has received confirmation that the frequency assignment has been brought into use, the Bureau shall remove the symbol in the Master Register.

5.2.9 The date in Column 2c shall be the date of bringing into use notified by the administration concerned. ~~It is given for information only.~~

5.3 Cancellation of entries in the Master Register

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under § 5.2.8, the Bureau will make inquiries of the administration not earlier than six months after the expiry of the period specified in § 5.1.3. On receipt of the relevant information, the Bureau will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Bureau within three months, whereupon the entry shall be removed from the Master Register.

MOD

RESOLUTION 49 (Rev.WRC-~~97~~2000)

Administrative due diligence applicable to some satellite communication services

MOD

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 under No. **S9.2B**, or for which the request for modifications of the Region 2 Plan~~s~~ under Article 4, § 4.2.1 *b)* of Appendices **S30** and **S30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Region 2 Plan~~s~~ under Article 4, § 4.2.1 *a)* of Appendices **S30** and **S30A** that extends the service area to another country or countries in addition to the existing service area, or for which the request for additional uses in Regions 1 and 3 under § 4.1 of Article 4 of Appendices **S30** and **S30A,** or for which the submission of information of Annex 2 of Appendix **S30B** 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 **S30B**) has been received by the Bureau from 22 November 1997;

2 that for a satellite network or satellite system within the scope of § 1, 2 or 3 of Annex 1 to this Resolution not yet recorded in the Master International Frequency Register (MIFR), for which the advance publication information under No. **1042** of the Radio Regulations 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 notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of No. **1550** of the Radio Regulations or the dates specified in the relevant provisions of Appendix **30** ([§ 4.3.5] [§ 4.1.3 and 4.2.6]), Appendix **30A** [(§ 4.2.5 and 4.2.6)] [§ 4.1.3 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 § 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 **S30/30** and **S30A/30A** or for application of Section III of Article 6 of Appendix **S30B/30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **S30/30** and **S30A/30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **S30B/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 Article **S9** or **S11** of the Radio Regulations or Appendices **S30/30**, **S30A/30A** or **S30B/30B**, as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **S30/30**, **S30A/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 WRC-~~99~~03 and future competent 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~~2002 Plenipotentiary Conference.

ANNEX 1 TO RESOLUTION 49 (Rev.WRC-~~97~~2000)

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 Nos. **S9.7**, **S9.8**, **S9.9**, **S9.11**, **S9.12** and **S9.13**, Resolution **33 (Rev.WRC-97)**, and Resolution **46 (Rev.WRC-97)** shall be subject to these procedures.

2 Any modifications of the Region 2 Plan~~s~~ under Article 4, § 4.2.1 *b)* of Appendices **S30/30** and **S30A/30A** that involve the addition of new frequencies or orbit positions or modifications of the Region 2 Plan~~s~~ under Article 4, § 4.2.1 *a)* of Appendices **S30/30** and **S30A/30A** that extend the service area to another country or countries in addition to the existing service area or request for additional uses in Regions 1 and 3 under § 4.1 of Article 4 of Appendices **S30** and **S30A** shall be subject to these procedures.

3 Any submission of information under Annex 2 of Appendix **S30B/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 **S30B/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 to be received before the end of the 5-year period established as a limit to bringing into use in No. **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 Region 2 Plans or additional uses in Regions 1 and 3 in ~~of~~ Appendices **S30/30** and **S30A/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 **S30/30**, § ~~4.3.5~~4.1.3 and 4.2.6, and with Appendix **S30A/30A**, § ~~4.2.5 and 4.2.6~~4.1.3 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 **S30B/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 so as 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 Region 2 Plans or for additional uses in Regions 1 and 3 in~~of~~ Appendices **S30/30** and **S30A/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 **S30B/30B** under § 3 above, the network shall also be deleted from the Appendix **S30B/30B** List, if applicable.

12 Before the Bureau extends the date of bringing into use under No. **S11.44**, 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 No. **S11.41** by that administration.

ANNEX 2 TO RESOLUTION 49 (Rev.WRC-~~97~~2000)

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 Region 2 Plans~~ or for additional uses in Regions 1 and 3~~ in Appendices **S30/30** and **S30A/30A**

e) Reference to the request for coordination (not applicable for Appendices **S30/30** and **S30A/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 execution of the contract

c) Contractual “delivery window”

d) Number of satellites procured.

* NOTE – In cases where a contract for satellite procurement covers more than one satellite, the relevant information shall be submitted for each satellite.

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.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 467-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 404 (+ Corr.1 and 2), 410 and 435 **COMMITTEE 6**

EIGHTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 refers to its seventh series of texts submitted to the Editorial Committee where the proposed modification to S9.17 had some text in square brackets. Committee 4 has received advice on the matter from GT PLEN-1 and has adopted the text shown in the annex.

Committee 4 has finished its consideration of agenda item PP Resolution 84 and parts of agenda item PP Resolution 86. As a result of these deliberations, it has unanimously adopted, at its ninth meeting, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairperson, Committee 4

Annex: 1

ANNEX

MOD

S9.17 *f)*[13] for any specific earth station or typical mobile earth station in frequency bands above ~~1GHz~~ 100 MHz 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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[13] ~~**S9.17.1** Application of this provision with respect to Articles 6 and 7 of Appendices **S30** and **S30A** is suspended pending a decision of WRC-99 on the revision of these two Appendices.~~

MOD

S11.44 The notified date[16] 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 three months before the expiry of this period.

ADD

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[16] **S11.44.1** In the case of space station frequency assignments that are brought into use prior to the completion of the coordination process, and for which the Resolution **49 (WRC-97)** data has been submitted to the Bureau, the assignment shall continue to be taken into consideration for a maximum period of seven years from the date of receipt of the relevant information under No. **S9.1**. If the first notice for recording of the concerned assignments under **S11.15** has not been received by the Bureau by the end of this seven-year period, the above-mentioned assignments shall no longer be taken into account by the Bureau and administrations. The Bureau shall inform the notifying administration of its pending actions three months in advance.

In the case of satellite networks for which relevant advance publication information has been received prior to 22 November 1997; the corresponding period will be nine years from the date of publication of this information.

Section III – Maintenance of the Rules of Procedure by the Bureau

(MOD)

S13.13 The Rules of Procedure shall include, inter alia, calculation methods and other data required for the application of these Regulations. These shall be based upon the decisions of world radiocommunication conferences and the Recommendations of the Radiocommunication Sector. Where requirements arise for new data for which there are no such decisions or Recommendations the Bureau shall develop such data in accordance with No. ~~**S13.14**~~**S13.15**, and shall revise them when appropriate decisions or Recommendations are available.

MOD

S13.14 ~~The Bureau shall submit to the Board the final drafts of all proposed changes to the Rules of Procedure. The Rules of Procedure approved by the Board shall be published and shall be open for comment by administrations. In case of continuing disagreement, the matter shall be submitted by the Director in his report, with the agreement of the concerned administration, to the next world radiocommunication conference. The Director of the Bureau shall also inform the appropriate study groups of this matter. Pending resolution of the matter, the Board and the Bureau shall continue to use the particular Rule of Procedure in dispute but, following resolution of the matter by a decision of a world radiocommunication conference, the Board shall promptly review and revise as necessary the Rules of Procedure and the Bureau shall review all relevant findings.~~Any administration may request a review or a study of the Rules of Procedure or may submit proposals for either changes to the existing Rules of Procedure or for new Rules of Procedure. Any such proposals for changes to existing Rules or new Rules shall be submitted to the Bureau as soon as possible so that the Bureau may make these proposals available to other administrations for comment before submitting the proposal to the Board.

ADD

S13.14A The Board may also request the Bureau to undertake studies with respect to the Rules of Procedure and such reviews shall be treated in accordance with **S13.15**.

MOD

S13.15 ~~If an administration, or the Board or the Bureau identifies a need for a special study, in relation to the Rules of Procedure, of any provisions of these Regulations or of a regional agreement with an associated frequency allotment or assignment plan, the case shall be handled under No. **S13.14**.~~The Bureau shall, where appropriate, prepare draft modifications, additions or deletions to the Rules of Procedure which shall be made available for comment by administrations before being submitted to the Board. The Director of the Bureau shall submit to the Board the final drafts of all proposed changes to the Rules of Procedure. The same shall apply if as a consequence of the review of a finding or other action by the Board it is necessary to re-examine the Rules of Procedure.

NOC

S13.16 The Rules of Procedure shall be maintained and published in a form that will facilitate easy modification and maximize their value to administrations and other users.

ADD

S13.16A The Rules of Procedure approved by the Board shall be published and shall be open for comment by administrations. In case of continuing disagreement, the matter shall be submitted by the Director in his report, with the agreement of the concerned administration, to the next world radiocommunication conference. Pending resolution of the matter, the Board and the Bureau shall continue to use the particular Rule of Procedure in dispute but, following resolution of the matter by a decision of a world radiocommunication conference, the Board shall promptly review and revise as necessary the Rules of Procedure and the Bureau shall review all relevant findings.

ADD

S13.16B The Director of the Bureau shall also, where appropriate, request ITU-R study groups to study relevant technical matters.

Section IV – Board documents

MOD

S13.17 ~~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 referred to 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.

MOD

S13.18 Within one week after a meeting of the Board, a summary of all decisions taken in that meeting~~,~~ shall be made available in electronic form. ~~as well as the~~ After each Board meeting the approved minutes of ~~the preceding~~ that meeting, shall normally be ~~published. These shall be~~ circulated at least one month before the start of the following meeting to administrations by means of a circular-letter ~~from the Bureau~~ and ~~then~~ these approved minutes shall also be made available in electronic form.

MOD

S13.19 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 shall be available in electronic form as soon as possible.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 468-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Chairperson of Committee 4

MOD

ARTICLE S59

Provisional application of the Radio Regulations

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 WRC-95 ~~and~~, WRC-97 and WRC-2000, shall ~~have provisional application~~be applied, pursuant to Article 54 of the Constitution, on the following basis.

S59.2 The provisions of these Regulations, as revised by WRC-95, concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of Articles **S21** and **S22,** and Appendix **S4**, apply provisionally as of 1 January 1997.

S59.3 The other provisions of these Regulations, as revised by WRC-95 and WRC-97, ~~shall~~ apply provisionally as of 1 January 1999, with the following exceptions:

S59.4 – the revised provisions for which other effective dates of application are stipulated in Resolutions **49 (WRC-97)**, **51 (WRC-97)**, **52 (WRC-97)**, **54 (WRC-97)**, **130 (WRC-97)**, **533 (WRC-97)**, **534 (WRC-97)** and **538 (WRC-97)**.

S59.5 The other provisions of these Regulations, as revised by WRC-2000, shall enter into force on [1 January 2002], with the following exceptions:

S59.6 – the revised provisions for which other effective dates of application are stipulated in Resolutions **49 (Rev.WRC-2000)**, **51 (Rev.WRC-2000)**, **53 (Rev.WRC-2000)**, **533 (Rev.WRC-2000)**, **[COM4-4]**, **[COM4-5]**, **[GT PLEN-1/1]** and **[GT PLEN-1/2]**.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 469-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

REPORT OF THE BUDGET CONTROL COMMITTEE TO THE PLENARY MEETING

1 Budget Control Committee

The Budget Control Committee held three meetings during the World Radiocommunication Conference (WRC-2000) and considered the issues arising from its terms of reference.

Under provisions 26 and 28 (sections a) and c), paragraph 4.4) of the Rules of Procedure of conferences and other meetings of the International Telecommunication Union, the Budget Control Committee's terms of reference are:

a) to determine the organization and 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 the conference.

2 Agreement between the Government of Turkey and the Secretary-General of ITU

In accordance with Resolution 77 of the Plenipotentiary Conference (Minneapolis, 1998), Resolution 5 of the Plenipotentiary Conference (Kyoto, 1994) and Resolution No. 83 (amended) of the ITU Council concerning the organization, financing and liquidation of the accounts of ITU conferences and meetings, the Government of Turkey and the Secretary-General of ITU concluded an agreement concerning the organization, holding and financing of the Radiocommunication Assembly and the World Radiocommunication Conference.

The Budget Control Committee took note of the agreement.

3 Organization and facilities made available to delegates

The Budget Control Committee thanked the Government and people of Turkey for the very good organization and the excellent facilities provided for the conference.

4 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."

5 Budget of the World Radiocommunication Conference (WRC-2000)

At its 1999 session, the Council approved by Resolution 1133 the budget of the World Radiocommunication Conference (WRC-2000) for the biennium 2000-2001, amounting to CHF 2 467 000. In addition, the planned costs for documentation for the conference were estimated at CHF 3 724 000, leading to a total planned direct cost of CHF 6 191 000.

6 Situation of the accounts of the World Radiocommunication Conference (WRC-2000) as at 22 May 2000

6.1 The situation of the accounts for WRC-2000 indicates that expenditures remain within the budget. The budget showed a positive balance of CHF 8 000 as at 22 May. Although a provision has been made, the cost of overtime may be a matter for concern if actual overtime costs prove to be higher than foreseen.

6.2 The budget of the World Radiocommunication Conference (WRC-2000) and the forecast expenditure to the end of the conference as estimated on 22 May 2000 are shown in Annex 1.

6.3 Regarding documentation, the situation is sound and indicates some projected savings, mostly in document reproduction. These estimates are based on current volumes and trends which may vary depending on actual demand up to the end of the conference.

7 Contributions of organizations of an international character and Sector Members

7.1 No. 476 of the Convention of the International Telecommunication Union in force since 1 January 2000, provides that organizations of an international character (unless they have been exempted by Council, subject to reciprocity) and Sector Members (except those attending a conference of their respective Sector) which participate in a world radiocommunication conference shall share in defraying the expenses of the conference in question.

7.2 Council Decision No. 486 (Document C99/110) provides that - pending the inclusion of the necessary amendments to the Financial Regulations to be made by the Council at its session of 2000, which have become necessary for the implementation of No. 476 of the Convention as amended in Minneapolis - the contribution per unit to defraying the expenses of the conference shall be calculated on the basis of the same principles and calculation methods as those applied before the amendments made by the Minneapolis Plenipotentiary Conference to Nos. 476 and 481 of the Convention.

7.3 The contributory unit for non-exempted international organizations and Sector Members (except ITU-R Sector Members) to defraying the expenses of the conference has been set at CHF 17 300. No organization nor Sector Member has fallen under this category as of 26 May 2000.

8 Estimate of work for the implementation of WRC-2000 decisions

8.1 Based on the experience gained from WRC-95 and WRC-97, WRC-2000 decisions and resolutions, mainly regarding the agendas of the next and next but one WRC, will have a significant impact on the work plan and workload of ITU-R. The additional work incurred can be divided into three main activities:

8.1.1 Activities to be carried out for the preparation of the next conferences and particularly for WRC-03 (conference preparatory work): the agendas for the next and next but one WRC will serve as a base for the evaluation of the requirements for ITU-R and mostly BR for the forthcoming years;

8.1.2 Additional activities as defined in new or revised resolutions and recommendations adopted by WRC-2000 (post-conference work): output from Committees 4 and 5 as well as from Working Group 1 of the Plenary (GT PLEN-1) shall be considered in this respect.

8.1.3 Modifications or deletions in the Radio Regulations which may incur additional work or release some resources of ITU-R.

8.2 At this early stage, due to the complexity of the results of the work of the Committees as well as the limited time available to make a realistic analysis, it is difficult to provide definitive financial estimates. Annex 2 gives the list of items including new and revised resolutions and recommendations, modifications to the Radio Regulations, and agendas for the next and next but one WRC that may incur additional workload for the Radiocommunication Sector and/or other Sectors and departments of the Union as well as provisional financial estimates.

8.3 Committee 3 has taken into consideration the note from Committee 4 (Document 436) requesting that all circulars and Special Sections of the past ten years be republished on CD-ROM. The financial implications of such a demand are included in Annex 2.

8.4 The 2000-2001 budget, as approved by the Council at its 1999 session (Resolution 1133) corresponds to the limits of expenditure set by Decision 5, PP-98. Therefore, it would not be possible to request Council 2000 for additional appropriations to carry over the above-mentioned post-conference work of WRC for 2000-2001 as well as the preparatory work for WRC-03. The following alternatives exist:

a) the workload may be absorbed within the existing resources of the Union while improving working methods, efficiency and developing appropriate tools and mechanisms;

b) priorities should be revised to take into consideration the increasing demand on ITU-R activities, products and services and therefore this re-prioritization will have to be reflected in the 2001 ITU-R operational plan. To this extent some activities will have to be reduced, postponed or even dropped;

c) existing resources, in particular human resources, could be redistributed within BR and eventually within ITU, while reconsidering priorities and enhancing processes and mechanisms so as to increase efficiency;

d) voluntary contributions could be made to the activities of ITU-R that would permit, at least partially, the implementation of the additional workload incurred by WRC decisions.

8.5 During the time-frame preceding Council 2000, BR, in collaboration with the relevant services of the General Secretariat, will carry out a detailed analysis of WRC-2000 decisions. A report will be presented to the 2000 session of Council to inform on the measures that the Secretariat will implement in order to carry over the additional demands that have resulted from the decisions of WRC-2000.

9 It was brought to the attention of the Committee that the timing of major Radiocommunication Sector meetings had a bearing on the Union’s general financial situation. It was agreed that this issue would be brought to the attention of the conference.

Annexes: 2

ANNEX 1

Situation of the accounts of the World Radiocommunication Conference as at 22 May 2000

CHF (000)

	Budget 2000-2001	Actual Expenditure as at 22/05/2000	Commitments as at 22/05/2000	Credits available 22/05/2000
Staff costs	2'084	68	2'023	-7
Other staff costs	96	12	89	-5
Travel on duty	80		80	0
Contractual services	5	0	16	-11
Rental & maintenance of premises and equipment	80		80	0
Materials and supplies	35	14	12	9
Public and internal services	72	14	40	18
Miscellaneous	15	6	5	4
Total Budget	**2'467**	**114**	**2'345**	**8**

CHF (000)

Documentation Costs	Planned costs 2000-2001	Actual costs as at 22/05/2000	Estimates* as at 22/05/2000	Variance as at 22/05/2000
Translation	1'113	582	449	82
Typing	1'026	610	391	25
Reprography	1'585	766	602	217
Total Documentation costs	**3'724**	**1'958**	**1'442**	**324**

Documentation Volumes	Planned volumes 2000-2001	Actual volumes as at 22/05/2000	Estimates* as at 22/05/2000	Variance as at 22/05/2000
Translation (pages)	8'474	4'432	3'419	623
Typing (pages)	23'017	13'690	8'772	555
Reprography (1000 pages)	26'435	12'729	10'000	3'706

*) Based on actual workload trends and estimates

ANNEX 2

Preliminary conclusions on the impact of WRC-2000 decisions on the Radiocommuniocation Sector workload

1 Additional work incurred in the preparation for the next conference

With reference to the work of Working Group 2 of the Plenary, in particular Document DT/70(Rev.3), the number and nature of agenda items proposed for the next world radiocommunication conference will generate a significant additional workload for the Radiocommunication Sector particularly for the Radiocommunication study group work programme.

At this stage, before the first meeting of CPM scheduled on 7 and 8 June 2000 and the ITU-R Chairpersons and Vice-Chairpersons' meeting on 6 and 9 June 2000, a preliminary evaluation of this workload indicates that there could be an increase of about 15% to 20% in the number of study group, working party and task group meeting days particularly for Study Groups 8, 7 and 4, as well as for the Special Committee on Regulatory/Procedural Matters. It should be noted that for the 1998/99 budgetary period, the expenditures of the study groups, including CPM, were over the allocated budget.

This increase in the coming period would affect the Radiocommunication Bureau and services provided by the General Secretariat, e.g. the Radiocommunication Bureau's Study Group Department could need some additional human resources at the Professional (36 staff.months) and General Service levels (36 staff.months) over the period between WRC-2000 and WRC-03.

In the light of the above, the overall additional financial impact estimates on the Radiocommunication Sector could be about 1.5 million Swiss francs during a three-year inter-conference period.

2 Impact on the on-going work of the Radiocommunication Bureau

Resolution S207 (periodical monitoring campaign) - The estimates for performing the tasks as requested by RS207 could amount to four person-months, per year, on a recurrent basis.

Resolution S716 (assistance to administrations) - The Bureau's involvement in the testing of a tool, if requested, could be 18 staff.months.

Modifications to Appendix S4 and in particular the inclusion of space plans in this Appendix require refinement of some specific tasks in Radiocommunication Bureau as well as the updating of existing software which would lead to the need of additional human resources (about 18 staff.months).

As noted in a report from Committee 4 to Committee 3 (see Document 436 in response to Document 134), should the conference so decide, the republication of the weekly circular, in particular the republication of Special Sections of the past ten years on CD-ROM, would require additional resources amounting to approximately 900 000 Swiss francs.

Changes to Resolution 51 would involve an additional workload of the concerned for the Radiocommunication Bureau: 18 staff.months in the period 2000/2001(see Document 411).

The effect of the new BSS Plan and the List, on the work of the Radiocommunication Bureau still has to be analysed further. However, as far as the implementation of Resolution 533 (WRC-2000) is concerned, the estimated human resources required for the implementation of this Resolution are

just those that were required for Resolution 533 (WRC-97). Also, issues related to - use of guardbands in Appendices S30/S30A - Implementation of Resolution 53 (Rev.WRC-2000) - compatibility between the new Plan and other services and with Regions - review of the criteria and regulatory procedures by ITU-R and its associated activities - preparation of modified Rules of Procedures for the new regulatory regime - will consume a significant amount of resources in the Radiocommunication Bureau. As was the case following WRC-97, ongoing processing of Article 4 modifications received before WRC-2000 will have to be postponed until the above re-examination.

The processing and approval of the minutes of the RRB meetings to meet the requirement of S13, as revised by WRC-2000, could require some additional resources.

Suppression of Resolutions 300 and 500 - These decisions have practically no impact (due to the low volume of activities); however, as indicated in Document 16, this would facilitate the implementation of TerRaSys as no module for Resolution 300 would need to be developed.

Resolution COM4/4: The mandatory electronic filing for satellite networks should result in significant savings, which still have to be identified after further detailed analysis. Further simplifications of the API process (which the conference decided to retain) will yield only a small saving of Bureau's resources. Separation of uplink and downlink examinations will produce some savings but, in the short term, additional requests for assistance could offset this.

3 Conclusion

The present preliminary conclusions on the impact of WRC-2000 decisions on the work of the Radiocommunication Sector and its eventual effects on the resources of the Radiocommunication Bureau, still need further study to take into account of the final decisions of this conference. A detailed report will be produced in this respect for the 2000 session of the Council.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 470-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 4

(REGULATORY AND ASSOCIATED ISSUES)

Thursday, 25 May 2000, at 1125 hours

Chairperson: Mr H. RAILTON (RRB)

Subjects discussed		**Documents**
1	Organization of work (continued)	48, 298
2	Oral report by the Chairperson of Working Group 4A	-
3	Oral report by the Chairperson of Working Group 4B	-
4	Approval of the summary records of the second and third meetings of Committee 4	231, 335
5	Documents to be noted	246, 315 330(Add.1), 370 407, 411
6	Documents for approval (continued)	298, 311, 349, 351

1 Organization of work (continued) (Documents 48 and 298)

1.1 The **Chairperson** drew attention to the fact that Document 298, containing the revised text of Resolution 51 (WRC-97), had been forwarded to the Editorial Committee in error, without the prior approval of Committee 4. He recalled that, at the committee's previous meeting, BR had been requested to report on the financial consequences of the revised resolution as well as on the implications for its current workload; the opinion of RRB had also been sought. Those matters would be taken up when the committee came to consider Document 298.

1.2 In reply to a question from the **delegate of Malaysia** as to when the committee would deal with Document 48, which contained her delegation's proposal relating to Resolution 86 (Minneapolis, 1998) and had not been considered at working group level, the **Chairperson** suggested that the document should be dealt with at the next meeting of Committee 4.

1.3 It was so **agreed**.

2 Oral report by the Chairperson of Working Group 4A

2.1 The **Chairperson of Working Group 4A** said that following 21 meetings, and with the establishment of more than ten sub-working groups, Working Group 4A had finally concluded its work. With the exception of Document 48, all the documents allocated to the working group had been considered. Three documents were now submitted to the committee for consideration, the other document relating to Appendix S7 (Document 326) having already been approved at the committee's fourth meeting. Working Group 4A had dealt with some highly complicated regulatory matters in connection with Appendix S7 and Resolutions 80 and 84 to 88 (Minneapolis, 1998) as well as Resolution 80 (WRC-97), which had entailed extensive debate.

2.2 Despite the laudable efforts of the chairpersons of the different sub-working groups, only Sub-Working Groups 4A-1, 4A-6 and 4A-10 had fully completed their work. Many of the matters considered by the remaining sub-working groups remained to be resolved. The input material prepared should, however, provide a useful basis for the committee's discussions. For instance, Sub-Working Group 4A-2 had been unable to reach agreement on the working methods of RRB pursuant to Resolution 84 (Minneapolis, 1998). In connection with Resolution 85 (Minneapolis, 1998), two minor matters had been left pending in the draft report to the plenipotentiary conference on the implementation of Resolution 49 (WRC-97) being prepared by Sub-Working Group 4A-3. In respect of Resolution 86 (Minneapolis, 1998), Sub-Working Group 4A-4 had been entrusted with the difficult task of examining coordination procedures for non-GSO BSS (sound) services in the band 2 535-2 655 MHz. However, the relevant document drafted by the sub-working group had not been discussed by Working Group 4A as a whole. As for the other aspects of Resolution 86, namely simplification of coordination procedures, Sub-Working Group 4A-5 had only been able to reach agreement on parts of the proposal under consideration, reservations having been expressed about the timing of its entry into force.

2.3 Owing to time constraints, the text relating to Resolution 87 (Minneapolis, 1998) containing proposed modifications to the Radio Regulations prepared by Sub-Working Group 4A-7 had not been examined at working group level. Furthermore, during discussions in Sub-Working Group 4A-8, diverging views had emerged on the repercussions of failing to pay costs in respect of notifications. Lastly, he recommended that the committee consider, as a matter of priority, the highly complex issue pursuant to Resolution 80 (WRC-97) of equitable access to the geostationary-satellite orbit, since Working Group 4A had been unable to give due consideration to the input document provided by Sub-Working Group 4A-9. In conclusion, he paid tribute to all those who had participated in Working Group 4A.

2.4 The **delegate of Canada**, speaking as the Chairperson of Sub-Working Group 4A-7, said that the previous evening he had submitted a text, in relation to Resolution 87 (Minneapolis, 1998), which had seemed to meet with the general agreement of the working group. It was his understanding that the text would go through the appropriate channels and be issued as a conference document. The **Chairperson of Working Group 4A** indicated that he would introduce the document once it became available.

2.5 The **Chairperson** commended the Chairperson of Working Group 4A on his work and presented him with a gift.

3 Oral report by the Chairperson of Working Group 4B

3.1 The **Chairperson of Working Group 4B** said that, since the previous Committee 4 meeting, Working Group 4B had met twice, had considered some 55 documents and had completed all the tasks assigned to it. With regard to conference agenda item 4, it had concluded its review of resolutions and recommendations. Its proposals for the modification and deletion thereof were contained in Documents 351 and 402.

3.2 In connection with conference agenda item 1.8, consensus had been reached on a new resolution, set forth in Document 405, thanks to the spirit of compromise and goodwill shown by all parties during three weeks of consultations. The results of work on the revision of footnotes, agenda item 1.1, were contained in Document 404. She thanked all those who had contributed to the successful completion of the work of Working Group 4B.

3.3 The **Chairperson** commended the Chairperson of Working Group 4B on her work and presented her with a gift.

4 Approval of the summary records of the second and third meetings of Committee 4 (Documents 231 and 335)

4.1 Document 231 was **approved**.

4.2 The **representative of the Radiocommunication Bureau**, referring to Document 335, said that in §§ 4.17 and 4.18 “Resolution 507 (WARC-79)” should be amended to read “Recommendation 507 (WARC-79)”. Accordingly, in the former paragraph, the words “relating to the establishment of agreements and associated plans for the broadcasting-satellite service” should be replaced by “relating to spurious emissions in the broadcasting-satellite service”.

4.3 Document 335, as amended, was **approved**.

5 Documents to be noted (Documents 246, 315, 330(Add.1), 370, 407 and 411)

Document 246

5.1 The **Chairperson** invited the Committee to take note of Document 246 containing a note from the Chairperson of Working Group 2 of the Plenary on an item to be included on the agenda of WRC-03, on the understanding that the substance of the document would be dealt with subsequently.

5.2 Document 246 was **noted**.

Document 315

5.3 The **delegate of Malaysia** introduced Document 315, which in its attachments reproduced an edited version of Documents 252 and 51(Add.1) containing, respectively, draft new Resolution [COM5/8] (Modification of bringing into use and administrative due diligence requirements as a consequence of allocation changes above 71 GHz) prepared by Sub-Working Group 5C-2, and a proposal by Malaysia. Under item 1.16 of the agenda, WRC-2000 was invited to consider the allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution 723 (WRC-97). Some of the new allocations being proposed as a result affected Malaysia. While her delegation would not oppose such changes, it stressed the need for a mechanism whereby the relevant Appendix S4 information could be resubmitted, while retaining the original date of receipt; the resubmitted Appendix S4 coordination or notification information would be excluded from cost-recovery procedures and sufficient time would be allowed for its resubmission. Such a mechanism was outlined in the draft new resolution.

5.4 The **Chairperson**, in response to a query by the **delegate of Belgium**, pointed out that the substance of the draft new resolution would be taken up by Committee 4 at a later stage.

5.5 Document 315 was **noted**.

Addendum 1 to Document 330

5.6 The **delegate of Moldova** said that his delegation was proposing an additional allocation in the band 790-862 MHz to the land mobile service on a secondary basis, as indicated in Addendum 1 to Document 330. The **delegate of Russia** objected to that proposal.

5.7 The **Chairperson** said that, in view of the strict agreement reached at the third Plenary Meeting (Document 299), the proposal by Moldova would fall.

5.8 The **delegate of Syria** pointed to the unfairness of applying the same rules to new Member States as to long-standing Member States, which had had ample time to assess their requirements. Such matters should be given due consideration at WRC-03. The **delegate of Lithuania** endorsed those remarks, although he sympathized with the position of the Russian delegation, which given the lateness of the proposal from Moldova had not had time to consider it in depth. Some means of dealing with similar proposals at an earlier stage must be considered at WRC-03.

Document 370

5.9 Document 370 (Note from the Chairperson of Working Group 5B to the Chairperson of Committee 4) was **noted**, subject to editorial amendment.

Document 407

5.10 The **Chairperson of Working Group 4B** introduced Document 407, which described the process whereby the secretariat would update references in the Radio Regulations to resolutions and recommendations of previous conferences revised by WRC-2000. Those amendments were of a purely editorial nature.

5.11 The **delegate of Syria** noted that, in the past, substantive amendments had sometimes been approved in the guise of editorial amendments. His Administration was strongly of the view that any such amendments should be made prior to the final Plenary Meeting.

5.12 The **delegate of the United States** said that in the case of the documentation to which Document 407 referred, the process was a mere formality. He could recall no case in which a resolution had been allowed to subsist once superseded by a new resolution, unless it related to a specific date.

5.13 The **delegate of Syria** said that the present case posed no difficulties for his Administration.

5.14 Document 407 was **noted**.

Document 411

5.15 The **representative of the Radiocommunication Bureau** said that Document 411 provided the information requested on the financial impact of the new *resolves* 3 of Resolution 51 (WRC-97) as well as on its consequences for the backlog in processing coordination requests. If all 658 networks were eventually involved, the cost would be CHF 360 000, split between two financial years. As the treatment of networks would be spread over four years, the proposed revision would be unlikely to have an adverse effect on the backlog.

5.16 The **delegate of the Seychelles** drew attention to a footnote to be found in Corrigendum 1 to Document 32, which appeared to have been omitted from the information in Document 411 referring to networks already cancelled. The footnote in question indicated that the total of 36 was “partly for two networks”.

5.17 Document 411 was **noted**.

6 Documents for approval (continued) (Documents 298, 311, 349 and 351)

Document 298

6.1 The **member of the Radio Regulations Board**, reporting the Board’s views on Resolution 51 (WRC-97), noted that in *resolves* 3 of Resolution 51 the maximum allowed time period of six years was calculated from the date of receipt of the API, whereas it was calculated from the date of publication in the revised text contained in Document 298, despite the decision taken at WRC-97 to adopt the date of receipt rather than of publication as the reference date. It would be for administrations to seek to resolve that apparent inconsistency in the course of WRC-2000.

6.2 The **Chairperson** invited the Committee to approve draft revised Resolution 51 as contained in Document 298, which had already been discussed extensively at the previous meeting.

6.3 Document 298 was **approved**.

Document 311

6.4 The **Chairperson of Working Group 4B** introduced Document 311, which contained proposed improvements relating to Resolution 28 (WRC-95) designed to clarify the mechanism for incorporation by reference, and also allowing administrations more time to review changes.

6.5 Document 311 was **approved**.

Document 349

6.6 The **Chairperson of Working Group 4B** introduced Document 349, relating to the replacement of references to "Weekly Circular" by references to "International Frequency Information Circular" in forthcoming editions of the Radio Regulations. Among the provisions of the Radio Regulations, resolutions and recommendations listed in the annex to the document, some remained in square brackets as they raised questions of substance that had still to be addressed in other bodies of the WRC. Document 349 also reflected the agreement by the working group to abolish the prefix "S" in forthcoming editions of the Radio Regulations.

6.7 The **delegate of Syria** proposed forwarding to Plenary a proposal that BR be tasked with providing each WRC with an input document concerning editorial amendments to the Radio Regulations.

6.8 It was so **agreed**.

6.9 Subject to further consideration of the provisions listed in square brackets in the annex, Document 349 was **approved**.

6.10 The **representative of the Radiocommunication Bureau** noted that with the adoption of Document 349 all actions with respect to Resolution 30 (WRC-97) had now been taken.

6.11 The **Chairperson** observed that accordingly Resolution 30 could be deleted.

6.12 It was so **agreed**.

Document 351

6.13 The **Chairperson of Working Group 4B** introduced Document 351, which proposed an editorial change to Resolution 46 (Rev.WRC-97), modifications to Resolution 216 (Rev.WRC-97) and an update to Recommendation 503 (Rev.WRC-97). The final page of the document comprised an extensive list of resolutions and recommendations to be deleted or left unchanged, three of which were still in square brackets.

6.14 In response to a request for clarification by the **delegate of Canada** with respect to Resolution 46, the **representative of the Radiocommunication Bureau** said that the Bureau had received legal advice to the effect that legal difficulties might arise if notices were published in accordance with a resolution that had been abrogated. Consequently, Resolution 46 must be retained until such time as Special Sections containing reference to Resolution 46 ceased to be published.

6.15 The editorial amendment to Resolution 46 (Rev.WRC-97) was **approved**.

6.16 The **delegate of Syria**, while stressing that his Administration did not oppose approval of draft revised Resolution 216, said that the proposed changes were substantive and thus properly fell within the terms of reference of Committee 5.

6.17 Draft revised Resolution 216 (WRC-97) and draft revised Recommendation 503 (Rev.WRC-97) were **approved**.

6.18 The **delegate of South Africa**, speaking as the Chairperson of Working Group 4B-2, and referring to the list of resolutions and recommendations to be deleted or left unchanged, said that at least three administrations considered that the objective of Resolution 63 (WARC-79) had not yet been achieved and that accordingly the resolution should be maintained. The sub-working group, however, was of the view that the resolution could now be deleted.

6.19 The **delegate of the United States** said that three regional groups bringing together a large number of administrations had specifically proposed the deletion of Resolution 63.

6.20 The **delegate of Syria** said that Resolution 63 was important and should be retained. If the resolution was deleted, his Administration would reserve the right to revert to the issue in Plenary.

6.21 The **Chairperson** asked whether, to expedite proceedings, the committee could agree to approve all the non-controversial resolutions and recommendations listed on the final page of Document 351.

6.22 The **delegate of Saudi Arabia**, supported by the **delegate of France**, proposed that Resolution 63 be retained until the next conference, as requested by three administrations, including his own. There seemed to be no reason to insist on its deletion at the present juncture.

6.23 The **delegate of Argentina** recalled that Resolution 95 (WRC-97) provided for a general review of resolutions and recommendations. That review had been carried out but no reasons were given in support of the deletion of Resolution 63. Argentina belonged to one of the regional groups referred to by the delegate of the United States, and he would accept deletion of Resolution 63 if that was the view of the majority.

6.24 The **Chairperson** said that if he heard no opposition, Resolution 63 would be retained.

6.25 It was so **agreed**.

6.26 The **Chairperson** said that the Committee would continue its consideration of the list of resolutions and recommendations to be deleted or retained without change at its next meeting.

The meeting rose at 1230 hours.

The Secretary:
P. LUNDBORG

The Chairperson:
H. RAILTON

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 471(Rev.1)-F/E/S
31 mai 2000
Original: français
anglais
espagnol

ISTANBUL, 8 MAY – 2 JUNE 2000

Ce document est annulé.

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This document is withdrawn.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 471-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Israel (State of)

EXCLUSION OF DOCUMENT 447 FROM THE AGENDA

A General

1 This document is submitted with reference to the attempt to place on the agenda of WRC-2000, for discussion in Plenary session, the proposal initiated by certain Member States of the Arab group, and supported by the observer of Palestine, concerning the implementation of Resolution 99 of the Plenipotentiary Conference (Minneapolis, 1998) brought before this Conference in Document 447.

2 **The above proposal should be withdrawn from consideration by WRC, and excluded from the Conference agenda, for reasons which will be elaborated below.**

3 Moreover, it should be brought to the attention of Member States that the State of Israel has made several attempts at this Conference, through the good offices and positive efforts of the Chairperson of the Conference, to resolve outstanding issues with the Palestinians, including those raised in Document 447. Yet all of these attempts by the State of Israel to take constructive measures have been unfortunately rejected by the sponsors of Document 447, for political rather than substantive reasons.

B Politicization of WRC

4 The proposal made in Document 447 politicizes WRC-2000 and is not compatible with the ongoing Middle East peace process in the sphere of telecommunications. Specifically, Document 447 calls upon WRC to urge Member States to adopt a specific course of action in matters which are currently the subject of permanent status negotiations between the State of Israel and the Palestinians. Placing the proposal on the agenda would allow the Palestinian side to circumvent bilateral negotiations, and would constitute intervention by ITU in this bilateral process. This attempt by the Palestinian side to secure unilateral rights disregards both the mutually agreed-upon peace process and the rights and concerns of neighbouring administrations.

5 The professional integrity and international standing of WRC requires that ITU Member States insist on preventing the Conference from becoming politicized in the manner proposed by Document 447.

C Relevant legal commitments of the Palestinian side

6 In accordance with Article 36 of the Civil Annex of the Interim Agreement signed between the State of Israel and the PLO in Washington, DC on 28 September 1995 (herein, the Interim Agreement), the topics referred to in Document 447 have been fully treated and agreed upon by Israel and the Palestinian side. Document 447 represents an attempt by the Palestinian side to renege on these standing commitments, and to ignore the firm legal provisions of Article 36 regarding the prevention and elimination of harmful interference.

7 Article 36 of the Interim Agreement provides for close cooperation between Israel and the Palestinian Authority on matters of telecommunications and broadcasting in the West Bank and Gaza Strip. Under this Article, international coordination of frequencies for the territories under Palestinian civil control has been agreed by the Palestinian side to be under the exclusive responsibility of the State of Israel. This point of agreement was also specifically reiterated in Article 8 of the May 1998 agreement between the two parties on GSM Frequency Assignment and Terms of Operation.

8 Moreover, Article 36 (B) (5) states unequivocally that "Both sides shall refrain from any action that interferes with the communication and broadcasting systems and infrastructures of the other side". This mutual commitment fully incorporates the substantive norms of the ITU's Radio Regulations.

9 Thus, an agreed bilateral mechanism between the State of Israel and the Palestinian side already exists governing the issues raised in Document 447, and there is no justification for bypassing this arrangement, which already incorporates ITU norms.

10 Nonetheless, in the second *considering* paragraph of Document 447, the Palestinian side is attempting to exempt itself from the bilateral legal obligations contained in Article 36 (B) (5), regarding certain stations operating under its responsibility. ITU Member States should not allow the unilateral conditioning, in this manner, of the performance of the basic obligation for the prevention of harmful interference.

D Conclusions

11 The State of Israel emphasizes that intervention in the arrangements of the Interim Agreement on the part of the WRC, or indeed, of any other third party, is contrary to the international principle of non-intervention in bilateral relations.

12 The State of Israel firmly contends that nothing in Document 447, or any Resolution which might be adopted by this Conference, may be legitimately intended, or may be construed as intending, to pre-judge, to pre-empt or to prevail over, in any matter whatsoever, any existing or future bilateral negotiations or agreements between the State of Israel and any duly-accredited Palestinian representation.

13 **Accordingly, Document 447 should not be placed on the agenda of WRC-2000, nor should it be supported in any manner by ITU Member States**. It calls upon WRC to intervene in existing, binding legal arrangements and political realities, as well as in the current bilateral peace endeavour, which all persons of goodwill should earnestly uphold.

Moshe GALILI
Head of Israeli delegation

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 472-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 351 and 386 **COMMITTEE 6**

NINTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 has finished its consideration of agenda item 4. As a result of these deliberations, it has unanimously adopted, at its fifth and sixth meetings, the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairperson, Committee 4

Annex: 1

ANNEX

(MOD)

RESOLUTION 46 (Rev.WRC-~~97~~2000)

Interim procedures for the coordination and notification of frequency assignments of satellite networks in certain space services and the other services to which certain bands are allocated[1*]

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[*] WRC-2000 reviewed this Resolution and decided to maintain it with no change, as it is applicable to satellite networks whose frequency assignments were received by the Bureau prior to 1 January 1999.

MOD

RESOLUTION 216 (Rev.WRC-~~97~~2000)

Possible broadening of the secondary allocation to the mobile-satellite service (Earth-to-space) in the band 14-14.5 GHz to cover aeronautical applications

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that the band 14-14.5 GHz was allocated to the land mobile-satellite service (Earth-to-space) on a secondary basis prior to ~~this Conference~~WRC-97;

b) that ~~this Conference~~ WRC-97 replaced this by an allocation to the mobile-satellite service (Earth-to-space) except aeronautical mobile-satellite, on a secondary basis;

c) that the band 14-14.5 GHz is also allocated to the fixed-satellite (Earth-to-space), radionavigation, fixed and mobile, except aeronautical mobile, services;

d) that the services in *considering c)* need to be protected consistent with their allocation status;

~~*d*~~*e)* that there is a demand for use on board aircraft~~,~~ of aeronautical mobile-satellite service capabilities in order to provide ~~location and two-way messaging~~two-way communication and data transmission functions~~, of the same type of terminals now used for land and maritime applications~~;

~~*e*~~*f)* that such demand justifies the consideration of possible broadening of the allocation to include aeronautical applications on a secondary basis at a future competent conference;

~~*f*~~*g)* that studies on the feasibility of such a broadening of the allocation must be completed before the aforementioned competent conference, with the participation of relevant entities and organizations;

~~*g*~~*h)* that Recommendation **34 (WRC-95)** states that future world radiocommunication conferences, whenever possible, should allocate frequency bands to the most broadly defined services with a view to providing maximum flexibility in spectrum use,

resolves

that [WRC-~~99~~02/03] should examine the possibility of broadening the secondary allocation to the mobile-satellite service (Earth-to-space) except aeronautical mobile-satellite in the 14-14.5 GHz band to include aeronautical use, ~~subject to the satisfactory outcome of technical compatibility studies,~~if the ITU-R studies demonstrate that such a secondary service can be operated without causing interference to the primary services,

invites ITU-R

to complete in time for [WRC-~~99~~02/03] the technical and operational studies on the feasibility of sharing of the band 14-14.5 GHz between the services referred to in *considering c)* above and the aeronautical mobile-satellite service, with the latter service on a secondary basis,

instructs the Director of the Radiocommunication Bureau

to invite relevant entities and organizations to participate in these studies.

MOD

RECOMMENDATION 503 (Rev.WRC-~~97~~2000)

High-frequency broadcasting

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) the congestion in the HF broadcasting bands;

b) the extent of co-channel and 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.~~

c) that AM reception quality is relatively poor compared with FM broadcast or CD quality;

d) that new digital techniques have enabled significant improvements in reception quality to be obtained in other broadcasting bands;

e) that the introduction of digital modulation systems in the broadcasting bands below 30 MHz has been shown to be feasible by using low bit-rate coding;

f) that Resolution **517 (Rev.WRC-97)** invites ITU-R to continue its studies on digital techniques in HF broadcasting as a matter of urgency;

g) that urgent studies on this subject are currently carried out by ITU-R in the framework of Question ITU-R 217/10 with a view to issue a relevant Recommendation in a very short time period,

recognizing

a) that the implementation of an ITU recommended worldwide system for digital sound in the HF bands would be extremely beneficial, particularly for developing countries, since it allows for:

– mass-scale production resulting in receivers as economical as possible;

– more economical analogue-to-digital conversion of existing transmitting infrastructures;

b) that the above system would result in digital receivers having a number of advanced features such as assisted tuning, improved audio quality and robustness to co-channel and adjacent channel interference, which would greatly contribute to a better spectrum utilization,

recommends administrations

1 to draw the attention of manufacturers to this matter, to ensure that future digital receivers make full advantage of the advanced technology while maintaining low cost;

2 to encourage manufacturers to closely monitor the development of the studies carried out by ITU-R with a view to starting mass production of new low-cost digital receivers as soon as possible after the approval of relevant ITU-R Recommendation(s).

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 473-E
29 May 2000
Original: French

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

SUMMARY RECORD

OF THE

SIXTH MEETING OF COMMITTEE 4
(REGULATORY AND ASSOCIATED ISSUES)

Thursday, 25 May 2000, at 1435 hours

Chairperson: Mr H. RAILTON (RRB)

Subjects discussed		**Documents**
1	Documents submitted for approval by Working Group 4B	351, 353, 378, 386 402, 405, 406
2	Documents submitted for approval by Working Group 4A	387, 401, DT/71

1 Documents submitted for approval by Working Group 4B (Documents 351, 353, 378, 386, 402, 405, 406)

Document 351 (continued)

1.1 The **Chairperson** invited the committee to consider the final page of Document 351 containing proposals to delete or maintain in their present form a number of resolutions and recommendations.

1.2 The **delegate of Syria** said that he was not in favour of deleting Resolution 703 (Rev.WARC-92), which provided for the distribution to all administrations of a list identifying the parts of new Recommendations approved by ITU affecting calculation methods and interference criteria. He proposed, however, that the size of that text could be reduced by no longer including the full text of the Recommendations but only their title. The **delegate of Oman** supported that proposal.

1.3 The **delegate of Japan** observed that, during the most recent exercise, only 16 replies had been received from the 180 administrations asked to indicate the specific technical criteria defined in the Recommendations which they agreed for use in the application of the pertinent provisions of the Radio Regulations. He therefore considered the consultation procedure to be both ineffective and unnecessarily costly.

1.4 The **delegate of Syria** said that at least the exercise revealed which administrations intended to use the recommendations in question.

1.5 The **delegate of Canada** pointed out that the real issue was not so much to know which Recommendations administrations accepted in substance, but whether they agreed to be bound by those Recommendations when neighbouring countries made a different choice. The Recommendations could also form the basis for bilateral discussions. From that point of view, it might be worthwhile to continue to distribute the list.

1.6 The **delegate of the United Kingdom** said that it was sometimes difficult to know which revised version of a Recommendation had been accepted by a particular administration. The list was therefore still useful for that purpose.

1.7 The **Chairperson** invited the speakers to seek a compromise solution on the matter. Meanwhile, the square brackets would remain round the proposal to delete Resolution 703. He announced that the square brackets round SUP Recommendation 720 could be removed.

1.8 With the exception of the deletion of Resolution 703, the proposals to delete or maintain the resolutions and recommendations on the last page of Document 351 were **approved**.

1.9 Subject to that reservation, Document 351, as amended, was **approved**.

Document 353

1.10 The **Chairperson of Working Group 4B** introduced Document 353 correcting the typographical errors noticed in the 1998 edition of the Radio Regulations. She drew the committee's attention to a mistake in the annex to Document 353, in which the eighth line of the first column should refer to 40-40.5 GHz and not MHz.

1.11 Document 353, as amended, was **approved**.

Document 378

1.12 The **Chairperson of Working Group 4B** introduced Document 378 containing a draft note by the Chairperson of Committee 4 to the Chairpersons of Committee 5 and GT PLEN-1 with

a draft table of contents of Volume 4 of the Radio Regulations featuring a provisional list of the ITU-R Recommendations containing texts incorporated by reference in the Radio Regulations.

1.13 The **representative of the Radiocommunication Bureau** said that the reference to Recommendation ITU-R M.1185-1 should be deleted since the cancellation of the calculation method to which it related had been approved during examination of Document 387.

1.14 Document 378, as amended, was **approved**.

Document 386

1.15 The **Chairperson of Working Group 4B** introduced Document 386 containing corrective action concerning inconsistencies and obsolete parts of the Radio Regulations.

1.16 The **delegate of Syria** invited the Director of BR to submit the document to the next CPM so that all corrections could be examined carefully.

1.17 The **Chairperson** said that that account would be taken of that remark.

1.18 The **delegate of Syria** said that, in accordance with a proposal approved in Sub-Working Group 4A-1, the note "see Table [S5-1A]*" in the third column of Table S5-1 should be replaced, wherever it occurred, by "frequency bands for which a footnote refers to No. S9.11A".

1.19 The **delegate of Canada** proposed that all the changes introduced by Committees 4 and 5 and by Working Group 1 of the Plenary to Appendices S4 and S5 and to Articles S9 and S11 should be brought together in a single document for each appendix and article respectively.

1.20 Referring to Annex 1 to Appendix S5, the **delegate of the United Kingdom** recalled the proposal to delete Section 2 as a whole and not just Parts 2.1 and 2.3.

1.21 The **Chairperson** took note of those remarks and proposed that Appendix S5 and its Annex 1 should be taken up again at a later stage.

1.22 It was so **agreed**.

1.23 Document 386 was **approved** under that understanding.

Document 402

1.24 The **Chairperson of Working Group 4B** introduced Document 402 containing the draft revisions approved by the group to Resolutions 25 (WRC-95), 95 (WRC-97) 706 (Mob-87), 716 (WRC-95) and 727 WRC-97).

1.25 The draft revision of Resolution 25 (WRC-95) was **approved**.

1.26 Referring to the draft revision of Resolution 95 (WRC-97), the **Chairperson of Working Group 4B** proposed that only the second part of the text in square brackets should be kept and that the square brackets should be removed.

1.27 The **delegate of Japan** said he would not oppose the approval of the resolution in that form. However, he pointed out that since the Director of BR would no longer submit his report to WRC but to CPM, which was held several months earlier, the information contained in that report would not reflect developments occurring between CPM and WRC. He therefore suggested that the Director of BR should give an update of the relevant information at the beginning of WRC.

1.28 The **Chairperson** said that account would be taken of that suggestion.

1.29 The draft revision of Resolution 95 (WRC-97), as amended, was **approved**.

1.30 The draft revision of Resolution 706 (Mob-87) was **approved**.

1.31 Referring to the draft revision of Resolution 716 (WRC-95), the **delegate of Syria** pointed out that the letters "FS" should be added after the words "notification of frequency assignments to" in the footnote on the second page.

1.32 The draft revision of Resolution 716 (WRC-95), as amended, was **approved**.

1.33 The draft revision of Resolution 727 (WRC-97) was **approved**.

1.34 Document 402, as amended, was **approved**.

Document 405

1.35 The **Chairperson of Working Group 4B** introduced Document 405 on agenda item 1.8, which contained a draft new Resolution [COM4/3] and two annexes. The resolution was entitled "Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz".

1.36 The **Chairperson** reminded the participants that the draft new resolution was the result of three weeks of intensive work. He invited comments on it.

1.37 The **delegate of the Russian Federation** said that his delegation approved the draft resolution under consideration, but was concerned by the fact that a number of matters had not yet been considered in depth by the ITU-R study groups. There was a danger that many administrations licensing earth stations located on board vessels would encounter difficulties in applying the resolution.

1.38 The **delegate of Germany** proposed that the words "certain technical and operational constraints" in *considering g)* should be replaced by "needed technical and operational constraints", an amendment that had been requested by one administration and approved by Working Group 4B.

1.39 It was so **agreed**.

1.40 Referring to *resolves* 4, the **delegate of Syria** proposed that the beginning of the sentence should be reworded to avoid appearing to give orders to WRC-03.

1.41 It was so **agreed**.

1.42 The **Chairperson** invited the committee to approve Annexes 1 and 2 of Resolution [COM4/3].

1.43 The **delegate of France** recalled that Working Group 4B had agreed to insert the word "provisional" in front of the word "guidelines".

1.44 The **Chairperson** said that account would be taken of that observation.

1.45 Draft new Resolution [COM4/3], as amended, and its annexes, were **approved**.

1.46 The **delegate of the United States** said that the participants in informal consultations on Document 405 had suggested that once Resolution [COM4/3], which invited the next WRC to take certain decisions, had been approved, Committee 4 should send a note to Working Group 2 of the Plenary, drawing its attention to the new resolution and suggesting that, under one of its agenda items, WRC-03 should consider the studies carried out by ITU-R in application of Resolution [COM4/3].

1.47 It was so **agreed**.

1.48 Document 405, as amended, was **approved**.

Document 406

1.49 The **Chairperson of Working Group 4B** introduced Document 406 concerning the alignment of the provisions of S21.7 with the Table of Frequency Allocations in Article S5. The proposal, made by the Administration of Cuba, had been approved by the working group.

1.50 MOD S21.7 (Document 406) was **approved**.

2 Documents submitted for approval by Working Group 4A (Documents 387, 401 and DT/71)

Document 387

2.1 The **Chairperson of Working Group 4A** introduced Document 387 which proposed modifications to Articles S1 and S5, Resolutions 27 (Rev.WRC-97) and 72 (WRC-97), the deletion of Resolution 60 (WARC-79) and of Recommendations 105 (WRC-95) and 711 (WARC-79) and a draft new Resolution [COM4/1].

2.2 MOD S1.171, MOD S1.173, MOD S1.185, MOD S5.43, ADD S5.43A and MOD S8.1.1, SUP Resolution 60 (WARC-79), SUP Recommendation 105 (WRC-95) and SUP Recommendation 711 (WARC-79) and MOD Resolution 72 (WRC-97) were **approved**.

2.3 The **Chairperson** invited the participants to consider proposed new Resolution [COM4/1] concerning the process to keep the technical bases of Appendix S7 current.

2.4 The **delegate of Sweden** considered that the first indent of *considering d)* did not make it clear that coordination related to high-density areas of the fixed service and earth stations. To make the text clearer, he proposed that the words “for high-density earth stations (fixed and mobile)” should be replaced by “for high-density applications in the services subject to coordination”.

2.5 The **Chairperson of Working Group 4A** said that the issues included under *considering d)* had been examined when the Radiocommunication Assembly had adopted Recommendation ITU-R SM.1448. He was very reluctant to change anything in the text since each of the indents of *considering d)* was linked to the work of Study Group 3 on propagation and any modification would certainly give rise to difficulties.

2.6 The **Chairperson** proposed that the text of *considering d)* should be kept as it stood, on the understanding that the comment by the delegate of Sweden would be reflected in the summary record.

2.7 Draft new Resolution [COM4/1] was **approved**, subject to typographical corrections.

2.8 The **Chairperson of Working Group 4A** informed the committee that the working group had considered a request by an administration to republish all the circulars and special sections of the last ten years. According to the Bureau, any such publication would cost CHF 900 000. Working Group 4A considered that if such publication was accepted, it should be on the basis of cost recovery from the administrations concerned.

2.9 The **Chairperson** invited the committee to approve that request.

2.10 It was so **agreed**.

2.11 Document 387 was **approved**.

Documents 401 and DT/71

2.12 The **Chairperson of Working Group 4A** introduced Document 401 containing proposed modifications to Article S9, Appendix S30, Appendix S30A and Appendix 30B drawn up in response to Resolution 88 (Minneapolis, 1998) of the Plenipotentiary Conference. All the proposed modifications were placed in square brackets since the working group had failed to reach agreement. Resolution 88 (Minneapolis, 1998) had instructed the Council to establish a working group to make recommendations to the 1999 session of the Council on the principle of the implementation of cost recovery for satellite network filings. In Decision 482, the Council invited WRC-2000 to consider the amendments required to the Radio Regulations in order to give effect to Resolution 88 (Minneapolis, 1998), including consideration of any consequences of non-payment due to unforeseen circumstances, and to take, in that respect, any action within its competence. The results of the work of Sub-Working Group 4A-8 on that issue were reflected in Document DT/71. Some administrations had expressed views orally during the discussion which, owing to lack of time, had not been reproduced in a document.

2.13 The **delegate of the Republic of Korea** recalled that his administration had made a proposal to the effect that every Member State should be entitled to the publication, free of charge, of special sections for one satellite network per year. That proposal, included in Document DT/71, did not appear in Document 401. He wondered whether that was deliberate and whether it had been decided not to discuss the proposal.

2.14 The **Chairperson of Working Group 4A** said that the subject would be dealt with in a separate document and that Document 401 related solely to amendments to the Radio Regulations with regard to the application of the principle of cost recovery to satellite networks. With regard to the matter of one free publication per year, the question arose whether the conference was competent to decide on that issue, or whether it would constitute interference in the work of the Council, and how the matter could best be handled (in the form of a decision if it was considered that the conference was competent or, otherwise, in the form of a recommendation or a resolution). In any event, Decision 482 of the Council had to be read with great care.

2.15 The **delegate of Luxembourg** said that the decision to allow each Member State the free publication of special sections for one satellite network per year had been taken by the Council and that the only problem now was the possible amendment of BR Circular Letter CR/139. The principle of applying cost recovery to satellite networks was equitable since the administrations causing the Bureau most work would be responsible for meeting the cost. Furthermore, the money received would be used by the Council to reduce the amount of the contributory unit. The opportunity offered to Member States of free publication of special sections for one satellite network per year was important for the developing countries.

2.16 The **delegate of Colombia** opposed the proposal made in Document 401 to the effect that the Bureau would cancel the publication of satellite network filings if the payments were not received in good time.

2.17 The **delegate of Tonga** considered that the conference was competent to instruct the Bureau to amend Circular Letter CR/139 in the light of the proposals made by the Republic of Korea and the Islamic Republic of Iran, as reflected in the final paragraph of Document DT/71.

21.8 The **delegate of the Islamic Republic of Iran** said he would like to see the proposals concerning the free publication of special sections in Document DT/71 reflected in the report of Committee 4.

2.19 The **delegate of Sweden** supported the proposals contained in Document 401, since he believed that the decision to apply the principle of cost recovery to satellite networks should be

taken by the conference and not referred to a forthcoming session of the Council or to the next plenipotentiary conference.

2.20 The **delegate of Argentina** strongly opposed the proposal to cancel a publication in the event of non-payment, which would penalize countries that did not possess the necessary resources. The conference was not obliged to introduce rules containing sanctions in the Radio Regulations. It could take a decision on the matter by adopting a resolution addressed to the Council, inviting it to inform the Plenipotentiary Conference of the results obtained by applying the principle of cost recovery to satellite network filings only. The next plenipotentiary conference could then take a policy decision. The proposal made by the Chairperson of Working Group 4A that the committee should adopt a resolution on the subject was acceptable.

2.21 The **delegates of the United Kingdom**, **the Netherlands**, **Canada** and **the United States** considered that it was up to WRC-2000 to make the necessary amendments to the Radio Regulations in conformity with Resolution 88 (Minneapolis, 1998), and approved the proposals contained in Document 401.

2.22 The **Chairperson** said that the question of free publication and the question of cost recovery should be considered separately.

2.23 The **delegate of the Islamic Republic of Iran** took the view that the two questions were linked and should therefore be examined jointly.

2.24 The **delegate of the United Kingdom** recalled that under *decides* 3 of Council Decision 482 concerning the implementation of cost recovery, each Member State would be entitled to the publication of special sections for one satellite network each year without charge and could determine which category would benefit from the "free" entitlement.

2.25 A majority of participants having decided by show of hands to examine Document 401, the **Chairperson** invited the committee to consider ADD S9.2B.1.

2.26 The **delegate of Colombia** said that his administration opposed ADD S9.2B.1 according to which "if the payments were not received in accordance with the provisions of Council Decision 482 …, the Bureau shall cancel the publication …".

2.27 The **delegate of Syria** said that his administration would support any decision that the conference might take to make the principle of cost recovery applicable, but would oppose any amendment of the Radio Regulations for that purpose. The Syrian Administration would also oppose adoption of a resolution which would leave it to the next conference to decide on how the principle of cost recovery was to be applied. There was a provision in the Financial Regulations of the Union according to which administrations which were two years behind in paying for publications they had received could only receive a new publication if they paid in advance. The conference could draw on that provision and adopt a resolution stipulating that administrations were entitled to a single notification free of charge and would then be entitled to a second notification provided they paid in advance.

2.28 The **delegate of Argentina** supported the proposal by the delegate of Syria. Such a resolution could be addressed to the Council, inviting it to amend the Financial Regulations. It would then not be necessary to alter the Radio Regulations.

2.28 The **Chairperson** said he was not certain that the conference was competent to request amendment of the Financial Regulations.

2.30 The **delegate of Luxembourg** said that all the procedures governing notification and publication were laid down in a treaty, namely the Radio Regulations. If those procedures were to be modified, it was that treaty, and not the Financial Regulations, that had to be amended. It was

therefore entirely logical that the Plenipotentiary Conference and the Council had entrusted the task to WRC.

2.31 The **delegate of Sweden** said that the majority of the participants in Sub-Working Group 4A-8 had been in favour of adopting ADD S9.2B.1.

2.32 The **delegate of Australia** said that it appeared to be the words "The Bureau shall cancel the publication" in the first sentence of ADD S9.2B.1 which were the most problematical for many administrations. He therefore proposed that they be replaced by the words "The Bureau shall proportionally amend the date of effect of the filing until payment is made". Thus, the obligation to pay would be embodied in the treaty while allowing the administrations more time to find the funds they needed to settle the payment.

2.33 The **delegate of Colombia** said that the Bureau was in no way competent to modify the content of a document signed by a sovereign administration. He feared that cost recovery was being used as a pretext and that the real aim was in fact to deprive a number of administrations of the right of access to orbit resources, which was contrary to the ITU Constitution. In his view, cancellation of publications was an excessive measure.

2.34 The **delegate of Canada** said that, if accepted, Australia's proposal would open the door to abuse. Administrations would make filings to the Bureau, which would process them, but they would not pay for that processing. They would then implement their systems one by one, in strategic fashion, to thwart the efforts of other administrations to gain access to the orbit.

2.35 The **delegate of Australia** said that the seven-year rule would still apply.

2.36 The **delegate of Luxembourg** said that if the date of receipt of the coordination request was delayed by six months, a year, or even more, on account of non-payment, that was likely to have in impact on the order in which the Radiocommunication Bureau examined systems, and increase its workload.

2.37 The **delegates of Malaysia** and **Sweden** agreed with the views expressed by the delegates of Canada and Luxembourg.

2.38 The **delegate of Morocco** recalled that, pursuant to No. 169 of the Constitution, a Member State in arrears in its payments to the Union lost its right to vote for so long as the amount of its arrears equalled or exceeded the amount of the contribution due for the preceding two years. He therefore found proposing such a severe a sanction as cancellation of the publication for a mere 60-day delay in payment somewhat surprising.

2.39 The **representative of the Radiocommunication Bureau** said that Decision 482 of the Council on the implementation of cost recovery followed on from Resolution 88 (Minneapolis, 1998) of the Plenipotentiary Conference. In application of *decides* 6 of that decision, the Bureau had already sent invoices to 34 notifying administrations, for a total amount of CHF 56 400, representing an average of CHF 1 600 per system.

2.40 The **delegate of Colombia** said that it would be interesting to know how many developing countries there were among the 34 countries mentioned and how many countries would have their publications cancelled if ADD S9.2B.1 were applied. Furthermore, there were no grounds for believing that the administrations were endeavouring to get out of their financial obligations. Having said that, it was in any event inadmissible to deprive administrations that were unable to meet those obligations of their rights under the Constitution.

2.41 The **delegate of Syria** said that the Plenipotentiary Conference (Minneapolis, 1998) had not instructed WRC-2000 to amend the Radio Regulations, but rather to consider whether any such amendments were necessary. Similarly, in the third footnote to Decision 482, the Council indicated

that the implementation of Resolution 88 (Minneapolis, 1998) implied that WRC-2000 “may” - and not “shall” - also consider any consequences of non-payment. Imposing sanctions on administrations in arrears in their payments or depriving them of the right of access to the orbit/spectrum resources would thus be going beyond the wishes expressed by the Plenipotentiary Conference and the Council.

2.42 The **delegate of Russia** said that his administration approved the principle of cost recovery, but could not accept the argument that a large number of administrations would not respect the payment deadlines. The Russian Administration believed, on the contrary, that administrations would make a point of settling their invoices on time, as they did for example with their invoices for publications, and it was therefore not necessary to consider sanctions at that juncture.

2.43 The **delegate of Luxembourg** wondered whether No. 169 of the Constitution could apply in the case non-payment under cost recovery.

2.44 The **Chairperson** proposed that the delegations that had taken part in the debate should get together after the meeting in order to seek to work out a compromise.

2.45 It was so **agreed**.

The meeting rose at 1745 hours

The Secretary:
P. LUNDBORG

The Chairperson:
H. RAILTON

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 474-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents DT/93(Rev.1), DT/107 + Add.1, DT/113, DT/118, DT/122

COMMITTEE 6

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

GT PLEN-1 has adopted, at its thirteenth meeting, the attached texts that are submitted for your consideration with a view to their subsequent submission to the Plenary.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

Following consideration of the request from the Chairperson of Working Group 4B contained in Document 348, GT PLEN-1 has reviewed the Resolutions and Recommendations and provides the following proposals for consideration by the Plenary.

Resolution number	Title	Proposed action
507	Relating to the establishment of agreements and associated plans for the broadcasting-satellite service	NOC
518	Country/geographical area symbols used in Appendices S30/30 and S30A/30A	SUP
519	Possible extension to Regions 1 and 3 of provisions for interim systems	SUP
524	Future consideration of the Plans for the broadcasting-satellite service in the band 11.7-12.5 GHz (Region 1) and the band 11.7-12.2 GHz (Region 3) in Appendix S30/30 and the associated feeder-link Plans in Appendix S30A/30A	SUP
531	Review of Appendices S30/30 and S30A/30A of the Radio Regulations	SUP
532	Review and possible revision of the 1997 broadcasting-satellite service Plans for Regions 1 and 3	NOC
533	Implementation of the decisions of the WRC-97 relating to Appendices S30 and S30A to the Radio Regulations	MOD
534	Implementation of Annex 5 to Appendix S30 and Annex 3 to Appendix S30A of the Radio Regulations	SUP
536	Operation of broadcasting satellites serving other countries	NOC
53	Updating of the “Remarks” columns in the tables of Article 9A of Appendix S30A and Article 11 of Appendix S30 to the Radio Regulations	MOD
73	Measures to solve the incompatibility between the broadcasting-satellite service in Region 1 and the fixed-satellite service in Region 3 in the frequency band 12.2-12.5 GHz	MOD

Recommendation number	Title	Proposed action
521	Technical parameters for use in the revision of Appendices S30/30 and S30A/30A in response to Resolution 524 (WRC-92)	NOC

RESOLUTION 53 (Rev.WRC-~~97~~2000)

Updating of the "Remarks" columns in the tables of Article 9A of Appendix S30A and Article 11 of Appendix S30 to the Radio Regulations

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) ~~that this Conference has adopted new texts relating to the symbols in the "Remarks" columns of Article 9A of Appendix **S30A** and Article 11 of Appendix **S30** to the Radio Regulations~~that WRC-2000 has adopted new methodologies and criteria for the calculation of compatibility between the WRC-2000 Regions 1 and 3 Plans in Appendices **S30/S30A** and other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan, and that these methodologies and criteria are included in, or referenced in Article 11 of Appendix **S30** and Article 9A of Appendix **S30A** and in the Annexes to Appendices **S30/S30A**;

b) ~~that this Conference has adopted new entries in the "Remarks" columns of Article 9A of Appendix **S30A** and Article 11 of Appendix **S30**, on the understanding that the lists of identified administrations will be reviewed and revised, as appropriate, by WRC-99~~that the R1/R3 downlink Plan (and the associated R1/R3 feeder-link Plan) were not analysed to identify any incompatibility with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan during WRC-2000 using the revised criteria adopted at WRC-2000;

c) ~~that studies of compatibility between the revised Regions 1 and 3 broadcasting-satellite service (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 Plans and the Region 2 Plans, were performed during this Conference using data which had been received and published by the Radiocommunication Bureau at the time of this Conference under relevant provisions of the Radio Regulations~~existing systems* and Part B** systems included in the R1/R3 downlink and feeder-link Plans as established by WRC-2000 have already been determined to be compatible with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan;

d) that by inclusion of symbols in the "Remarks" columns of Article 9A to Appendix **S30A** and Article 11 of Appendix **S30** and their associated Notes explaining the nature of the "Remarks" column entries to the Radio Regulations a mechanism is available to identify potential incompatibility conditions both for causing interference and receiving interference that shall be subject to a coordination process before the concerned assignments may be brought into service;

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* Whenever the term "existing" is used in this document, it refers to the notified assignments that are in conformity with Appendices **S30** and **S30A**, which have been brought into use and for which the date of bringing into use has been confirmed to the Bureau before 1700 hours (Istanbul time) 12 May 2000.

** Whenever the term "Part B" is used in this document, it refers to the assignments for which the procedures of Article 4 of Appendices **S30** and **S30A** have been successfully completed and provided due diligence information (when required) before 1700 hours (Istanbul time) 12 May 2000, but have not been brought into use and/or the date of bringing into use has not been confirmed to the Bureau.

~~*d)* that 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 this Conference;~~

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 were received prior to this Conference,

recognizing

a) ~~that the revised Regions 1 and 3 Plans must be compatible with the Region 2 Plans and with the other services which have primary allocations in the planned bands in all three Regions in accordance with principles adopted at this Conference~~that the integrity of the Region 2 Plan and its associated provisions must be preserved, by providing the same protection to the assignments contained in that Plan as is now received under the relevant provisions of the Radio Regulations, and by not requiring more protection from assignments in the Region 2 Plan than that provided under the Radio Regulations;~~*~~

b) that the required compatibility between the BSS in Regions 1 and 3 and the other services in all three Regions must be ensured;

~~*b)*~~*c)* that the Bureau requires clear instructions from this Conference on how to complete the analyses and to finalize the entries to be included in the "Remarks" column of both Article 9A of Appendix **S30A** and Article 11 of Appendix **S30**;

~~*c)*~~*d)* that the instructions to the Bureau shall take effect on ~~22 November 1997~~[3 June 2000],

resolves

1 that the Bureau shall complete the required analyses based on the ~~new~~ Notes explaining the nature of the "Remarks" column entries numbered 3 to 7 in Section 9A.2 of Article 9A of Appendix **S30A** and Notes 5 to 7 in Section 11.2 of Article 11 of Appendix **S30** ~~added during this Conference~~using the methodology and criteria adopted at this Conference;

2 that the Radiocommunication Bureau shall publish after the Conference the results of its analyses ~~after this Conference, together with a modified "Remarks" column of Article 9A of Appendix **S30A** and Article 11 of Appendix **S30**, in the form of~~together with its conclusion thereto in a ~~c~~Circular~~-l~~ Letter;

3 that once the ~~c~~Circular~~-l~~ Letter referred to in *resolves* 2 has been sent, administrations will have a period of ~~60~~120 days to decide whether they do or do not wish to ~~go on~~continue appearing as "affected or affecting administrations" ~~in the relevant table~~. In the case of a request of an affecting administration in a remark, its deletion from the remark is subject to the agreement of the affected administration. The Bureau shall send a reminder to all administrations 45 days before the expiry of the above-mentioned deadline in the form of a circular telefax requesting comment/reply. If no reply is received from administrations within that period, it will be taken that there is no need to make any change;

~~5~~4 that the Bureau shall report the results of its ~~analyses and~~review in a further Circular Letter containing the final lists of administrations to be included in the modified "Remarks" columns ~~to WRC-99~~of the WRC-2000 Regions 1 and 3 Plans~~,~~;

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* WRC-2000 decided to apply the procedure of Section 3 of Annex 1 to Appendix **S30** and Section 5 to Annex 1 to Appendix **S30A** to preserve this integrity.

~~4~~5 that the ~~new~~ coordination requirements identified in the ~~above-mentioned c~~Circular ~~l~~ Letter referenced in *resolves* 4 shall apply provisionally from the date of ~~the above-mentioned circular letter until a decision is taken by WRC-99~~ that Circular Letter until the remarks are included in the Radio Regulations by a competent conference;

6 that any request for notification of an assignment included in the Regions 1 and 3 downlink Plan or the Regions 1 and 3 feeder-link Plan adopted at WRC-2000, which would be received before the expiry date of the Circular Letter mentioned in *resolves* 4, would be subject to an examination by the Bureau with respect to its compatibility with other services having primary allocations in the planned bands in all three Regions and with the Region 2 Plan, using the methodology and criteria adopted at this Conference,

instructs the ~~Secretary-General~~Director, Radiocommunication Bureau

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~~include the results of this analysis in his report to the next World Radiocommunication Conference.

MOD

APPENDIX S30*

ARTICLE 1

General definitions

1 For the purposes of this Appendix the following terms shall have the meanings defined below:

1.1 *1977 Conference:* World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in the Frequency Bands 11.7-12.2 GHz (in Regions 2 and 3) and 11.7-12.5 GHz (in Region 1), called in short World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977.

1.2 *1983 Conference:* Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz and Associated Feeder Links in the Frequency Band 17.3-17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC Sat-R2), Geneva, 1983.

1.3 *1985 Conference:* First Session of the Word Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985, called in short WARC Orb-85.

ADD

1.3A *1997 Conference:* World Radiocommunication Conference (Geneva, 1997).

1.3B *2000 Conference:* World Radiocommunication Conference (Istanbul, 2000) called in short WRC-2000.

MOD

1.4 *Regions 1 and 3 Plan:* 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 contained in this Appendix~~, together with any modifications resulting from the successful application of the procedures of Article 4 of this Appendix~~.

1.5 *Region 2 Plan:* The Plan for the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz in Region 2 contained in this Appendix, together with any modifications resulting from the successful application of the procedures of Article 4 of this Appendix.

1.6 *Frequency assignment in conformity with the Plan:*

– Any frequency assignment which appears in the Regions 1 and 3 Plan; *or*

– Any frequency assignment which appears in the Region 2 Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

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* 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.

ADD

1.7 *Additional use in Regions 1 and 3:* For the application of the provisions of this Appendix, additional uses in Regions 1 and 3 are:

a) use of assignments with characteristics different from those appearing in the Regions 1 and 3 Plan and which are capable of causing more interference than the corresponding entries in the Plan;

b) use of assignments in addition to those appearing in the Plan.

ADD

1.8 *Regions 1 and 3 List of additional uses (hereafter called in short "the List"):* The list of assignments for additional uses in Regions 1 and 3 as established by WRC-2000, as updated following the successful application of the procedure of § 4.1 of Article 4 of this Appendix.

ARTICLE 2

Frequency bands

NOC

2.1

ADD

2.2 The use of the guardbands of the Plans in Appendix **S30**, as defined in section 3.9 of Annex 5 to this Appendix, to provide space operations functions in accordance with No. **S1.23** in support of GSO BSS networks operation, shall be coordinated with the assignments subject to these Plans using the provisions of Article 7 of this Appendix. Coordination among assignments intended to provide these functions and services not subject to a Plan shall be effected using the provisions of No. **S9.7** and the associated provisions of Articles **S9** and **S11**. Coordination of modifications to the Region 2 Plan, or assignments to be included in the Regions 1 and 3 List with assignments intended to provide these functions shall be effected using paragraph 4.1.1 *e)*, 4.2.3 *e)* or 4.2.3 *f)* as appropriate, of Article 4 of Appendix **S30**.

ARTICLE 3

Execution of the provisions and associated Plans

MOD

3.1 The Member States 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

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[1] ~~In Region 2, s~~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.

3.2 The Member States shall not change the characteristics specified in the Region 1 and Region 3 Plans 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.

ADD

3.3 The Plan for Regions 1 and 3 is based on national coverage from the geostationary-satellite orbit. The associated procedures contained in this Appendix are intended to promote long-term flexibility of the Plan and to avoid monopolization of the planned bands and orbit by a country or a group of countries.

ARTICLE 4

MOD

Procedures for modifications to the Region 2 Plans or for additional uses in Regions 1 and 3[2bis]

ADD

[2bis] The provisions of Resolution **49 (WRC-2000)** apply.

ADD

4.1 Provisions applicable to Regions 1 and 3

4.1.1 An administration proposing to include a new or modified assignment in the List shall seek the agreement of those administrations whose services are considered to be affected, i.e. administrations[3]:

a) of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service, any portion of which falls within the necessary bandwidth of the proposed assignment, which is included in the Regions 1 and 3 Plan; *or*

b) of Regions 1 and 3 having a frequency assignment included in the List or for which complete Appendix **S4** information has already been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

c) of Region 2 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Region 2 Plan, or in respect of which proposed modifications to that Plan have already been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article; *or*

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[3] [The provisions of Resolution 53 (Rev.WRC-2000) are applicable.]

d) having no frequency assignment in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed assignment 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 proposed assignment exceeds the prescribed limit as a result of the proposed assignment; *or*

e) 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 International Frequency Register (Master Register) or for which complete coordination information has been received by the Bureau for coordination under No. **S9.7**, or under § 7.1 of this Appendix.

4.1.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

4.1.3 An administration intending to include a new or modified assignment in the List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix **S4**. An assignment in the List shall lapse if it is not brought into use by that date.[4a]

4.1.4 If the information received by the Bureau under paragraph 4.1.3 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

4.1.5 The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected. The Bureau shall publish, in a Special Section of its International Frequency Information Circular (IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, FSS networks and BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the assignment.

4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of the IFIC drawing their attention to the information it contains and shall send them the results of its calculations.

4.1.7 An administration which considers that it should have been identified in the publication referred to under paragraph 4.1.5 above shall, within four months of the date of publication of the relevant IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under paragraph 4.1.5.

4.1.8 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

4.1.9 Comments from administrations on the information published pursuant to § 4.1.5 should be sent either directly to the administration proposing the modification or through the Bureau. In any event the Bureau shall be informed that comments have been made.

[4a The provisions of Resolution 533 (Rev.WRC-2000) are applicable.]

4.1.10 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the IFIC referred to in § 4.1.5 shall be understood to have agreed to the proposed assignment. This time limit may be extended:

– for an administration that has requested additional information under § 4.1.8 by up to three months, or

– for an administration that has requested the assistance of the Bureau under § 4.1.21 by up to three months following the date at which the Bureau communicated the result of its action.

4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.1.12 If no comments have been received on the expiry of the periods specified in § 4.1.10, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.1.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.1.14 When the proposed assignment involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.1.15 The Bureau shall publish in a Special Section of the IFIC the information received under § 4.1.12 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall be included in the List.

4.1.16 In case of disagreement from an administration whose agreement has been sought, the requesting administration should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.1.17 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by either one of these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.1.18 If in spite of the application of paragraphs 4.1.16 and 4.1.17, there is still continuing disagreement and the notifying administration insists that the proposed assignment be included in the List, the Bureau shall enter the assignment provisionally in the List with an indication of those administrations whose assignments were the basis of the disagreement, however, the entry shall be changed from provisional to definitive recording in the List only if the Bureau is informed that the new assignment in the List has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made.

4.1.19 Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. **S11.44** (for the non-planned services), or in paragraph 4.1 (for assignments in the List or having initiated the procedure under paragraph 4.1), as appropriate, then the status of the assignment in the List shall be reviewed accordingly.

4.1.20 Should harmful interference be caused by an assignment included in the List under paragraph 4.1.18 to any recorded assignment in the MIFR which was the basis of the disagreement, the administration using the frequency assignment included in the List under paragraph 4.1.18 shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

4.1.21 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau.

4.1.22 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Bureau.

4.1.23 When a frequency assignment included in the List is no longer required, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a Special Section of its IFIC and delete the assignment from the List.

4.1.24 No assignment in the List shall have a period of operation exceeding 15 years, counted from the date of bringing into use, or 2 June 2000, whichever is later. Upon request by the responsible administration received by the Bureau at the latest three years before the expiry of this period, this period may be extended by up to 15 years, on the condition that all the characteristics of the assignment remain unchanged.

4.1.25 When an administration already having included in the List two assignments (not including those systems notified on behalf of a group of named administrations and included in the List by WRC-2000), in the same channel and covering the same service area, proposes to include in the List a new assignment in the same channel over this service area, it shall apply the following in respect of another administration which has no assignment in the List in the same channel and which proposes to include in the List a new assignment:

a) If the agreement of the former administration is required following the application of paragraph 4.1 by the latter administration, in order to protect the new assignment proposed by the former administration from interference caused by the assignment proposed by the latter administration, both administrations shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

b) in case of continuing disagreement, and if the former administration has not communicated to the Bureau the information specified in Annex 2 of Resolution **49 (WRC-2000)**, this administration shall be deemed to have given its agreement to the inclusion in the List of the assignment of the latter administration.

4.1.26 This procedure may be applied by the administration of a new ITU Member State in order to include new assignments in the List. Upon completion of the procedure, the next World Radiocommunication Conference may be requested to consider, among the assignments included in the List after the successful completion of this procedure, the inclusion in the Plan of up to 10 channels (for Region 1) and 12 channels (for Region 3), over the national territory of the new Member State.

4.1.27 When an administration has successfully applied this procedure and received all the agreements* required to include in the List assignments over its national territory, at an orbital location and/or in channels different from those appearing in the Plan for this country, it may request the forthcoming World Radiocommunication Conference to consider the inclusion in the Plan of up to ten (for Region 1) and up to twelve (for Region 3) of these assignments, as a replacement to its assignments appearing in the Plan.

4.1.28 The List as updated shall be published periodically by the Bureau.

4.1.29 New or modified assignments in the List shall be limited to digital modulation.

MOD

4.2 Provisions applicable to Region 2

4.2.1 When an administration intends to make a modification[5a~~2~~] to ~~one of~~ the Region~~al~~ 2 Plan~~s~~, 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~~Region~~al~~ 2 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~~Region~~al~~ 2 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);

~~4.1.1 Before an administration proposes to include in the Plan, under the provisions of § 4.1 *b)*, a new frequency assignment to a space station or to include in the Plan new frequency assignments to a space station whose orbital position is not designated in the Plan for this administration, all the assignments to the service area involved should have been brought into service or have been notified to the Bureau in accordance with the relevant provisions of the Plan.~~

4.2.2 The term “frequency assignment in conformity with the Plan” used in this and the following Articles is defined in Article 1.

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* In such a case provision 4.1.18 does not apply.

[5a] For assignments using analogue modulation, the intention not to employ energy dispersal in accordance with § 3.18 of Annex 5 shall be treated as a modification and thus subject to the appropriate provisions of this Article.

~~[2] The intention not to employ energy dispersal in accordance with § 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.~~

~~**4.3 Proposed modifications to a frequency assignment in conformity with one of the Regional Plans or inclusion in that Plan of a new frequency assignment**~~

~~*For Regions 1 and 3:*~~

~~4.3.1 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Regions 1 and 3 Plan, or the inclusion of a new frequency assignment in that Plan, shall seek the agreement of those administrations:~~

~~4.3.1.1 of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service in the same or adjacent channel which is in conformity with the Regions 1 and 3 Plan, or in respect of which proposed modifications to that Plan have already been published by the Bureau in accordance with the provisions of § 4.3.5.1 or 4.3.6 of this Article; *or*~~

~~4.3.1.2 of Region 2 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Region 2 Plan, or in respect of which proposed modifications to that Plan have already been published by the Bureau in accordance with the provisions of § 4.3.5.1 or 4.3.6 of this Article; *or*~~

~~4.3.1.3 (SUP - WRC 97)~~

~~4.3.1.4 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*~~

~~4.3.1.5 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 International Frequency Register (Master Register) or which has been coordinated or is being coordinated under the provisions of No. **S9.7**, or those of § 7.2.1 of this Appendix;~~

~~4.3.1.6 whose services are considered to be affected.~~

~~4.3.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.~~

~~*For Region 2:*~~

4.3~~2~~.3 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 Plan, or the inclusion of a new frequency assignment in that Plan, shall seek the agreement of those administrations:

~~4.3.3.1 of Region 2 having a frequency assignment in the Region 2 Plan to a space station in the broadcasting-satellite service in the same or adjacent channel which is in conformity with that Plan, or in respect of which proposed modifications to that Plan have already been published by the Bureau in accordance with the provisions of § 4.3.5.1 or 4.3.6 of this Article; *or*~~

~~4.3.3.2~~*a)* of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Regions 1 and 3 Plan~~, or in respect of which proposed modifications to that Plan have already been published by the Bureau in accordance with the provisions of § 4.3.5.1 or 4.3.6 of this Article~~; *or*

~~4.3.3.3~~*~~b)~~* ~~(SUP WRC 97)~~of Regions 1 and 3 having a frequency assignment included in the List or for which complete Appendix **S4** information has been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

c) of Region 2 having a frequency assignment in the Region 2 Plan to a space station in the broadcasting-satellite service in the same or adjacent channel which is in conformity with that Plan, or in respect of which proposed modifications to that Plan have already been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article; *or*

~~4.3.3.4~~*~~d)~~* 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*

~~4.3.3.5~~*~~e)~~* 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 for which ~~has been coordinated or is being coordinated~~complete coordination information has been received by the Bureau for coordination under ~~the provisions of~~ No. **S9.7** or ~~those of~~under § 7.~~2.~~1 of this Appendix; *or*

~~4.3.3.6~~*~~f)~~* 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*~~*i)* is recorded in the Master Register, *or*

~~*b*~~*ii)* ~~has been coordinated or is being coordinated~~for which complete coordination information has been received by the Bureau for coordination ~~under the provisions of Resolution **33 (Rev.WRC-97)**, *or*~~ under No. **S9.7**[7a] or under § 7.1 of this Appendix;

~~*c)* appears in a Region 3 Plan to be adopted at a future radiocommunication conference, taking account of modifications to that Plan which may be introduced in accordance with the Final Acts of the Conference;~~

4.~~3.3.7~~2.4 whose services are considered to be affected.

4.~~3.4~~2.5 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

~~*For all Regions:*~~

4.~~3.5~~2.6 An administration intending to modify characteristics in ~~one of~~ the Region~~al~~ 2 Plan~~s~~ shall send to the Bureau, not earlier than ~~five~~eight years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in ~~Annex 2~~Appendix **S4**. Modifications to that Plan involving additions under § 4.2.1 *b)* shall lapse if the assignment is not brought into use by that date.

[7a] Or under Resolution **33 (Rev.WRC-97)** for assignments for which the API or the request for coordination has been received by the Bureau prior to 1 January 1999.

4.2.7 If the information received by the Bureau under § 4.2.6 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

~~4.3.5.1 Where as a result of the intended modification the limits defined in Annex 1 are not exceeded, this fact shall be indicated when submitting to the Bureau the information required by § 4.3.5. The Bureau shall then publish this information in a special section of its Weekly Circular.~~

~~4.3.5.2 In all other cases the administration shall notify the Bureau of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in § 4.3.1 or § 4.3.3, as well as of those with which agreement has already been reached.~~

4.~~3.6~~2.8 The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of § ~~4.3.1 or § 4.3.3~~4.2.3. The Bureau shall ~~include the names of those administrations with the information received under § 4.3.5.2 and shall~~ publish, in a special section of its IFIC, the complete information ~~in a special section of its Weekly Circular~~received under § 4.2.6, together with the names of the affected administrations, FSS networks and BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the ~~appropriate~~ Region~~al~~ 2 Plan.

4.~~3.7~~2.9 The Bureau shall send a telegram/fax to the administrations listed in the special section of the ~~Weekly Circular~~IFIC drawing their attention to the information it contains and shall send them the results of its calculations.

4.~~3.8~~2.10 An administration which feels that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Bureau to include its name. The Bureau shall study this request on the basis of Annex 1 and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the ~~appropriate~~ Region~~al~~ 2 Plan.

4.~~3.9~~2.11 Any modification to a frequency assignment which is in conformity with the ~~appropriate~~ Region~~al~~ 2 Plan or any inclusion in that Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 shall be subject to the agreement of all administrations whose services are considered to be affected.

4.~~3.10~~2.12 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

4.~~3.11~~2.13 Comments from administrations on the information published pursuant to § ~~4.3.6~~4.2.8 should be sent either directly to the administration proposing the modification or through the Bureau. In any event the Bureau shall be informed that comments have been made.

4.~~3.12~~2.14 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the ~~Weekly Circular~~IFIC referred to in § ~~4.3.5.1 or § 4.3.6~~4.2.8 shall be understood to have agreed to the proposed assignment. This time limit may be extended by up to three months for an administration that has requested additional information under § ~~4.3.10~~4.2.12 or for an administration that has requested the assistance of the Bureau under § ~~4.3.20~~4.2.22. In the latter case the Bureau shall inform the administrations concerned of this request.

4.~~3.13~~2.15 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § ~~4.3.5~~4.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.~~3.14~~2.16 If no comments have been received on the expiry of the periods specified in § ~~4.3.12~~4.2.14, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.~~3.15~~2.17 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.~~3.16~~2.18 When the proposed modification to the ~~appropriate~~ Region~~al~~ 2 Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.~~3.17~~2.19 The Bureau shall publish in a special section of its ~~weekly circular~~IFIC the information received under § ~~4.3.14~~4.2.16 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the ~~appropriate~~ Region~~al~~ 2 Plan and will be considered as a frequency assignment in conformity with the Plan.

4.~~3.18~~2.20 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement from an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.~~3.19~~2.21 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.~~3.20~~2.22 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau~~, particularly in seeking the agreement of another administration~~.

4.~~3.21~~2.23 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Bureau.

4.2.~~2~~4 Cancellation of frequency assignments

When a frequency assignment in conformity with ~~one of the~~ Region~~al~~ 2 Plan~~s~~ is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a special section of its ~~weekly circular~~IFIC and delete the assignment from the ~~appropriate~~ Region~~al~~ 2 Plan.

4.2.25 Master copy of the Region 2 Plans

~~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.~~

~~*b)*~~4.2.25.1 The Bureau shall maintain an up-to-date master copy of the Region 2 Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure specified in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference and those derived from all modifications to the Plan as a result of the successful completion of the modification procedure described in this Article. ~~The Bureau shall prepare a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure described in this Article.~~

~~4.5.2~~2.25.2 ~~The Secretary-General shall be informed by the Bureau of any modifications made to the Regional Plans and shall publish an up-to-date version of those Plans in an appropriate form.~~ An up-to-date version of the Region 2 Plan shall be published by the Secretary-General when justified by the circumstances.

MOD

ARTICLE 6

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to terrestrial stations or to earth stations in the fixed-satellite service (Earth-to-space) 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)[5]

SUP

6.1.1 to 6.3.41

ADD

6.1 The provisions of **S9.19** and the associated provisions under Articles **S9** and **S11**, are applicable in respect of frequency assignments to broadcasting-satellite stations in the 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:

a) to transmitting terrestrial stations in the frequency band 11.7-12.7 GHz in all Regions;

b) to transmitting earth stations in the fixed-satellite service in the band 12.5-12.7 GHz (in Region 1).

6.2 In applying the procedures referred to in § 6.1, the provisions of Appendix **S5** are replaced by the following:

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[5] These procedures do not replace the procedures prescribed for terrestrial stations in Articles **S9** and **S11**.

6.2.1 These procedures are to be applied in respect of administrations whose territory is included within the service area associated with:

a) assignments in conformity with the appropriate Regional Plan in Appendix **S30**;

b) assignments included in the Regions 1 and 3 List;

c) assignments for which the procedure of Article 4 of this Appendix has been initiated, from the date of receipt of the complete Appendix **S4** information under 4.1 or 4.2.

6.2.2 Criteria to be applied are these given in Annex 3 to this Appendix.

MOD

ARTICLE 7

Procedures for coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) 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), and to stations in the broadcasting-satellite service in the frequency band 12.5-12.7 GHz (in Region 3) when frequency assignments to broadcasting-satellite stations ~~in conformity with the Regions 1 and 3 Plan, or the Region 2 Plan, respectively,~~in the 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 are involved[8]

SUP

7.1.1 to 7.8.6

ADD

7.1 The provisions of **S9.7**[9] and the associated provisions under Articles **S9** and **S11** are applicable in respect of frequency assignments to broadcasting-satellite stations in the 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:

a) to transmitting space stations in the fixed-satellite service in the band 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); and

b) to transmitting space stations in the broadcasting-satellite service in the frequency band 12.5-12.7 GHz (in Region 3).

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[8] These provisions do not replace the procedures prescribed in Articles **S9** and **S11** when stations other than those ~~of the~~in the planned broadcasting-satellite service are involved.

[9] The provision of Resolution **33 (Rev.WRC-97)** are applicable to space stations in the BSS for which the API or the request for coordination has been received by the Bureau prior to 1 January 1999.

7.2 In applying the procedures referred to in § 7.1, the provisions of Appendix **S5** are replaced by the following:

7.2.1 The frequency assignments to be taken into account are:

a) the assignments in conformity with the appropriate Regional Plan in Appendix **S30**;

b) the assignments included in the Regions 1 and 3 List;

c) the assignments for which the procedure of Article 4 of this Appendix has been initiated, from the date of receipt of the complete Appendix **S4** information under 4.1 or 4.2.

7.2.2 Criteria to be applied are those given in Annex 4 of this Appendix.

APPENDIX S30A

ARTICLE 1

General definitions

MOD

1.1 *Regions 1 and 3 feeder link Plan:* The Plan for the feeder-links in the frequency bands 14.5-14.8 GHz[2] and 17.3-18.1 GHz for the broadcasting-satellite service in Regions 1 and 3 contained in this Appendix ~~together with any modifications resulting from the successful application of the procedure of Article 4 herein referred to as the Regions 1 and 3 Plan~~.

1.2 *Region 2 feeder link Plan:* The Plan for the feeder-links in the frequency band 17.3-17.8 GHz for the broadcasting-satellite service in Region 2 contained in this Appendix, together with any modifications resulting from the successful application of the procedure of Article 4 herein referred to as the Region 2 Plan.

MOD

1.3 *Frequency assignment in conformity with the Plans:* Any frequency assignment for a receiving space station or transmitting earth station which appears in the Regions 1 and 3 Plan or any frequency assignment for a receiving space station or transmitting earth station which appears in the Region 2 Plan or for which the procedure of Article 4 has been successfully applied.

1.4 *1983 Conference:* Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz and Associated Feeder-links in the Frequency Band 17.3-17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC Sat-R2), Geneva, 1983.

1.5 *1985 Conference:* 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, called in short WARC Orb-85.

1.6 *1988 Conference:* Second Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1988, called in short WARC Orb-88.

ADD

1.7A *1997 Conference:* World Radiocommunication Conference (Geneva, 1997).

1.7B *2000 Conference:* World Radiocommunication Conference (Istanbul, 2000) called in short WRC-2000.

ADD

1.8 *Additional use in Regions 1 and 3*: for the application of the provisions of this Appendix, additional uses in Regions 1 and 3 are:

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[2] This use the band 14.5-14.8 GHz is reserved for countries outside Europe.

a) use of assignments with characteristics different from those appearing in the Regions 1 and 3 Plan and which are capable of causing more interference than the corresponding entries in the Plan;

b) use of assignments in addition to those appearing in the Plan.

ADD

1.9 *Regions 1 and 3 List of additional uses (hereafter called in short "the List")*: The list of assignments for additional uses in Regions 1 and 3 as established by WRC-2000, as updated following the successful application of the procedure of § 4.1 of Article 4 of this Appendix.

ARTICLE 2

Frequency bands

NOC

2.1

ADD

2.2 The use of the guardbands of the Plans in Appendix **S30A**, as defined in sections 3.1 and 4.1 of Annex 3 to this Appendix, to provide space operations functions in accordance with No. **S1.23** in support of GSO BSS networks operation, shall be coordinated with the assignments subject to these Plans using the provisions of Article 7 of this Appendix. Coordination among assignments intended to provide these functions and services not subject to a Plan shall be effected using the provisions of No. **S9.7** and the associated provisions of Articles **S9** and **S11**. Coordination of modifications to the Region 2 Plan, or assignments to be included in the Regions 1 and 3 List, with assignments intended to provide these functions shall be effected using paragraph 4.1.1 *d)* as appropriate, of Article 4 of Appendix **S30A**.

ARTICLE 3

Execution of the provisions and associated Plans

3.1 The Member States 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.

3.2 The Member States shall not change the characteristics specified in the Region 1 and Region 3 Plans 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.

3.3 The procedures for the use of interim systems in Region 2 for feeder-links in the fixed-satellite service for the bands covered by this Appendix are given in Resolution **42 (Rev.Orb-88)**.

ADD

3.4 The Plan for Regions 1 and 3 is based on national coverage from the geostationary-satellite orbit. The associated procedures contained in this Appendix are intended to promote long-term flexibility of the Plan and to avoid monopolization of the planned bands and orbit by a country or a group of countries.

ARTICLE 4

MOD

Procedure for modifications to the Region 2 Plans or for additional uses in Regions 1 and 3

ADD

4.1 Provisions applicable to Regions 1 and 3

4.1.1 An administration proposing to include a new or modified assignment in the List shall seek the agreement of those administrations whose services are considered to be affected, i.e. administrations[1a,2a]:

a) of Regions 1 and 3 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service, in the same channel or an adjacent channel which is included in the Regions 1 and 3 Plan, *or*

b) of Regions 1 and 3 having a feeder-link frequency assignment included in the List or for which complete Appendix **S4** information has already been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

c) of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Region 2 feeder-link Plan, or in respect of which proposed modifications to that Plan have already been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article; *or*

d) of Region 2 having a feeder-link frequency assignment in the band 17.8-18.1 GHz in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. **S9.7**, or under § 7.1 of this Appendix.

[1a] [The provisions of Resolution **53 (Rev.WRC-2000)** are applicable.]

[2a] Agreement with administrations having a frequency assignment in the bands 14.5-14.8 GHz or 17.7-18.1 GHz to a terrestrial station, or having a frequency assignment in the band 17.7-18.1 GHz to an earth station in the fixed-satellite service (space-to-Earth), or having a frequency assignment in the band 17.3-17.8 GHz in the broadcasting-satellite service shall be sought respectively under No. **S9.17** or No. **S9.17A** or No. **S9.19**.

4.1.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

4.1.3 An administration intending to include a new or modified assignment in the List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix **S4**. An assignment in the List shall lapse if it is not brought into use by that date.[4a]

4.1.4 If the information received by the Bureau under paragraph 4.1.3 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

4.1.5 The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected. The Bureau shall publish, in a Special Section of its International Frequency Information Circular (IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, FSS networks and BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the assignment.

4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the Special Section of the IFIC drawing their attention to the information it contains and shall send them the results of its calculations.

4.1.7 An administration which considers that it should have been identified in the publication referred to under paragraph 4.1.5 above shall, within four months of the date of publication of the relevant IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under paragraph 4.1.5.

4.1.8 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

4.1.9 Comments from administrations on the information published pursuant to § 4.1.5 should be sent either directly to the administration proposing the modification or through the Bureau. In any event the Bureau shall be informed that comments have been made.

4.1.10 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the IFIC referred to in § 4.1.5 shall be understood to have agreed to the proposed assignment. This time-limit may be extended:

– for an administration that has requested additional information under § 4.1.8 by up to three months, *or*

– for an administration that has requested the assistance of the Bureau under § 4.1.21 by up to three months following the date at which the Bureau communicated the result of its action.

4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

[4a] [The provisions of Resolution **533 (Rev.WRC-2000)** are applicable.]

4.1.12 If no comments have been received on the expiry of the periods specified in § 4.1.10, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.1.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.1.14 When the proposed assignment involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.1.15 The Bureau shall publish in a Special Section of the IFIC the information received under § 4.1.12 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall be included in the List.

4.1.16 In case of disagreement from an administration whose agreement has been sought, the requesting administration should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.1.17 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by either one of these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.1.18 If in spite of the application of paragraphs 4.1.16 and 4.1.17, there is still continuing disagreement and the notifying administration insists that the proposed assignment be included in the List, the Bureau shall enter the assignment provisionally in the List with an indication of those administrations whose assignments were the basis of the disagreement. However, the entry shall be changed from provisional to definitive recording in the List only if the Bureau is informed that the new assignment in the List has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made.

4.1.19 Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. **S11.44** (for the non-planned services), or in paragraph 4.1 (for assignments in the List or having initiated the procedure under paragraph 4.1), as appropriate, then the status of the assignment in the List shall be reviewed accordingly.

4.1.20 Should harmful interference be caused by an assignment included in the List under paragraph 4.1.18 to any recorded assignment in the MIFR which was the basis of the disagreement, the administration using the frequency assignment included in the List under paragraph 4.1.18 shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

4.1.21 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau.

4.1.22 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Bureau.

4.1.23 When a frequency assignment included in the List is no longer required, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a Special Section of its IFIC and delete the assignment from the List.

4.1.24 No assignment in the List shall have a period of operation exceeding 15 years, counted from the date of bringing into use, or 2 June 2000, whichever is later. Upon request by the responsible administration received by the Bureau at the latest three years before the expiry of this period, this period may be extended by up to 15 years, on the condition that all the characteristics of the assignment remain unchanged.

4.1.25 When an administration already having included in the List two assignments (not including those systems notified on behalf of a group of named administrations and included in the List by WRC-2000) in the same channel and covering the same service area, proposes to include in the List a new assignment in the same channel over this service area, it shall apply the following in respect of another administration which has no assignment in the List in the same channel and which proposes to include in the List a new assignment:

a) If the agreement of the former administration is required following the application of paragraph 4.1 by the latter administration, in order to protect the new assignment proposed by the former administration from interference caused by the assignment proposed by the latter administration, both administrations shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

b) in case of continuing disagreement, and if the former administration has not communicated to the Bureau the information specified in Annex 2 of Resolution **49 (WRC-2000)**, this administration shall be deemed to have given its agreement to the inclusion in the List of the assignment of the latter administration.

4.1.26 This procedure may be applied by the administration of a new ITU Member State in order to include new assignments in the List. Upon completion of the procedure, the next World Radiocommunication Conference may be requested to consider, among the assignments included in the List after the successful completion of this procedure, the inclusion in the Plan of up to 10 channels (for Region 1) and 12 channels (for Region 3), over the national territory of the new Member State.

4.1.27 When an administration has successfully applied this procedure and received all the agreements[*] required to include in the List assignments over its national territory, at an orbital location and/or in channels different from those appearing in the Plan for this country, it may request the forthcoming World Radiocommunication Conference to consider the inclusion in the Plan of up to ten (for Region 1) and up to twelve (for Region 3) of these assignments, as a replacement to its assignments appearing in the Plan.

4.1.28 The List as updated shall be published periodically by the Bureau.

4.1.29 New or modified assignments in the List shall be limited to digital modulation.

[*] In such a case provision 4.1.18 does not apply.

ADD

4.2 Provisions applicable to Region 2

MOD

4.14.2.1 When an administration intends to make a modification to ~~one of the Regional~~the Region 2 Plan~~s~~, 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~~Region 2 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 Region 2 Plan a new frequency assignment in the fixed-satellite service; *or*

c) to cancel a frequency assignment in the fixed-satellite service,

the following procedure shall be applied before any notification of the frequency assignment is made to the Radiocommunication Bureau (see Article 5 and Resolution **42 (Rev.Orb-88)**).

~~4.1.1 Before an administration proposes to include in the Plan, under the provisions of § 4.1 *b)*, a new frequency assignment to a space station or to include in the Plan new frequency assignments to a space station whose orbital position is not designated in the Plan for this administration, all the assignments to the service area involved should have been Brought into service or have been notified to the Bureau in accordance with the relevant provisions of the Plan.~~

~~**4.2 Proposed modifications to a frequency assignment in conformity with one of the Regional Plans or proposed inclusion in that Plan of a new frequency assignment**~~

~~*For Regions 1 and 3*~~

~~4.2.1 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Regions 1 and 3 Plan or the inclusion of a new frequency assignment in that Plan shall seek the agreement of those administrations:~~

~~4.2.1.1 of Regions 1 and 3 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, in the same orbital position or an adjacent orbital position in the range ±12.5°, which appears in the Plan or in respect of which proposed modifications to the Plan have already been published by the Bureau in accordance with the provisions of § 4.2.6.1 and 4.2.7 of this Article; *or*~~

~~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** and which is located within the coordination area of the feeder-link fixed-satellite earth station; *or*~~

~~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*~~

~~4.2.1.4 having an assignment for feeder-links in the fixed-satellite service (Earth-to-space) with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Region 2 feeder-link Plan, or in respect of which proposed modifications to the Plan have already been published by the Bureau in accordance with the provisions of § 4.2.6.1 and 4.2.7 of this Article;~~

~~4.2.1.5 which are considered affected.~~

~~4.2.1.6 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.~~

~~4.2.2 The agreement referred to in § 4.2.1 is not required when an administration proposes to bring into use, with characteristics[3] appearing in the Plan, a fixed feeder-link earth station or a transportable feeder-link earth station in the bands 14.5-14.8 GHz or 17.3-18.1 GHz.~~

~~*For Region 2*~~

4.2.3~~2~~ An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 Plan or the inclusion of a new frequency assignment in that Plan shall seek the agreement of those administrations*3bis*,*3ter*

~~4.2.3.1 of Region 2 having a feeder-link frequency assignment in the fixed- satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the Plan have already been published by the Bureau in accordance with the provisions of § 4.2.6.1 and 4.2.7 of this Article; *or*~~

~~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** and which is located within the coordination area of the feeder-link fixed-satellite earth station; *or*~~

~~4.2.3.3 having a frequency assignment in the band 17.7-17.8 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*~~

~~4.2.3.4~~*a)* having an assignment for feeder-links in the fixed-satellite service (Earth-to-space) with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Regions 1 and 3 feeder-link Plan~~, or in respect of which proposed modifications to the Plan have already been published by the Bureau in accordance with the provisions of § 4.2.6.1 and 4.2.7 of this Article~~; *or*

~~[3] The power to be taken into account is obtained by adding the values specified in columns 13 and 14 of the Plan.~~

3bis Agreement with administrations having a frequency assignment in the bands 17.7-17.8 GHz to a terrestrial station or to an earth station in the fixed-satellite service (space-to-Earth) shall be sought respectively under No. **S9.17** or No. **S9.17A**.

3ter Agreement with administrations having a frequency assignment in the band 17.3-17.8 GHz to an earth station in the broadcasting-satellite service shall be sought under No. **S9.19**.

b) of Regions 1 and 3 having a feeder-link frequency assignment included in the List or for which complete Appendix **S4** information has already been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

c) of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the Plan have already been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article; *or*

4.2.3~~.5~~ which are considered affected.

4.2.3~~.6~~4 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

4.2.4~~5~~ The agreement referred to in § 4.2.3~~2~~ is not required when an administration proposes to bring into use, with characteristics appearing in the Plan, a fixed feeder-link earth station in the band 17.3-17.8 GHz or a transportable feeder-link earth station in the band 17.3-17.7 GHz. Administrations may communicate to the Bureau the characteristics of such earth stations for inclusion in the Plan.

~~*For all Regions*~~

4.2.5~~6~~ An administration intending to modify characteristics in ~~one of the Regional~~the Region 2 Plan~~s~~ shall send to the Bureau, not earlier than eight years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in ~~Annex 2~~Appendix **S4** ~~to this Appendix~~. Modifications to that Plan involving additions under § 4.2.1 *b)* shall lapse if the assignment is not brought into use by that state.

4.2.7 If the information received by the Bureau under paragraph 4.2.6 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

~~4.2.6 If an administration wishes to modify its assignments in the Plans contained in Appendices **S30** and **S30A**, the eight-year period of § 4.2.5 will be applicable in lieu of the five-year period specified in § 4.3.5 of Appendix **S30**.~~

~~4.2.6.1 Where as a result of the intended modification the limits defined in Annex 1 are not exceeded, this fact shall be indicated when submitting to the Bureau the information required by § 4.2.5. The Bureau shall then publish this information in a special section of its Weekly Circular.~~

~~4.2.6.2 In all other cases the administration shall notify the Bureau of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in § 4.2.1 and 4.2.3 as well as of those with which agreement has already been reached.~~

4.2.7~~8~~ The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of § ~~4.2.1 and 4.2.3~~4.2.2. The Bureau ~~shall include the names of those administrations with the information received under § 4.2.6.2 and~~ shall publish, in a special section of its IFIC, the complete information ~~in a special section of its Weekly Circular~~received under § 4.2.6, together with the names of the affected administrations, FSS and BSS networks and feeder-link BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the Region 2 Plan.

4.2.8~~9~~ The Bureau shall send a telegram/fax to the administrations listed in the special section of the ~~weekly circular~~IFIC drawing their attention to the information it contains and shall send them the results of its calculations.

4.2.~~9~~10 An administration which feels that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Bureau to include its name. The Bureau shall study this request on the basis of Annex 1 and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the Region 2 Plan.

4.2.1~~0~~1 Any modification to a frequency assignment which is in conformity with the Region 2 Plan or any inclusion in ~~the~~that Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 shall be subject to the agreement of all affected administrations.

4.2.1~~1~~2 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

4.2.1~~2~~3 Comments from administrations on the information published pursuant to § 4.2.~~7~~8 should be sent either directly to the administration proposing the modification or through the Bureau. In any event the Bureau shall be informed that comments have been made.

4.2.1~~3~~4 An administration which has not notified its comments either to the administration seeking agreement or to the Bureau, within a period of four months following the date of the ~~Weekly Circular~~IFIC referred to in § ~~4.2.6.1 or § 4.2.7~~4.2.8 shall be understood to have agreed to the proposed modification. This time-limit may be extended by up to three months for an administration which has requested additional information under § 4.2.1~~1~~2 or for an administration which has requested the assistance of the Bureau under § 4.2.2~~1~~2. In the latter case the Bureau shall inform the administrations concerned of this request.

4.2.1~~4~~5 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.2.~~5~~ and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.2.1~~5~~6 If no comments have been received on the expiry of the periods specified in § 4.2.1~~3~~4, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.2.1~~6~~7 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.2.1~~7~~8 When the proposed modification to the Region 2 Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.2.1~~8~~9 The Bureau shall publish in a special section of its ~~Weekly Circular~~IFIC the information received under § 4.2.1~~5~~6 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the Region 2 Plan and will be considered as a frequency assignment in conformity with the Plan.

4.2.~~19~~20 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement from an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome

the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.2.2~~0~~1 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.2.2~~1~~2 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau~~, particularly in seeking the agreement of another administration~~.

4.2.2~~2~~3 The relevant provisions of Article 5 shall be applied when frequency assignments are notified to the Bureau.

~~4.3~~4.2.24 Cancellation of frequency assignments

When a frequency assignment in conformity with ~~one of the Regional~~the Region 2 Plan~~s~~ is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a special section of its ~~weekly circular~~IFIC and delete the assignment from the Region 2 Plan.

~~4.4~~4.2.25 Master copies of the Plans

~~4.4.1 The Bureau shall maintain up-to-date master copies of the Plans as well as master copies of the margin reports, including for each assignment the overall equivalent protection margins in respect of Region 2 and the feeder-link equivalent protection margins and the overall equivalent protection margins in respect of Regions 1 and 3, taking account of the application of the procedure specified in this Article. Each master copy of the margin reports shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference in the case of Region 2 and the feeder-link equivalent protection margins and the overall equivalent protection margins for the 1988 Conference in the case of Regions 1 and 3 and those derived from all modifications to the Plans as a result of the successful completion of the modification procedure of this Article.~~

4.2.25.1 The Bureau shall maintain an up-to-date master copy of the Region 2 Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure specified in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference and those derived from all modifications to the Plan as a result of the successful completion of the modification procedure described in this Article.

4.~~4~~.2~~2~~.25.2 ~~The Secretary-General shall be informed by the Bureau of any modifications made to the Regional Plans and shall publish up-to-date versions of the Plans in an appropriate form~~An up-to-date version of the Region 2 Plan shall be published by the Secretary-General when justified by the circumstances.

ARTICLE 6

Procedure concerning coordination, notification and recording in the Master International Frequency Register of frequency assignments to receiving terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the band 17.7-17.8 GHz, when frequency assignments to feeder-link transmitting earth stations for the broadcasting-satellite service in conformity with the Regions 1 and 3 Plan or the Region 2 Plan are involved

MOD

6.1 Administrations planning to implement assignments for terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the 17.7-17.8 GHz band should evaluate the level of interference assessed on the basis of coordination contours calculated in accordance with Appendix **S7**[5], which might be caused by ~~the closest~~a feeder-link earth station ~~which could be~~ located ~~on the border of~~within the territory of another administration and included in the service area of an assignment to a BSS feeder-link space station which is in conformity with the appropriate Regional Plan. Should the administration planning terrestrial stations find that interference may be caused by such a feeder-link earth station, it may request the administration responsible for the feeder-link earth station to indicate the geographical coordinates, the antenna characteristics and the elevation angle of the horizon around its actual and planned feeder-link earth stations.

NOC

6.2 In the case of Region 2, when the entry in the Plan contains information on specific earth stations, this shall be used in the interference calculations mentioned in § 6.1 above. When such information is not contained in the Region 2 Plan, an administration which receives a request under § 6.1 shall, within a period of three months, communicate the details of the feeder-link earth stations to the administration planning the terrestrial station, and to the Bureau in order to update the Plan.

MOD

6.3 In the case of Regions 1 and 3, an administration which receives a request under § 6.1 shall, within a period of ~~three~~four months, communicate the details of the feeder-link stations to the administration planning the terrestrial station, and to the Bureau for information.

MOD

6.4 If, at the end of a period of ~~three~~four months, the administration responsible for the terrestrial station does not receive a reply, it may request the assistance of the Bureau.

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[5] In the case of Regions 1 and 3, the feeder-link earth-station power to be taken into account is obtained by adding the values specified in columns [13 and 14] of the Plan.

MOD

6.5 If the administration responsible for the feeder-link earth station does not communicate to the Bureau, within a period of ~~three~~four months, the information requested under § 6.1, this administration shall only implement its feeder-link earth station provided it does not cause harmful interference to the terrestrial station under consideration.

NOC

6.6 If, as a result of the application of this Article, an agreement is reached with the administration responsible for the feeder-link earth station or no comments have been received, the administration responsible for the terrestrial station may notify this station under Article **S11** for recording in the Master Register. A remark shall be included indicating either that an agreement has been reached or that no comments have been received.

MOD

ARTICLE 7

Procedure concerning coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-eEarth) in Regions 1, 2 and 3 in the band 17.7-18.1 GHz ~~and in Region 2 in the band 17.7-17.8 GHz~~, to stations in the fixed-satellite service (Earth-to-space) in Region 2 in the band 17.8-18.1 GHz and to stations in the broadcasting-satellite service in Region 2 in the band 17.3-17.8 GHz when frequency assignments to feeder-links for broadcasting-satellite stations ~~appearing~~ in the 17.3-18.1 GHz band in~~the~~ Regions 1 and 3 ~~Plan~~ or in the band 17.3-17.8 GHz in Region 2 ~~Plan~~ are involved

ADD

Section I – Coordination of transmit space or earth stations in the fixed-satellite service or transmit space stations in the broadcasting-satellite service with assignments to BSS feeder links

MOD

7.1 The provisions of No. **S9.7**[5*bis*] and the associated provisions under Articles **S9** and **S11** ~~and Appendix **S8**~~ are applicable to transmitting space stations in the fixed-satellite service in the band 17.7-18.1 GHz, to transmitting earth stations in the fixed-satellite service in Region 2 in the band 17.8-18.1 GHz and ~~the provisions of Resolution **33** are applicable~~ to transmitting space stations in the broadcasting-satellite service in Region 2 in the band 17.3-17.8 GHz ~~together with the provisions of Annex 4, except that in relation to feeder-link stations, the relevant criteria mentioned in Appendix **S8** are replaced by those given in Section 1 of Annex 4~~.

5*bis* The provisions of Resolution **33 (Rev.WRC-97)** are applicable to space stations in the BSS for which the API or the request for coordination has been received by the Bureau prior to 1 January 1999.

ADD

7.2 In applying the procedures referred to in § 7.1, the provisions of Appendix **S5** are replaced by the following:

7.2.1 The frequency assignments to be taken into account are:

a) the assignments in conformity with the appropriate Regional Plan in Appendix **S30A**;

b) the assignments included in the Regions 1 and 3 List;

c) the assignments for which the procedure of Article 4 of this Appendix has been initiated, from the date of receipt of the complete Appendix **S4** information under 4.1 or 4.2.

7.2.2 Criteria to be applied are those given in Annex 4 to the Appendix.

ADD

Section II – Coordination with assignments in conformity with the appropriate Regional Plan in Appendix S30A

MOD

7.~~2~~3 Administrations planning to implement assignments for receiving earth stations in all Regions ~~1 and 3~~ in the 17.7-18.1 GHz band ~~and in Region 2 in the 17.7-17.8 GHz band~~ in the fixed-satellite service (space-to-Earth) or in the 17.3-17.8 GHz band in the broadcasting-satellite service should evaluate the level of interference, assessed on the basis of coordination contours calculated in accordance with ~~Section 3 of Annex 4~~Appendix **S7**, which might be caused by ~~the closest~~a feeder-link earth station ~~which could be~~ located ~~on the border of~~ within the territory of another administration and included in the service area of an assignment to a BSS feeder-link space station which is in conformity with the appropriate Regional Plan. Should the administration planning receiving earth stations find that interference may be caused by such a feeder-link earth station, it may request the administration responsible for the feeder-link earth stations to indicate the geographical coordinates, the antenna characteristics and the elevation angle of the horizon around its actual and planned feeder-link earth stations.

MOD

7.~~3~~4 In the case of Region 2, when the entry in the Plan contains information on specific earth stations this shall be used in the interference calculations mentioned in § 7.2 above. When such information is not contained in the Plan an administration which receives a request under § 7.2 shall, within a period of ~~three~~four months, communicate the details of the feeder-link earth stations to the administration planning the receiving earth station, and to the Bureau in order to update the Plan.

MOD

7.~~4~~5 In the case of Regions 1 and 3, an administration which receives a request under § 7.2 shall, within a period of ~~three~~four months, communicate the details of the feeder-link earth stations to the administration planning the receiving earth station, and to the Bureau for information.

MOD

7.~~5~~6 If, at the end of the period of ~~three~~four months, the administration responsible for the fixed-satellite or broadcasting-satellite receiving earth station(s) does not receive a reply, it may request the assistance of the Bureau.

MOD

7.~~6~~7 If the administration responsible for the feeder-link earth stations does not communicate to the Bureau, within a period of ~~three~~four months, the information requested under § 7.2, this administration shall only implement its feeder-link earth station provided it does not cause harmful interference to the fixed-satellite or broadcasting-satellite earth station(s) under consideration.

NOC

7.~~7~~8 If, as a result of the application of this Article, an agreement is reached with the administration responsible for the feeder-link earth station or no comments have been received, and when the station is recorded in the Master Register in accordance with Article **S11**, the Bureau shall enter a remark indicating either that an agreement has been reached or that no comments have been received.

ADD

Section III – Coordination with assignments in the Regions 1 and 3 List, or for which the procedure of Article 4 of Appendix S30A has been initiated

7.9 The provisions of **S9.17A** and the associated provisions under Articles **S9** and **S11** and Appendix **S5,** are applicable to FSS and BSS receiving earth stations in respect of frequency assignments to transmit BSS feeder-link earth stations in the fixed-satellite service in the bands 17.3-18.1 GHz in Regions 1 and 3 and 17.3-17.8 GHz in Region 2, which correspond to assignments to receiving BSS feeder-link space stations already included in the Regions 1 and 3 List, or for which the procedure of Article 4 of Appendix S30A has been initiated, from the date of receipt of the complete Appendix **S4** information.

RESOLUTION [GT PLEN-1/3] (WRC-2000)

Studies relating to the review of the sharing procedures and criteria between receiving earth stations in the broadcasting-satellite service and transmitting earth stations or terrestrial stations in frequency bands allocated to the broadcasting-satellite service and the fixed-satellite service (Earth-to-space) or terrestrial services

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that receiving earth stations in the broadcasting-satellite service are ubiquitously deployed throughout the service area of the associated satellite network and therefore cannot be coordinated or notified on the basis of specific earth stations;

b) that coordination under Nos. **S9.17** and **S9.17A** of the Radio Regulations, respectively, and the associated provisions in Article **S11** only provide for the coordination and notification of specific earth stations with terrestrial stations or earth stations operating in the opposite direction of transmission, respectively;

c) that transmitting earth stations or terrestrial stations sharing spectrum with the broadcasting-satellite service are required to coordinate with receiving earth stations in this service under No. **S9.19** of the Radio Regulations;

d) that No. **S9.19** was introduced in the Radio Regulations by WRC-97 as a new provision, without specific criteria for sharing between these services;

e) that No. **S9.19** was modified by WRC-2000 to include the coordination of earth stations in opposite directions of transmission and the protection of typical earth stations in the broadcasting-satellite service;

f) that the harmonious development of terrestrial and space services in the bands allocated to the broadcasting-satellite service may be impeded in the absence of suitable procedures and associated sharing criteria;

g) that Appendix **S7** and Annex 3 of Appendix **S30** provide sharing criteria that may be reviewed and adjusted in order to cover the sharing situations mentioned above,

resolves to invite ITU-R

to undertake, as a matter of urgency, and complete, in time for consideration by WRC-03, the appropriate regulatory, operational and technical studies in the bands allocated to the broadcasting-satellite service and the fixed-satellite service (Earth-to-space) or terrestrial services consistent with the decisions of WRC-2000 on No. **S9.19**, in order to enable WRC-03 to review, and if appropriate revise, the regulatory and technical sharing conditions between these services, with a view to enable equitable access to spectrum by these services in these bands and ensure their harmonious development,

urges administrations

to participate actively in these studies, with the involvement of terrestrial, broadcasting-satellite and fixed-satellite service interests.

Proposals for modification of footnote S5.487

MOD

S5.487 In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to or claim protection from broadcasting-satellite stations operating in accordance with the provisions of the Regions 1 and 3 Plan of Appendix **S30**.

Proposals for modification of footnote S5.492

MOD

S5.492 Assignments to stations of the broadcasting-satellite service in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List 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 Plan~~. With respect to the space services, this band shall be used principally for the broadcasting-satellite service~~ or the List, as appropriate.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 475-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note by the Chairperson to GT PLEN-1 to the Plenary

DETERMINATION OF PLAN SYSTEMS AND LIST SYSTEMS

With respect to determining whether an assignment of an "existing" or "Part B" system, which is contained in the ongoing planning process and listed in Document 238, is to be incorporated in the new R1/R3 Plan or the List, GT PLEN-1 concluded as follows:

Systems of national service area ("existing"* and "Part B"** systems, which have not more than 10 channels for Region 1 and 12 channels for Region 3 (or the corresponding number entered by WRC-97)), are nominally included in the new R1/R3 Plan. Systems with multi-national coverage resulting from successful application of the Article 4 modification procedure are nominally included in the List. Administrations should be invited to opt accordingly. Once the option taken, the results are to be submitted to the Conference for approval.

_____

* Whenever the term "existing" is used in this document, it refers to notified assignments that are in conformity with Appendices S30 and S30A, which have been brought into use and for which the date of bringing into use has been confirmed to the Bureau before 1700 hours (Istanbul time) 12 May 2000.

** Whenever the term "Part B" is used in this document, it refers to the assignments for which the procedures of the Article 4 of the Appendices S30 and S30A have been successfully completed and provided due diligence information (when required) before 1700 hours (Istanbul time) 12 May 2000, but have not been brought into use and/or the date of bringing into use has not been confirmed to the Bureau.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 476-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document WRC2000/DT/127 **PLENARY MEETING**

Chairperson, Working Group 1 of the Plenary

LIST OF "EXISTING"[1] SYSTEMS INCLUDED IN THE REPLANNING PROCESS FOR SUBSEQUENT INCLUSION IN THE PLAN OR IN THE LIST

Table 1 of Document WRC2000/238 is reproduced in the Attachment to this document with the exception that the contents of Column 15 has been replaced with information related to the subsequent inclusion of these systems in the Plan or in the List according to the decision taken at the twelfth meeting of GT PLEN-1, Monday, 29 May 2000, at 0930 hours, i.e.: "existing" systems with national coverage, co-located with the national Plan beam at the same orbital position, and with the same or a smaller number of channels (i.e. same grouping). Other "existing" systems, as well as "Part B"[2] systems (i.e. those of Tables 2 and 3 of Document WRC2000/238), should be included in the List.

R. ZEITOUN
Chairperson, GT PLEN-1

Attachment: List of the "existing" systems included in the replanning process.

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[1] Whenever the term "existing" is used in this document, it refers to notified assignments that are in conformity with Appendices S30 and S30A, which have been brought into use and for which the date of bringing into use has been confirmed to the Bureau before 1700 hours (Istanbul time) 12 May 2000.

[2] Whenever the term "Part B" is used in this document, it refers to the assignments for which the procedures of the Article 4 of the Appendices S30 and S30A have been successfully completed and provided due diligence information (when required) before 1700 hours (Istanbul time) 12 May 2000, but have not been brought into use and/or the date of bringing into use has not been confirmed to the Bureau.

ATTACHMENT

TABLE 1

Satellite networks which satisfy the conditions of Principle 3 of Annex 1 to Resolution 532 (WRC-97); i.e. "existing" systems

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No.	**Adm.**	**Satellite network**	**Orbital position**	**Date of receipt for publication request**	**Special Section number**		**Date of receipt for publication request[3]**	**Date of bringing into use**	**Date of receipt of due diligence[4] information**	**Downlink e.i.r.p. (dBW)**		**Number of channels**		**PLAN or LIST Indicator**
				Part A	**AP30/E**	**AP30A/E**	**Part B**			**Min.**	**Max.**	**APS30**	**APS30A**	
1	ARS	ARABSAT-BSS1 (Channels 1-20)	26.0º E	08.08.95	73	69	12.05.00 16:47	01.04.99	29.09.98	50	50	20	19	LIST
2	E	HISPASAT-1 (27 MHz analog)	30.0º W	13.02.90	9	5	03.07.92	01.09.92	Yet to be provided[5]	57.6	57.6	5	5	PLAN
3	E	HISPASAT-1 (27 MHz digital)	30.0º W	13.02.90	9(Corr.1)	5(Corr.1)	16.08.99	01.12.95	21.09.98	57.6	57.6	5	5	PLAN
4	E	HISPASAT-1 (33 MHz digital)	30.0º W	13.10.94	9(Add.1)	5(Add.1)	18.10.99	01.12.98	22.12.99	57.6	57.6	5	5	PLAN
5	E	HISPASAT-2 (27 MHz analog)	30.0º W	07.03.91	14	11	25.07.95	16.02.00	16.06.99	59.0	59.0	10	10	LIST
6	E	HISPASAT-2 (27 MHz digital) (APS30 only)	30.0º W	07.03.91	14(Corr.1)	-	24.04.00	16.02.00	16.06.99	58.5	58.5	10	-	LIST

[3] The service areas associated to these networks are those initially received by the Radiocommunication Bureau under relevant provisions of Article 4 of Appendix S30 and their associated Rules of Procedure, in particular under paragraphs 4.3.14 for publication under paragraph 4.3.17.

[4] In accordance with Resolution 49 (WRC-97). Details of the administrative due diligence information are available in the BR secretariat (BSS team).

[5] To be provided before 21 November 2000 in accordance with *resolves* 3 of Resolution 49 (WRC-97).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No.	**Adm.**	**Satellite network**	**Orbital position**	**Date of receipt for publication request**	**Special Section number**		**Date of receipt for publication request[3]**	**Date of bringing into use**	**Date of receipt of due diligence[4] information**	**Downlink e.i.r.p. (dBW)**		**Number of channels**		**PLAN or LIST Indicator**
				Part A	**AP30/E**	**AP30A/E**	**Part B**			**Min.**	**Max.**	**APS30**	**APS30A**	
7	E	HISPASAT-3 (27/33 MHz digital) (APS30 only)	30.0º W	30.10.95	103	-	12.05.00 10:30	16.02.00	12.05.00 10:30	54.5	56	40	-	LIST
8	EGY	NILESAT-1S	7.0º W	24.10.94	41	37	12.05.00 16:15	28.04.98	02.05.00	51.7	52.0	18	18	LIST
9	F/EUT	EUTELSAT B-13E (APS30)	13.0º E	11.05.93	26	-	26.01.00	18.12.96	03.02.00	51.4	55.5	40	-	LIST
		(APS30A)			-	23	27.01.00			-	-	-	40	
10	F/EUT	EUTELSAT-36 (APS30A only)	36.00º E	17.03.95	-	59	25.04.00	27.04.00	06.04.00	-	-	-	40	LIST
11	J	BS-3M	110.0º E	Not applicable	Not applicable	Not applicable	Not applicable	31.03.96	Not applicable	63.2	64.4	8	8	PLAN
12	J	BS-3N	109.85º E	27.05.93	28	24	31.04.94	15.06.95	30.06.98	63.2	64.4	8	8	PLAN
13	KOR	KOREASAT-1 (analog)	116.0º E	15.10.90	12	9	15.11.95	05.02.96	04.04.00	63.6	63.7	6	6	PLAN
14	KOR	KOREASAT-1 (digital)	116.0º E	28.09.93	12 (Add.1)	9 (Add.1)	15.11.95	05.02.96	04.04.00	63.6	63.7	6	6	PLAN

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No.	**Adm.**	**Satellite network**	**Orbital position**	**Date of receipt for publication request**	**Special Section number**		**Date of receipt for publication request[3]**	**Date of bringing into use**	**Date of receipt of due diligence[4] information**	**Downlink e.i.r.p. (dBW)**		**Number of channels**		**PLAN or LIST Indicator**
				Part A	**AP30/E**	**AP30A/E**	**Part B**			**Min.**	**Max.**	**APS30**	**APS30A**	
15	KOR	KOREASAT-2 (digital)	113.0º E	28.09.93	22 (Add.1)	18 (Add.1)	12.05.00 16:24	30.12.99	04.04.00	51.4	51.9	6	6	LIST
16	LUX	DBL (APS30)	19.2º E	11.03.91 11.03.93	15 + Add.1	-	09.03.99	01.01.96	26.04.99	49.3	54.5	40	-	LIST
		(APS30A)		04.05.93 01.07.93	-	22 + Add.1	12.05.00 11:44			-	-	-	40	LIST
17	LUX	DBL-28.2E (APS30)	28.2º E	23.12.94	51	-	28.01.00	30.08.98	22.12.99	55.0	55.0	40	-	LIST
		(APS30A)			-	47	12.05.00 11:44			-	-	-	40	LIST
18	NOR	BIFROST-2	0.8º W	31.08.92	23	19	21.10.97	01.07.98	03.08.99	54.5	54.5	15	15	LIST
19	NOR	BIFROST	0.8º W	20.05.92	20	16	21.19.97	01.07.98	23.12.99	59.0	59.0	5	5	LIST#
20	RUS	RST-1	36.0º E	Not applicable	31	28	Not applicable	28.01.99	Not applicable	53.0	53.0	8	8	PLAN
21	S	TELE-X*	5.0º E	Not applicable	Not applicable	Not applicable	Not applicable	02.04.89	Not applicable	63.2	63.2	1	1	LIST#

Considered as additional assignments to those assigned to the national Plan beam of that administration according to its national preferences (see Document WRC2000/237).

* Sweden agreed to review the protection situation afforded to the TELE-X network (e.g. by reducing the protection ratios and the downlink power) in order to ease the replanning process.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No.	**Adm.**	**Satellite network**	**Orbital position**	**Date of receipt for publication request**	**Special Section number**		**Date of receipt for publication request[3]**	**Date of bringing into use**	**Date of receipt of due diligence[4] information**	**Downlink e.i.r.p. (dBW)**		**Number of channels**		**PLAN or LIST Indicator**
				Part A	**AP30/E**	**AP30A/E**	**Part B**			**Min.**	**Max.**	**APS30**	**APS30A**	
22	S	SIRIUS	5.2º E	12.08.91	17	13	19.04.93	01.04.95	Yet to be provided[6]	58.0	59.5	5	5	LIST
23	S	SIRIUS-W	13.0º W	25.08.92	21	17	04.02.00	04.05.00	09.03.00	52.9	52.9	5	5	LIST
24	S	SIRIUS-2** (APS30)	5.00º E	27.03.95	65+a1	-	05.05.00	21.11.97	30.06.98	51.5	57.0	25	-	LIST
		SIRIUS-2** (APS30A)			-	61	12.05.00 15:33	21.11.97	30.06.98	-	-	-	16	LIST
25	S	SIRIUS-3** (APS30)	5.20º E	11.04.95	66	-	05.05.00	01.12.99	31.12.99	57.0	57.0	13	-	LIST
		SIRIUS-3** (APS30A)			-	62	12.05.00 15:33			-	-	-	9	LIST

6 To be provided before 21 November 2000 in accordance with *resolves* 3 of Resolution 49 (WRC-97).

** Sweden accepted to apply for this network the new protection ratios specified by the IRG (i.e. dowlink co-channel: 21 dB, downlink upper and lower adjacent channels: 16 dB; feeder-link co-channel: 27 dB, feeder-link upper and lower adjacent channels: 22 dB), in order to ease the replanning process.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 477-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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	B.6/455	**ARTICLE S1** – S1.171 – S1.173 – S1.185 **ARTICLE S8** – S8.1.1 **ARTICLE S14** – S14.6 **ARTICLE S20** – S20.11 **ARTICLE S21** – S21.7 **APPENDIX S4, Annex 1A** **APPENDIX S4, Annex 1B** **APPENDIX S13** – Part A1, § 2 – Part A6, § 11 **APPENDIX S27** – Section II, Article 1 – Section II, Article 2, **S27**/222 **APPENDIX S42** – Call signs **RESOLUTION 8 (Rev.Mob-87)** **RESOLUTION 14** **RESOLUTION 23 (WRC-95)** **RESOLUTION 24 (WRC-95)**

RESOLUTION 25 (Rev.WRC-2000)
RESOLUTION 28 (Rev.WRC-2000)
RESOLUTION 30 (WRC-97)
RESOLUTION 50 (WRC-97)
RESOLUTION 52 (WRC-97)
RESOLUTION 54 (WRC-97)
RESOLUTION 60
RESOLUTION 70 (WARC-92)
RESOLUTION 72 (Rev.WRC-2000)
RESOLUTION 95 (Rev.WRC-2000)
RESOLUTION 406
RESOLUTION 411 (WARC-92)
RESOLUTION 412 (WARC-92)
RESOLUTION 500
RESOLUTION 703 (Rev.WRC-2000)
RESOLUTION 706 (Rev.WRC-2000)
RESOLUTION 716 (Rev.WRC-2000)
RESOLUTION 721 (WRC-97)
RESOLUTION 727 (Rev.WRC-2000)
RESOLUTION [COM4/1] (WRC-2000)
RECOMMENDATION 32 (Orb-88)
RECOMMENDATION 61
RECOMMENDATION 105 (WRC-95)
RECOMMENDATION 405
RECOMMENDATION 518 (HFBC-87)
RECOMMENDATION 711
RECOMMENDATION 720 (WRC-95)

Annex: 32 pages

ARTICLE S1

Terms and definitions

MOD

S1.171 *coordination area:* When determining the need for coordination, the area surrounding an *earth station* sharing the same frequency band with *terrestrial stations*, or surrounding a transmitting *earth station* sharing the same bidirectionally allocated frequency band with receiving *earth stations*, beyond which the level of *permissible interference* will not be exceeded and coordination is therefore not required.

MOD

S1.173 *coordination distance:* When determining the need for coordination, the distance on a given azimuth from an *earth station* sharing the same frequency band with *terrestrial stations*, or from a transmitting *earth station* sharing the same bidirectionally allocated frequency band with receiving *earth stations*, beyond which the level of *permissible interference* will not be exceeded and coordination is therefore not required.

MOD

S1.185 *inclination of an orbit* (of an earth satellite)*:* The angle determined by the plane containing the *orbit* and the plane of the Earth's equator measured in degrees between 0 and 180 and in counter-clockwise direction from the Earth's equatorial plane at the ascending node of the *orbit*.

ARTICLE S8

Status of frequency assignments recorded in the Master International Frequency Register

MOD

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[1] **S8.1.1** 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 Register. Additionally, wherever the expression relates to a geostationary or non-geostationary space station, it shall be associated with § A.4 of Annex 2A to Appendix **S4**, as relevant, and wherever the expression relates to an earth station associated with a geostationary or non-geostationary space station, it shall be associated with § A.4 *c)* of Annex 2A to Appendix **S4**, as relevant.

ARTICLE S14

Procedure for the review of a finding or other decision of the Bureau

MOD

S14.6 The decision of the Board on the review, to be taken in accordance with the Convention, shall be regarded as final in so far as the Bureau and the Board are concerned. That decision, together with the supporting information, shall be published as under No. **S14.4**. If the 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. However, if the administration which requested the review disagrees with the Board's decision it may raise the matter at a world radiocommunication conference.

ARTICLE S20

Service documents

SUP

S20.11

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

MOD

S21.7 5) Transhorizon systems in the 1 700-1 710 MHz, 1 980-2 010 MHz, 2 025-2 110 MHz and 2 200-2 290 MHz bands may exceed the limits given in Nos. **S21.3** and **S21.5**, but the provisions of Nos. **S21.2** and **S21.4** should be observed. Considering the difficult sharing conditions with other services, administrations are urged to keep the number of transhorizon systems in these bands to a minimum.

APPENDIX S4

Consolidated list and tables of characteristics for use in the application of the procedures of Chapter SIII

ANNEX 1A

List of characteristics of stations in the terrestrial services[1]

MOD

ITEM B – Notifying administration

Symbol of the notifying administration.

MOD

ITEM SYNC – Synchronized network

Symbol followed by the identification of the network, if the station concerned by the assignment pertains to a synchronized network.

ADD

ITEM 1AA – Usable frequency range

For MF/HF adaptive systems, the difference between the maximum and minimum assignable frequencies of a distinct frequency band.

SUP

ITEM 1D

MOD

ITEM 1E – Frequency offset, in terms of the line frequency

The carrier frequency offset expressed as a multiple of 1/12 of the line frequency of the television system concerned, expressed by a number (positive or negative).

ADD

ITEM 1E1 – Frequency offset (kHz)

The carrier frequency offset, in kHz, expressed by a number (positive or negative).

SUP

ITEM 1H

MOD

ITEM 3A – Call sign or station identification

The call sign or other identification used in accordance with Article **S19**.

MOD

ITEM 4A – Name of the location of the transmitting station

The name of the locality by which the transmitting station is known or in which it is situated.

MOD

ITEM 4B – Country or geographical area

Symbol of the geographical area in which the station is located.

SUP

ITEM 4F

MOD

ITEM 5A – Name of the location of the receiving station

The name of the locality by which the receiving station is known or in which it is situated.

MOD

ITEM 5B – Country or geographical area

Symbol of the geographical area in which the receiving station is located.

ADD

ITEM 7A1 – Frequency stability

Frequency stability for analogue television (RELAXED, NORMAL or PRECISION).

MOD

ITEM 7AA – Type of modulation

For HF broadcasting stations in their exclusive bands, a symbol which specifies the use of DSB, SSB or any new modulation techniques recommended by ITU-R.

ADD

ITEM 7B1 – Adjacent channel protection ratio

For assignments to stations of the broadcasting service covered by the LF/MF Broadcasting Agreement (Regions 1 and 3) (Geneva, 1975), the protection ratio (dB) to be used for adjacent channel interference calculations.

MOD

ITEM 7D – Transmission system

Symbol corresponding to the transmission system for an assignment to a VHF sound broadcasting station.

MOD

ITEM 8A – Power delivered to the antenna

The power delivered to the antenna transmission line expressed in dBW, with the exception of LF/MF sound broadcasting, for which the power delivered to the antenna shall be expressed in kW.

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**.

ADD

ITEM 8BA – Range of power control

In the case of systems where automatic power control is applied, the range of power control (dB) above the nominal power indicated in 8B.

MOD

ITEM 8BH – Maximum effective radiated power (dBW) – horizontal

The maximum effective radiated power of the horizontally polarized component (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments).

MOD

ITEM 8BV – Maximum effective radiated power (dBW) – vertical

The maximum effective radiated power of the vertically polarized component (for VHF sound broadcasting (BC) and VHF/UHF television broadcasting (BT) assignments).

MOD

ITEM 8D – Vision/sound power ratio

Vision/sound carrier power ratio for VHF/UHF analogue television broadcasting (BT) assignments.

MOD

ITEM 9A – Azimuth of maximum radiation

For a directional transmitting antenna, the azimuth of maximum radiation of the transmitting antenna in degrees (clockwise) from True North.

MOD

ITEM 9AA – Central azimuth of augmentation

The central azimuth of the augmentation (centre of the span) in degrees for an assignment to an MF broadcasting station in Region 2.

MOD

ITEM 9CA – Total span of augmentation

The total span of the augmentation in degrees for an assignment to an MF broadcasting station in Region 2.

SUP

ITEM 9H

MOD

ITEM 9I – Maximum radiation or r.m.s. value of radiation

The maximum radiation, in dB, relative to a cymomotive force (c.m.f.) of 300 V or an effective monopole radiated power (e.m.r.p.) of 1 kW, determined from the nominal power of the transmitter and the theoretical gain of the antenna without allowing for miscellaneous losses.

For assignments to stations of the broadcasting service covered by the MF Broadcasting Agreement (Region 2) (Rio de Janeiro, 1981), the product of the r.m.s. characteristic field strength, calculated in the horizontal plane, and the square root of the power.

ADD

ITEM 9L – Maximum effective radiated power (dB(kW))

The maximum effective radiated power, expressed in dB relative to an e.r.p. of 1 kW on a short vertical antenna.

SUP

ITEM 9N

MOD

ITEM 9NH – Attenuation (dB) of the horizontally polarized component at different azimuths

The value of attenuation of the horizontally polarized component in the horizontal plane at different azimuths, with respect to the maximum e.r.p. of this component, expressed in dB.

MOD

ITEM 9NV – Attenuation (dB) of the vertically polarized component at different azimuths

The value of attenuation of the vertically polarized component in the horizontal plane at different azimuths, with respect to the maximum e.r.p. of this component, expressed in dB.

MOD

ITEM 9Q – Type of antenna

Symbol designating a simple vertical antenna or any other antenna.

MOD

ITEM 9R – Slew angle

For HF broadcasting stations in their exclusive bands, the slew angle represents the difference between the azimuth of maximum radiation and the direction of unslewed radiation.

MOD

ITEM 9T3 – Phase difference of the field

The positive or negative phase difference in the tower field with respect to the field of the reference tower, in degrees.

SUP

ITEM 9T6

MOD

ITEMS 9T9A to 9T9D – Description of top-loaded or sectionalized tower

Description of top-loaded or sectionalized towers, in accordance with the RJ81 Agreement.

SUP

ITEM 10A

MOD

ITEM 10CA – Start date

For HF broadcasting stations in their exclusive bands, this parameter is used in the case that the requirement starts after the start of the schedule.

MOD

ITEM 10CB – Stop date

For HF broadcasting stations in their exclusive bands, this parameter is used in the case that the requirement stops before the end of the schedule.

MOD

ITEM 10CC – Days of operation

For HF broadcasting stations in their exclusive bands, this parameter is used when the station does not transmit every day of the week.

MOD

ITEM 11 – Coordination with other administrations

Symbol of the administration with which coordination has been effected and the provision (No. of the Radio Regulations, regional agreement, or other arrangement) requiring such coordination.

SUP

ANNEX 1B

Table of characteristics to be submitted for stations in the terrestrial services

ADD

ANNEX 1B

Table of characteristics to be submitted for stations in the terrestrial services

Notice type	**T01**	**T02**	**T03**	**T04**	**T11**	**T12**			**T13**		**T14**	**T15**	**T16**	**T17**		**AR S12**	**Notice type**
Item No.	**BC**	**BT**	**BC**	**BC**	**FX**	**AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS**	**FD, FG, SM**	**NL**	**AM, MA, ML, MO, MR, MS, NR, OD, SA**	**RM**	**AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS**	**FC[4]**	**AL[5], FC[5]**	**FX**	**FA, FB, FC[2], FD[2], FG[2], FL, FP**	**BC**	**Item No.**
B	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	B
SYNC			+	+													SYNC
1A	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1A
1AA														X	X		1AA
1B					+	+	+	+	+	+	+		+	+	+		1B
1C						+						*[6]				O	1C
1E		*[7,13]															1E
1E1		*[7, 13]															1E1
1G																O	1G
1X												*[6]	O				1X
1Y												O					1Y
1Z												+					1Z
2C	+	+	+	+	X	X	X	X	X	X	X	X		X	X		2C
3A	O	O	O	O	+	+	X	O						+	X	O	3A

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
4A	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		4B
4C	X	X	X	X	X	X	X	X	*[8]	X	*[8]	+	X	X	X	X	4C
4D									*[8]	X	*[8]						4D
4E									*[8]		*[8]	X					4E
4G			X														4G
5A					X[9]				X	X				X[9]			5A
5B					X[9]				X	X				X[9]			5B
5C					X[9]	*[10]	*[10]	*	X	X				X[9]	*[10]		5C
5D						*[10]	*[10]					X			*[10]	X	5D
5E						*[10]	*[10]	*					X		*[10]		5E
5F						*[10]	*[10]	*					X		*[10]		5F
5G					O	O	O	O				O		O	O		5G
6A					X	X	X	X	X	X	X	X	X	X	X		6A
6B					X	X	X	X	X	X	X	X	X	X	X		6B
7A	X[11]		X[11]	O	X	X	X	X	X	X	X	X	X	X	X		7A
7A1		+[7]															7A1
7AA																X	7AA
7B				X	+									+			7B
7B1			X														7B1
7C1		X															7C1
7C2		+[7]															7C2
7D	+																7D
7E					+[12]												7E

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
7F					+[12]												7F
8					X	X	X	X	X	X	X	X		X	X		8
8A			X	X	*	*	X	*	*	*	*	X		X	X	X	8A
8AB					+[12]												8AB
8B					*	*	*	*	*	*	*			+	+		8B
8BA														O	O		8BA
8BH	X	X															8BH
8BV	X	X															8BV
8D		+[7]															8D
9	X	X			X	X	X	X				X		X	X		9
9A					+	+	+	+				+		+	+	X	9A
9AA				+													9AA
9AB					+	+	+	+				+		+	+		9AB
9B					+	+	+	+									9B
9C					+	+	+	+				+		+	+		9C
9CA				+													9CA
9D	X	X			+												9D
9E	X	+	X		+	+	+	+									9E
9EA	X	+			+	+	+	+									9EA
9EB	X	X															9EB
9EC	+	+															9EC
9F				+													9F
9G					+	+	+	+			+	+		+	+		9G
9GH			+														9GH
9GV			+														9GV

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(cont.)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
9I				X													9I
9IA				+													9IA
9J					O	O	O	O						O	O	X	9J
9K					+[12]												9K
9L			X														9L
9NA				+													9NA
9NH	+	+															9NH
9NV	+	+															9NV
9O				+													9O
9P				O													9P
9Q			X	X													9Q
9R																X	9R
9T1				+													9T1
9T2				+													9T2
9T3				+													9T3
9T4				+													9T4
9T5				+													9T5
9T7				+													9T7
9T8				+													9T8
9T9A				+													9T9A
9T9B				+													9T9B
9T9C				+													9T9C
9T9D				+													9T9D
10B	+	+	X	X	X	X	X	X	X	X	X	X	X	X	X		10B
10CA																+	10CA

X Mandatory * One of the items + Required in specific cases O Optional

Table of characteristics to be submitted for stations in the terrestrial services *(end)*

Notice type	T01	T02	T03	T04	T11	T12			T13		T14	T15	T16	T17		AR S12	Notice type
Item No.	BC	BT	BC	BC	FX	AL, BC[1], FA, FB, FC, FL, FP, LR, OE, RN, SS	FD, FG, SM	NL	AM, MA, ML, MO, MR, MS, NR, OD, SA	RM	AL[2], FA[3], FB[3], FC[2], FD[2], FG[2], FL, FP, FX[3], LR, NL[2], OE, RN, SM, SS	FC[4]	AL[5], FC[5]	FX	FA, FB, FC[2], FD[2], FG[2], FL, FP	BC	Item No.
10CB																+	10CB
10CC																+	10CC
10D												X					10D
10E												X					10E
11	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O		11
12A	O	O	O	O	O	O	O	O	O	O	O			O	O	+	12A
12B	+	+	+	+	X	X	X	X	X	X	X			X	X		12B

X Mandatory * One of the items + Required in specific cases O Optional

[1] Outside the planned LF/MF bands and the VHF/UHF bands (up to 960 MHz), the HF bands that are governed by Article **S12**.

[2] In the non-planned bands.

[3] Outside the bands governed by the GE85M and GE89 Regional Agreements.

[4] In the bands governed by Appendix **S25**.

[5] In the bands governed by the GE85 Regional Agreement.

[6] 1C or 1X.

[7] For analogue television only if the frequency stability is normal or precision.

[8] (4C and 4D) or (4E).

[9] (5A, 5B and 5C) or (minimum three sets of 5C).

[10] (Minimum three sets of 5C) or (5D) or (5E and 5F).

[11] The necessary bandwidth only.

[12] This information may be furnished for stations in the fixed service when the parameters are used as a basis for effecting coordination with another administration.

[13] 1E or 1E1.

APPENDIX S13*

Distress and safety communications (non-GMDSS)

(see Article **S30**)

Part A1 – General provisions

MOD

§ 2 The procedure specified in this Appendix is obligatory in the maritime mobile-satellite service and for communications between stations on board aircraft and stations of the maritime mobile-satellite service, where this service or stations of this service are specifically mentioned. Paragraphs 1, 3 3), 6 of Part A3, and paragraphs 3 1), 3 4) and 14 1) of Part A4 are also applicable.

Part A6 – Special services relating to safety

Section IV – Narrow-band direct-printing telegraphy system for transmission of navigational and meteorological warnings and urgent information to ships (NAVTEX)

MOD

§ 11 In addition to existing methods, navigational and meteorological warnings and urgent information shall be transmitted by means of narrow-band direct-printing telegraphy, with forward error correction, by selected coast stations.

MOD

APPENDIX S27*

Frequency allotment Plan for the aeronautical mobile (R) service and related information

(See Article **S43**)

Section II – Allotment of frequencies in the aeronautical mobile (R) service

ARTICLE 1

Area	Frequency bands (MHz)										
	3	**3.5**	**4.7**	**5.4 (Reg. 2)**	**5.6**	**6.6**	**9**	**10**	**11.3**	**13.3**	**18**
	kHz	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**	**kHz**
2	2 938 2 950		4 696		5 556	6 583 6 601	8 846 8 855 8 888	10 015 10 045	11 297 11 360 11 390	13 321 13 357	17 964

ARTICLE 2

S27/222 Band **5 450-5 480 kHz (Reg. 2)** **5.4 MHz**

Frequency (kHz)	Authorized area of use*	Remarks*
1	**2**	**3**
5 466	R l0B 13I	

MOD

APPENDIX S42

Table of allocation of international call sign series

Call sign series	Allocated to
VSA-VSZ	United Kingdom of Great Britain and Northern Ireland

SUP

RESOLUTION 8 (Rev.Mob-87)

Implementation of the changes in allocations in the bands between 4000 kHz and 27500 kHz[1]

SUP

RESOLUTION 14

Relating to the transfer of technology[1]

SUP

RESOLUTION 23 (WRC-95)

Provisions applicable to the frequency assignments in the non-planned bands below 28 000 kHz

SUP

RESOLUTION 24 (WRC-95)

Review of the provisions of the Constitution relating to revisions of the Radio Regulations

MOD

RESOLUTION 25 (Rev.WRC-2000)

Operation of global satellite systems for personal communications

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in accordance with No. 6 of its Constitution (Geneva, 1992), one of the purposes of the Union is "to promote the extension of the benefits of the new telecommunication technologies to all the world's inhabitants";

b) that, to this end, the Union is fostering the use of new technologies in telecommunications and is studying questions relating to this use in the Radiocommunication and the Telecommunication Standardization Sectors;

c) that the Telecommunication Development Sector is studying questions aimed at identifying the benefits that developing countries may derive from using new technologies;

d) that, among these new technologies, constellations of low-Earth orbit satellites may provide global coverage and facilitate low-cost communications;

e) that the theme "global mobile personal communications by satellite" (GMPCS) was discussed at the first World Telecommunication Policy Forum established by Resolution 2 (Kyoto, 1994) of the Plenipotentiary Conference;

f) that Council Resolution 1116 instructs the Secretary-General to act as depositary of the GMPCS Memorandum of Understanding (MoU) and its Arrangements, to act as the registry for type-approval procedures and terminal types and to authorize the use of the abbreviation "ITU" as part of the GMPCS-MoU mark;

g) Recommendations ITU-R M.1343 and ITU-R M.1480 on the essential technical requirements of GMPCS earth stations that should be used by administrations as a common technical basis facilitating the global circulation and use of such GMPCS terminals in conformity with these Recommendations,

recognizing

a) that the spectrum available to global satellite systems for personal communications is limited;

b) that successful coordination does not in any way imply licensing authorization to provide a service within the territory of a Member State,

considering further

that other countries intending to use these systems should be guaranteed that they will be operated in accordance with the Constitution, the Convention and the Administrative Regulations,

noting

a) that the Constitution recognizes the sovereign right of each State to regulate its telecommunications;

b) that the International Telecommunication Regulations "recognize the right of any Member, subject to national law and should it decide to do so, to require that administrations and private operating agencies, which operate in its territory and provide an international telecommunication service to the public, be authorized by that Member", and specifies that "within the framework of the present Regulations, the provision and operation of international telecommunication services in each relation is pursuant to mutual agreement between administrations";

c) that Article **S18** specifies the authorities for licensing the operation of stations within any given territory;

d) the right of each Member State to decide on its participation in these systems, and the obligations for entities and organizations providing international or national telecommunication services by means of these systems to comply with the legal, financial and regulatory requirements of the administrations in whose territory these services are authorized,

resolves

that administrations licensing global satellite systems and stations intended to provide public personal communications by means of fixed, mobile or transportable terminals shall ensure, when licensing these systems and stations, that they can be operated only from the territory or territories of administrations having authorized such service and stations in compliance with Articles **S17** and **S18**, in particular No. **S18.1**,

requests administrations

1 to continue cooperating with worldwide satellite system operators in improving the established arrangements for the provision of service within their territories and with the Secretary-General in implementing the GMPCS-MoU and its Arrangements;

2 to participate actively in the ITU-R studies in developing and improving relevant Recommendations,

reminds operators of such systems

to take account, when contracting agreements on the operation of their systems from the territory of a country, of any potential loss of revenue that the country may suffer from a possible reduction of its international traffic existing at the time such agreements are executed.

MOD

RESOLUTION 28 (Rev.WRC-2000)

Revision of references to the text of ITU-R Recommendations incorporated by reference in the Radio Regulations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the Voluntary Group of Experts on simplification of the Radio Regulations (VGE) proposed the transfer of certain texts of the Radio Regulations to other documents, especially to ITU-R Recommendations, using the incorporation by reference procedure;

b) that, in some cases, the provisions of the Radio Regulations imply an obligation on Member States to conform to the criteria or specifications incorporated by reference;

c) that references to incorporated texts shall be explicit and shall refer to a precisely identified provision (see Resolution **27 (Rev.WRC-2000)**);

d) that all texts of ITU-R Recommendations incorporated by reference are published in a volume of the Radio Regulations;

e) that, taking into account the rapid evolution of technology, ITU-R may revise the ITU-R Recommendations containing text incorporated by reference at short intervals;

f) that, following revision of an ITU-R Recommendation containing text incorporated by reference, the reference in the Radio Regulations shall continue to apply to the earlier version until such time as a competent WRC agrees to incorporate the new version;

g) that it would be desirable that texts incorporated by reference reflect the most recent technical developments,

noting

that administrations need sufficient time to examine the potential consequences of changes to ITU-R Recommendations containing text incorporated by reference and would therefore benefit greatly from being advised, as early as possible, of which ITU-R Recommendations have been revised and approved during the elapsed study period,

resolves

1 that each Radiocommunication Assembly shall communicate to the following WRC a list of the ITU-R Recommendations containing text incorporated by reference in the Radio Regulations which have been revised and approved during the elapsed study period;

2 that, on this basis, WRC should examine those revised ITU-R Recommendations, and decide whether or not to update the corresponding references in the Radio Regulations;

3 that, if WRC decides not to update the corresponding references, the currently referenced version shall be maintained in the Radio Regulations;

4 that WRCs shall place the examination of Recommendations in conformity with *resolves* 1 and *resolves* 2 of this resolution on the agenda of future WRCs,

instructs the Director of the Radiocommunication Bureau

to provide the CPM immediately preceding each WRC with a list, for inclusion in the CPM Report, of those ITU-R Recommendations containing texts incorporated by reference that have been revised or approved since the previous WRC, or that may be revised in time for the following WRC,

urges administrations

1 to participate actively in the work of the radiocommunication study groups and the Radiocommunication Assembly on revision of those Recommendations to which mandatory references are made in the Radio Regulations;

2 to examine any indicated revisions of ITU-R Recommendations containing text incorporated by reference and to prepare proposals on possible updating of relevant references in the Radio Regulations.

SUP

RESOLUTION 30 (WRC-97)

Publication of the Weekly Circular including special sections

SUP

RESOLUTION 50 (WRC-97)

Interval between world radiocommunication conferences

SUP

RESOLUTION 52 (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

SUP

RESOLUTION 54 (WRC-97)

Implementation of Resolution 46 (Rev.WRC-97)

SUP

RESOLUTION 60

Relating to information on the propagation of radio waves used in the determination of the coordination area

SUP

RESOLUTION 70 (WARC-92)

Establishment of standards for the operation of low-orbit satellite systems

MOD

RESOLUTION 72 (Rev.WRC-2000)

Regional preparations for world radiocommunication conferences

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that many regional telecommunication organizations have coordinated their preparations for WRC-2000;

b) that many 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 Member States 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,

recognizing

a) *resolves* 2 of Resolution 80 (Minneapolis, 1998) of the Plenipotentiary Conference:

“to support the regional harmonization of common proposals, as stated in Resolution 72 (WRC-97), for submission to world radiocommunication conferences”;

b) *resolves* 3 of Resolution 80 (Minneapolis, 1998) of the Plenipotentiary Conference:

“to encourage both formal and informal collaboration in the interval between conferences with a view to resolving differences on new, or conference agenda issues”,

noting

a) that at the World Telecommunication Development Conference (Valletta, 1998) many regional telecommunication organizations expressed the need for the Union to cooperate more closely with regional telecommunication organizations;

b) that, consequently, the Plenipotentiary Conference (Minneapolis, 1998) resolved that the Union should develop stronger relations with regional telecommunication organizations;

c) that the Radiocommunication Assembly (Istanbul, 2000) adopted Resolution ITU-R 48 which sought a strengthening of the regional presence in ITU-R study group work, including WRC-related studies,

further noting

that in some regions the relationship with the ITU-D regional offices has proved to be of great benefit,

resolves to instruct the Director of the Radiocommunication Bureau

1 to continue consulting 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:

– organization of regional preparatory meetings;

– organization of information sessions, preferably before and after the second session of the Conference Preparatory Meeting;

– development of coordination methods;

– identification of major issues to be resolved by the future world radiocommunication conference;

– facilitation of regional and interregional informal and formal meetings, with the objective of reaching a convergence of interregional views on major issues;

2 pursuant to Resolution ITU-R 2-3 of the Radiocommunication Assembly on the CPM, to assist in ensuring that overview presentations of the chapters of the CPM Report will be made by the CPM management at an early stage in the CPM session, as part of the regularly scheduled meetings, in order to help all participants understand the contents of the CPM report;

3 to submit a report on the results of such consultations to both the next plenipotentiary conference and WRC-03,

invites the Director of the Telecommunication Development Bureau

to collaborate with the Director of the Radiocommunication Bureau in implementing this resolution.

MOD

RESOLUTION 95 (Rev.WRC-2000)

General review of the resolutions and recommendations of world administrative radio conferences and world radiocommunication conferences

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that it is important to keep the resolutions and recommendations of past world administrative radio conferences and world radiocommunication conferences under constant review, in order to keep them up to date;

b) that the reports of the Director of the Radiocommunication Bureau submitted to previous conferences provided a useful basis for a general review of the resolutions and recommendations of past conferences;

c) that some principles and guidelines are necessary for future conferences to treat the resolutions and recommendations of previous conferences which are not related to the agenda of the conference,

resolves to invite future competent world radiocommunication conferences

1 to review the resolutions and recommendations of previous conferences that are related to the agenda of the conference with a view to their possible revision, replacement or abrogation and to take appropriate action;

2 to review the resolutions and recommendations of previous conferences that are not related to any agenda item of the conference with a view to:

– abrogating those resolutions and recommendations that have served their purpose or have become no longer necessary;

– updating and modifying resolutions and recommendations, or parts thereof that have become out of date, and to correct obvious omissions, inconsistencies, ambiguities or editorial errors and effect any necessary alignment;

3 at the beginning of the conference, to determine which committee within the conference has the primary responsibility to review each of the resolutions and recommendations referred to in *resolves* 1 and 2 above,

instructs the Director of the Radiocommunication Bureau

1 to conduct a general review of the resolutions and recommendations of previous conferences and, after consultation with the Radiocommunication Advisory Group and the chairpersons and vice-chairpersons of the radiocommunication study groups, submit a report to the second session of the Conference Preparatory Meeting in respect of *resolves* 1 and *resolves* 2;

2 if practicable, to include in the above report an indication of the agenda item, if appropriate, and possible responsible committees within the conference for each text, based on the available information as to the possible structure of the conference,

invites the Conference Preparatory Meeting

to include, in its report, the results of a general review of the resolutions and recommendations of previous conferences.

SUP

RESOLUTION 406

Relating to the use of frequency bands higher than the HF bands in the aeronautical mobile (R) service and the aeronautical mobile-satellite (R) service for communication and for meteorological broadcasts

SUP

RESOLUTION 411 (WARC-92)*

Implementation of the new provisions applicable in the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz[1]

SUP

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]

SUP

RESOLUTION 500

Relating to the modification of carrier frequencies of LF broadcasting stations in Region 1

* Consequential amendment: The reference to this resolution in No. S26/3.6 of Appendix S26 is deleted.

(MOD)

RESOLUTION 703 (Rev.WRC-2000)

Calculation methods and interference criteria recommended by the ITU-R for sharing frequency bands between space radiocommunication and terrestrial radiocommunication services or between space radiocommunication services*

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* WRC-2000 reviewed this resolution and decided to recommend that WRC-03 review the need for this resolution and, until that time, the implementation of the resolution should be suspended, except that once a year the Director will send a list of ITU-R Recommendations as identified according to *resolves* 1 to all administrations for information.

MOD

RESOLUTION 706 (Rev.WRC-2000)

Operation of the fixed service in the band 90-110 kHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) the need to protect phased pulse hyperbolic radionavigation systems (Loran-C) operating in the band 90-110 kHz used as a safety service for both maritime and aeronautical services;

b) the studies made by the ITU-R in this band;

c) that harmful interference affecting safety of flight and ship navigation may be caused to this service by the operation of the fixed service having a secondary allocation in this band;

d) that, the World Administrative Radio Conference for the Mobile Services (Geneva, 1987) (Mob-87) removed the allocation for the maritime mobile service from this band,

noting

that Mob-87 was not competent to affect significantly the allocation of the fixed service,

resolves

to invite the next competent conference to review the fixed service allocation in this band with a view to its possible deletion.

MOD

RESOLUTION 716 (Rev.WRC-2000)

Use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the fixed and mobile-satellite services and associated transition arrangements

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WARC-92 allocated the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the mobile-satellite service with a date of entry into force of 1 January 2005, these allocations being co-primary with fixed and mobile service allocations;

b) that the use of the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 by the mobile-satellite service (MSS), in accordance with the provisions of Nos. **S5.389A**, **S5.389C** and **S5.389D** of the Radio Regulations, as adopted by WRC-95 and WRC-97, is subject to a date of entry into force of 1 January 2000, 1 January 2002 (for Region 2) or 1 January 2005;

c) that these bands are shared with the fixed and mobile[1] services on a primary basis and that they are widely used by the fixed service in many countries;

d) that the studies made have shown that, while sharing of the MSS with the fixed service in the short to medium term would be generally feasible, in the long term sharing will be complex and difficult in both bands, so that it would be advisable to transfer the fixed service stations operating in the bands in question to other segments of the spectrum;

e) that for many developing countries, the use of the 2 GHz band offers a substantial advantage for their radiocommunication networks and that it is not attractive to transfer these systems to higher frequency bands because of the economic consequences that this would entail;

f) that ITU-R has developed a new frequency plan for the fixed service in the 2 GHz band, set out in Recommendation ITU-R F.1098 which will facilitate the introduction of new fixed service systems in band segments that do not overlap with the above-mentioned MSS allocations at 2 GHz;

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[1] This resolution does not apply to the mobile service. In this respect, the use of these bands by the mobile-satellite service is subject to coordination with the mobile service under the provisions of Resolution **46 (Rev.WRC-97)** or No. **S9.11A**, as applicable.

g) that sharing between fixed service systems using tropospheric scatter and Earth-to-space links in the MSS in the same frequency band segments is generally not feasible;

h) that some countries utilize these bands in application of Article 48 of the Constitution (Geneva, 1992),

recognizing

a) that WARC-92 identified the bands 1 885-2 025 MHz and 2 110-2 200 MHz for worldwide use by International Mobile Telecommunications-2000 (IMT-2000), the satellite component being limited to the bands 1 980-2 010 MHz and 2 170-2 200 MHz, and that the development of IMT-2000 can offer great potential in helping the developing countries develop more rapidly their telecommunication infrastructure;

b) that WARC-92 resolved to request the Telecommunication Development Bureau (BDT), when formulating its immediate plans for assistance to the developing countries, to consider the introduction of specific modifications in the radiocommunication networks of the developing countries and that a future world development conference should examine the needs of developing countries and should assist them with the resources needed to implement the required modifications to their radiocommunication networks,

resolves

1 to request administrations to notify to the Radiocommunication Bureau the basic characteristics of frequency assignments to existing or planned fixed stations requiring protection, or those typical[2] of existing and planned fixed stations brought into use before 1 January 2000 in the frequency bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2;

2 that administrations proposing to bring an MSS system into service must take account of the fact that, when coordinating their system with administrations having terrestrial services, such administrations may have existing or planned installations covered by Article 48 of the Constitution;

3 that in respect of stations of the fixed service taken into account in the application of Resolution **46 (Rev.WRC-97)/S9.11A**, administrations responsible for MSS networks operating in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 shall ensure that unacceptable interference is not caused to fixed service stations notified and brought into use before 1 January 2000;

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[2] With respect to the notification of frequency assignments to stations in the fixed and mobile services, it was possible to notify the characteristics of typical stations in the fixed service in accordance with No. **S11.17** without restriction up until 1 January 2000.

4 that to facilitate the introduction and future use of the 2 GHz bands by the MSS:

4.1 administrations are urged to ensure that frequency assignments to new fixed service systems, to be brought into operation after 1 January 2000, do not overlap with the 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 MSS allocations, for example by using the channel plans of Recommendation ITU-R F.1098;

4.2 administrations are urged to take all practicable steps to phase out troposcatter systems operating in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2 by 1 January 2000. New troposcatter systems shall not be brought into operation in these bands;

4.3 administrations are encouraged, where practicable, to draw up plans for the gradual transfer of the frequency assignments to their fixed service stations in the bands 1 980-2 010 MHz and 2 170-2 200 MHz in all three Regions and 2 010-2 025 MHz and 2 160-2 170 MHz in Region 2 to non-overlapping bands, giving priority to the transfer of their frequency assignments in the band 1 980-2 010 MHz in all three Regions and 2 010-2 025 MHz in Region 2, considering the technical, operational and economical aspects;

5 that administrations responsible for the introduction of mobile-satellite systems should take into account and address the concerns of affected countries, especially developing countries, to minimize the possible economic impact of transition measures in respect to existing systems;

6 to invite the Bureau to provide assistance to developing countries requesting it for the introduction of specific modifications to their radiocommunication networks that will facilitate their access to the new technologies being developed in the 2 GHz band as well as in all coordination activities;

7 that administrations responsible for the introduction of mobile-satellite systems urge their mobile-satellite system operators to participate in the protection of terrestrial fixed services especially in the least developed countries,

invites ITU-R

to conduct, as a matter of urgency, further studies, in conjunction with the Bureau, to:

– develop and provide to administrations the necessary tools in a timely manner and not later than WRC-03 to assess the impact of interference in the detailed coordination of mobile-satellite systems;

– develop the necessary planning tools as soon as possible to assist those administrations considering a replanning of their terrestrial fixed networks in the 2 GHz range not later than WRC-03,

invites ITU-D

to evaluate, as a matter of urgency, the financial and economic impact on the developing countries of the transfer of fixed services, and to present its results to a future competent world radiocommunication conference and/or world telecommunication development conference,

invites the Director of the Telecommunication Development Bureau

to implement *invites ITU-D* by encouraging joint activities between the relevant study groups of both ITU-D and ITU-R,

instructs the Director of the Radiocommunication Bureau

to submit a report on the implementation of this resolution to world radiocommunication conferences.

SUP

RESOLUTION 721 (WRC-97)

Agenda for the 1999 World Radiocommunication Conference

MOD

RESOLUTION 727 (Rev.WRC-2000)

Use of the frequency band 420-470 MHz by the earth exploration-satellite (active) service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the United Nations Conference on Environment and Development (UNCED) (Rio de Janeiro, 1992) identified an urgent need for assessment and systematic observations of forest cover and rate of forest degradation in tropical and temperate regions;

b) that, during WRC-97, many countries agreed to the principle that ITU should take action in response to the need identified by UNCED;

c) that frequencies around 450 MHz have been identified as having the unique capability to penetrate the canopy of forests and to determine the ground-trunk interaction;

d) that a bandwidth of about 6 MHz is considered necessary to provide the required resolution,

recognizing

a) that WRC-97 considered a proposal for a secondary allocation for the earth exploration-satellite (active) service within the frequency band 432-438 MHz;

b) that CPM-97 concluded that spaceborne sensors cannot be considered technically compatible with terrestrial tracking radars without restriction on the spaceborne sensors;

c) that measures may be needed to minimize interference to fixed, mobile, mobile-satellite, amateur, amateur-satellite and space operation services,

resolves

1 to invite ITU-R to study, as a matter of urgency, emission criteria, specific sharing criteria and operational characteristics for active spaceborne sensors in the frequency band 420-470 MHz, and develop a relevant Recommendation;

2 to invite ITU-R to develop an ITU-R Report by the date of a future Conference Preparatory Meeting on the specific emission and operational characteristics used by the Earth exploration-satellite (active) service in order to minimize the potential interference to existing services, and in order to support the selection of a frequency band having the optimal sharing scenarios;

3 that, on the basis of proposals from administrations, and taking into account the results of the ITU-R studies, the ITU-R Report mentioned in *resolves* 2, and a future CPM Report, a future competent world radiocommunication conference should consider provision of up to 6 MHz of frequency spectrum to the Earth exploration-satellite (active) service in the frequency band 420-470 MHz.

ADD

RESOLUTION [COM4/1] (WRC-2000)

Process to keep the technical bases of Appendix S7 current

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that Appendix **S7** to the Radio Regulations provides the method for the determination of the coordination area of an earth station, and the assumed technical coordination parameters for unknown terrestrial stations or earth stations;

b) that the technical coordination parameters are contained in Tables 7, 8 and 9 of Annex 7 to Appendix **S7**;

c) that the technical coordination parameter tables are based on Recommendation ITU-R SM.1448;

d) that ITU-R studies on methods for the determination of the coordination area of an earth station are continuing, and the conclusions of these studies could lead to revision of Appendix **S7**; these methods under study are:

– methods considering the cumulative impact in determining the coordination areas for high-density earth stations (fixed and mobile);

– methods to address the modelling of VHF/UHF frequencies for percentages of time less than 1%;

– methods to address propagation mode (2) water vapour density for both radio climatic Zones B and C;

– refinements to propagation mode (2) to address elevation angle dependency and the displacement of the centre of the propagation mode (2) contour from the coordinating earth station;

e) that the technical coordination parameter tables may also need to be modified when changes are made to the Table of Frequency Allocations at future WRCs, or due to changes in technology or in applications;

f) that the technical coordination parameter tables do not include values for all the necessary parameters of certain space radiocommunication services and terrestrial radiocommunication services sharing frequency bands with equal rights,

recognizing

a) that Recommendation ITU-R SM.1448 was developed by ITU-R as a basis for the revision of Appendix **S7**;

b) that there is a need for future WRCs to keep Appendix **S7** current with the latest techniques and to ensure protection of other radiocommunication services sharing the same frequency bands with equal rights, particularly through revision of the tables of technical coordination parameters,

invites ITU-R

1 to continue its study, as required, of the technical bases used for determination of the coordination area of an earth station, including recommended values for the missing entries in the tables of technical coordination parameters (Annex 7 to Appendix **S7**);

2 to maintain the relevant ITU-R texts in a format which would facilitate the future revision of Appendix **S7**;

3 to assess the significance of changes to the technical bases,

resolves

1 that when ITU-R concludes, based on its studies of the methods in *considering d)* for determination of the coordination area of an earth station and/or the values of technical coordination parameters, that a revision of Appendix **S7** is warranted, the matter shall be brought to the attention of the Radiocommunication Assembly;

2 that, if the Radiocommunication Assembly confirms the improvements of the methods in *considering d)* for determination of the coordination area of an earth station and/or the values of technical coordination parameters which have been presented by ITU-R, the Director of the Radiocommunication Bureau shall identify the matter in the Director's report to the following WRC,

invites

1 WRCs, when presented with any significant changes through the Director's report, to consider the revision of Appendix **S7** in light of the recommendation of the Radiocommunication Assembly, pursuant to *resolves* 1 and 2 above;

2 each WRC, when modifying the Table of Frequency Allocations, to consider any consequential changes that may be required to the technical coordination parameters of Annex 7 to Appendix **S7** and, if necessary, request ITU-R to study the matter.

SUP

RECOMMENDATION 32 (Orb-88)

International monitoring of emissions originating from space stations[1]

SUP

RECOMMENDATION 61

Relating to technical standards for the assessment of harmful interference in the frequency bands above 28 MHz[1]

SUP

RECOMMENDATION 105 (WRC-95)

Further work by ITU-R on determination of the coordination area around earth stations operating with geostationary-satellite networks in the fixed-satellite service and earth stations providing feeder links to non-geostationary-satellite networks in the mobile-satellite service operating in opposite directions of transmission

SUP

RECOMMENDATION 405

Relating to a study of the utilization of the aeronautical mobile-satellite (R) service[1]

SUP

RECOMMENDATION 518 (HFBC-87)

HF broadcast receivers

SUP

RECOMMENDATION 711

Relating to the coordination of earth stations

SUP

RECOMMENDATION 720 (WRC-95)

The flexible and efficient use of the radio spectrum by fixed and some mobile services in the MF and HF bands using block allocations for adaptive systems

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 478-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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	408	**ARTICLE S5** – Table of allocations 4 800-5 830 MHz – S5.444 – S5.444B – S5.444C – S5.488 – S5.502 – S5.503 – Table of allocations 24.75-29.9 GHz – S5.5SSS – Table of allocations 29.9-34.2 GHz – S5.5RRR
COM 4	428	**ARTICLE S5** – S5.43 – S5.43A – S5.50 – Table of allocations 200-495 kHz – S5.81 – Table of allocations 495-1 800 kHz 3 230-5 003 kHz – S5.120 – Table of allocations 5 003-7 350 kHz

7 350-13 360 kHz
13 360-18 030 kHz
18 030-23 350 kHz
23 350-27 500 kHz
47-75.2 MHz
75.2-137.175 MHz
137.175-148 MHz
410-470 MHz
4 800-5 830 MHz
– S5.536A

COM 5	431	**ARTICLE S5** – S5.353A – S5.357A – S5.491
COM 5	445	**ARTICLE S5** – Table of allocations 890-1 350 MHz – S5.328 – S5.328A – S5.329 – S5.329A – S5.332 – S5.333 – S5.337A – Table of allocations 1 525-1 610 MHz
COM 4	453	**ARTICLE S5** – S5.55 – S5.58 – S5.59 – S5.65 – S5.67 – S5.75 – S5.77 – S5.93 – S5.96 – S5.98 – S5.99 – S5.107 – S5.112 – S5.114 – S5.117 – S5.124 – S5.152 – S5.154 – S5.155A – S5.160 – S5.162A – S5.175

– S5.176
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– S5.206
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– S5.271
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– S5.331
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– S5.347
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– S5.350
– S5.355
– S5.355A
– S5.359
– S5.359A
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– S5.390
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– S5.415A
– S5.417
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– S5.420A
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– S5.432
– S5.437
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– S5.514
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– S5.550
– S5.551D

COM 5	456	**ARTICLE S5** – S5.441 – S5.484A – S5.487A – S5.516 – S5.520

Annex: 30 pages

ARTICLE S5

Frequency allocations

MOD

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 000-5 150	AERONAUTICAL RADIONAVIGATION S5.367 S5.444 S5.444A S5.444B S5.444C	

MOD

S5.444 The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band, No. **S5.444A** and Resolution **114 (WRC-95)** apply.

ADD

S5.444B *Additional allocation:* The band 5 000-5 010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution **[COM5/15] (WRC-2000)**.

ADD

S5.444C *Additional allocation:* The band 5 010-5 030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in bands above 5 030 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5 010-5 030 MHz shall not exceed –124.5 dB(W/m^2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4 990-5 000 MHz, the aggregate power flux-density produced in the 4 990-5 000 MHz band by all the space stations within any RNSS (space-to-Earth) system operating in the 5 010-5 030 MHz band shall not exceed the provisional value of –171 dB(W/m^2) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution **[COM5/16] (WRC-2000)** applies.

MOD

S5.488 The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to the provisions of Resolution **[COM5/18] (WRC-2000)**. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **S30**.

MOD

S5.502 In the band 13.75-14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations. No. **S5.43** does not apply. See Resolution [**COM5/10**] **(WRC-2000)**.

MOD

S5.503 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

a) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in the 6 MHz band from 13.772 to 13.778 GHz;

b) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power-flux density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions.

MOD

24.75-29.9 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
27.5-28.5	FIXED S5.5SSS FIXED-SATELLITE (Earth-to-space) S5.484A S5.539 MOBILE S5.538 S5.540	

ADD

S5.5SSS In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations (HAPS). The use of the band 27.5-28.35 GHz by HAPS is limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services.

MOD

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
31-31.3	FIXED S5.5RRR MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research S5.544 S5.545 S5.149	

ADD

S5.5RRR In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31.0-31.3 GHz may also be used by high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31.0-31.3 GHz by systems using HAPS shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services, taking into account No. **S5.545**. The use of HAPS in the band 31.0-31.3 GHz shall not cause harmful interference to the passive services having a primary allocation in the band 31.3-31.8 GHz, taking into account the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769. The administrations of the countries listed above are urged to limit the deployment of HAPS in the band 31.0-31.3 GHz to the lower half of this band (31.0-31.15 GHz) until WRC-03.

ARTICLE S5

Frequency allocations

MOD

S5.43 1) Where it is indicated in these Regulations that a service or stations in a service may operate in a specific frequency band subject to not causing harmful interference to another service or to another station in the same service, this means also that the service which is subject to not causing harmful interference cannot claim protection from harmful interference caused by the other service or other station in the same service.

ADD

S5.43A 1*bis*) Where it is indicated in these Regulations that a service or stations in a service may operate in a specific frequency band subject to not claiming protection from another service or from another station in the same service, this means also that the service which is subject to not claiming protection shall not cause harmful interference to the other service or other station in the same service.

S5.50 5) The footnote references which appear in the Table below the allocated service or services apply to more than one of the allocated services, or to the whole of the allocation concerned.

MOD

200-495 kHz

<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>415-435
MARITIME MOBILE S5.79
AERONAUTICAL RADIONAVIGATION
S5.72</td><td colspan="2" rowspan="2">415-495
MARITIME MOBILE S5.79 S5.79A
Aeronautical radionavigation S5.80</td></tr>
<tr><td>435-495
MARITIME MOBILE S5.79 S5.79A
Aeronautical radionavigation
S5.72 S5.82</td></tr>
<tr><td colspan="2"></td><td>S5.77 S5.78 S5.82</td></tr>
</table>

SUP

S5.81

MOD

495-1 800 kHz

<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="3">505-526.5
MARITIME MOBILE S5.79 S5.79A S5.84
AERONAUTICAL RADIONAVIGATION

S5.72</td><td>505-510
MARITIME MOBILE S5.79</td><td rowspan="3">505-526.5
MARITIME MOBILE S5.79 S5.79A S5.84
AERONAUTICAL RADIONAVIGATION
Aeronautical mobile
Land mobile</td></tr>
<tr><td>510-525
MOBILE S5.79A S5.84
AERONAUTICAL RADIONAVIGATION</td></tr>
<tr><td>525-535</td></tr>
</table>

MOD

3 230-5 003 kHz

<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">3 500-3 800
AMATEUR
FIXED
MOBILE except aeronautical mobile

S5.92</td><td>3 500-3 750
AMATEUR

S5.119</td><td rowspan="2">3 500-3 900
AMATEUR
FIXED
MOBILE</td></tr>
<tr><td rowspan="3">3 750-4 000
AMATEUR
FIXED
MOBILE except aeronautical mobile (R)

S5.122 S5.124 S5.125</td></tr>
<tr><td>3 800-3 900
FIXED
AERONAUTICAL MOBILE (OR)
LAND MOBILE</td></tr>
<tr><td>3 900-3 950
AERONAUTICAL MOBILE (OR)
S5.123</td><td>3 900-3 950
AERONAUTICAL MOBILE
BROADCASTING</td></tr>
<tr><td>3 950-4 000
FIXED
BROADCASTING</td><td>3 950-4 000
FIXED
BROADCASTING
S5.126</td></tr>
</table>

SUP

S5.120

MOD

5 003-7 350 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
7 000-7 100	AMATEUR AMATEUR-SATELLITE S5.140 S5.141	
7 100-7 300 BROADCASTING	**7 100-7 300** AMATEUR S5.142	**7 100-7 300** BROADCASTING

MOD

7 350-13 360 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
10 100-10 150	FIXED Amateur	

MOD

13 360-18 030 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
14 000-14 250	AMATEUR AMATEUR-SATELLITE	
14 250-14 350	AMATEUR S5.152	

MOD

18 030-23 350 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18 068-18 168	AMATEUR AMATEUR-SATELLITE S5.154	
21 000-21 450	AMATEUR AMATEUR-SATELLITE	

MOD

23 350-27 500 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
24 890-24 990	AMATEUR AMATEUR-SATELLITE	

MOD

47-75.2 MHz

<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="4">47-68
BROADCASTING

S5.162A S5.163 S5.164 S5.165 S5.169 S5.171</td><td>47-50
FIXED
MOBILE</td><td>47-50
FIXED
MOBILE
BROADCASTING
S5.162A</td></tr>
<tr><td colspan="2">50-54
AMATEUR
S5.166 S5.167 S5.168 S5.170 S5.162A</td></tr>
<tr><td>54-68
BROADCASTING
Fixed
Mobile

S5.172</td><td>54-68
FIXED
MOBILE
BROADCASTING

S5.162A</td></tr>
</table>

MOD

75.2-137.175 MHz

<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>75.2-87.5
FIXED
MOBILE except aeronautical mobile

S5.175 S5.179 S5.184 S5.187</td><td colspan="2">75.2-75.4
FIXED
MOBILE
S5.179</td></tr>
<tr><td rowspan="3"></td><td>75.4-76
FIXED
MOBILE</td><td>75.4-87
FIXED
MOBILE

S5.182 S5.183 S5.188</td></tr>
<tr><td>76-88
BROADCASTING
Fixed
Mobile

S5.185</td><td rowspan="2">87-100
FIXED
MOBILE
BROADCASTING</td></tr>
<tr><td>88-100
BROADCASTING</td></tr>
<tr><td>87.5-100
BROADCASTING

S5.190</td><td colspan="2"></td></tr>
</table>

MOD

137.175-148 MHz

<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>144-146</td><td colspan="2">AMATEUR
AMATEUR-SATELLITE
S5.216</td></tr>
</table>

MOD

410-470 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
455-456 FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E	**455-456** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.286A S5.286B S5.286C S5.209	**455-456** FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E
459-460 FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E	**459-460** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.286A S5.286B S5.286C S5.209	**459-460** FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E

MOD

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 150-5 250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) S5.447A S5.446 S5.447 S5.447B S5.447C	

MOD

S5.536A Administrations installing earth exploration-satellite earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

ARTICLE S5

Frequency allocations

MOD

S5.353A In applying the procedures of Section II of Article **S9** 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. (The provisions of Resolution **[COM5/22] (WRC-2000)** shall apply.)

MOD

S5.357A In applying the procedures of Section II of Article **S9** 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 providing transmission of messages with priority 1 to 6 in Article **S44**. Aeronautical mobile-satellite (R) service 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, aeronautical mobile-satellite (R) service 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. (The provisions of Resolution **[COM5/22] (WRC-2000)** shall apply.)

MOD

S5.491 *Additional allocation:* in Region 3, the band 12.2-12.5 GHz is also allocated to the fixed-satellite (space-to-Earth) service on a primary basis. The power flux-density limits in Article **S21**, Table **S21-4** shall apply to this frequency band. The introduction of the service in relation to the broadcasting-satellite service in Region 1 shall follow the procedures specified in Article 7 of Appendix **S30**, with the applicable frequency band extended to cover 12.2-12.5 GHz.

ARTICLE S5

Frequency allocations

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
960-1 215	AERONAUTICAL RADIONAVIGATION S5.328 S5.328A	
1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) S5.330 S5.331 S5.332	
1 240-1 260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.330 S5.331 S5.332 S5.334 S5.335	
1 260-1 300	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.282 S5.330 S5.331 S5.333 S5.334 S5.335	
1 300-1 350	AERONAUTICAL RADIONAVIGATION S5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) S5.149 S5.337A	

MOD

S5.328 The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

ADD

S5.328A *Additional allocation:* the band 1 164-1 215 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux-density produced by all the space stations of all radionavigation-satellite systems at the

Earth's surface shall not exceed the provisional value of –115 dB(W/m^2) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause harmful interference to, nor claim protection from, stations of the aeronautical-radionavigation service. The provisions of Resolution **[COM5/19] (WRC-2000)** apply.

MOD

S5.329 Use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. **S5.331**. See also Resolution **[COM5/20] (WRC-2000)**.

ADD

S5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on other systems or services operating in accordance with the Table of Frequency Allocations.

MOD

S5.332 In the band 1 215-1 260 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.

MOD

S5.333 In the band 1 260-1 300 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 and other services allocated by footnotes on a primary basis.

ADD

S5.337A The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to, nor constrain the operation and development of, the aeronautical-radionavigation service.

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329A S5.341 S5.363 S5.355A S5.359A	

ARTICLE S5

Frequency allocations

MOD

S5.55 *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.58 *Additional allocation:* in Armenia, Azerbaijan, Georgia, Kazakstan, Kyrgyzstan, the Russian Federation, Tajikistan and Turkmenistan, the band 67-70 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.59 *Different category of service:* in Bangladesh and Pakistan, the allocation of the bands 70-72 kHz and 84-86 kHz to the fixed and maritime mobile service is on a primary basis (see No. **S5.33**).

MOD

S5.65 *Different category of service:* in Bangladesh, the allocation of the bands 112-117.6 kHz and 126-129 kHz to the fixed and maritime mobile services is on a primary basis (see No. **S5.33**).

MOD

S5.67 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania and Turkmenistan, 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

S5.75 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Bulgaria and Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned.

MOD

S5.77 *Different category of service:* in Australia, China, the French Overseas Territories of Region 3, India, Indonesia (until 1 January 2005), Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in these countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the band 435-495 kHz do not cause interference to reception by coast stations of ship stations transmitting on frequencies designated for ship stations on a worldwide basis (see No. **S52.39**).

MOD

S5.93 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, the Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz and, in Bulgaria, the bands 1 625-1 635 kHz and 1 800-1 810 kHz, are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Denmark, Estonia, Finland, Georgia, Hungary, Ireland, Israel, Jordan, Kazakstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, the United Kingdom, the Russian Federation, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W.

MOD

S5.98 *Alternative allocation:* in Angola, Armenia, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Eritrea, Spain, Ethiopia, Georgia, Greece, Italy, Kazakstan, Lebanon, Lithuania, Moldova, the Netherlands, Syria, Kyrgyzstan, the Russian Federation, 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, Austria, 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

S5.107 *Additional allocation:* in Saudi Arabia, Botswana, Eritrea, Ethiopia, Iraq, Lesotho, Libya, Somalia and Swaziland, 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, Greece, Iceland, Malta, Sri Lanka 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, Greece, Iraq, Malta, 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, Greece, Iceland, Liberia, Malta, Sri Lanka, Togo and Yugoslavia, the band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

SUP

S5.124

MOD

S5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, Iran (Islamic Republic of), Kazakstan, Moldova, Kyrgyzstan, the Russian Federation, 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, Kyrgyzstan, the Russian Federation, 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.

MOD

S5.155A In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

MOD

S5.160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Dem. Rep. of the Congo, Rwanda and Swaziland, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

MOD

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, the Netherlands, Poland, Portugal, Slovakia, the Czech Republic, the United Kingdom, the Russian Federation, Sweden and Switzerland 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 **217 (WRC-97)**.

MOD

S5.175 *Alternative allocation:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned.

MOD

S5.176 *Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea, Estonia (subject to agreement obtained under No. **S9.21**) and Western Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis.

MOD

S5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Latvia, Moldova, Uzbekistan, Poland, Kyrgyzstan, the Russian Federation, 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 Egypt, Israel, Japan, and Syria, 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

S5.197 *Additional allocation:* in Egypt, Japan, Pakistan and Syria, 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

S5.202 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Jordan, Latvia, Moldova, Oman, Uzbekistan, Poland, Syria, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan 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.

MOD

S5.206 *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, Finland, France, Georgia, Greece, Kazakstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Syria, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. **S5.33**).

MOD

S5.210 *Additional allocation:* in 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

S5.211 *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Bosnia and Herzegovina, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Malta, Norway, the Netherlands, Qatar, the United Kingdom, Somalia, Sweden, Switzerland, Tanzania, Tunisia, Turkey and Yugoslavia, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis.

MOD

S5.214 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, Somalia, Sudan, Tanzania and Yugoslavia, the band 138-144 MHz is also allocated to the fixed service on a primary basis.

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, Korea (Rep. of), Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakstan, Kenya, Kuwait, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the United Kingdom, the Russian Federation, 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

S5.259 *Additional allocation:* in Egypt, Israel, Japan, and Syria, 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

S5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakstan, Kuwait, Liberia, Malaysia, Moldova, Nigeria, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the Russian Federation, Singapore, Somalia, Tajikistan, Turkmenistan, Ukraine and Yugoslavia, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.271 *Additional allocation:* in Azerbaijan, Belarus, China, Estonia, India, Latvia, Lithuania, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

MOD

S5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo, Djibouti, Georgia, Hungary, Israel, Kazakstan, Latvia, Mali, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, 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, Azerbaijan, Belarus, China, Japan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Russian Federation, 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

S5.293 *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico, Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed and mobile services is on a primary basis (see No. **S5.33**), subject to agreement obtained under No. **S9.21**. In Argentina and Ecuador, the allocation of the band 470-512 MHz to the fixed and mobile services 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, Lithuania, 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 listed 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.

MOD

S5.297 *Additional allocation:* in Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica and Mexico, the band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.314 *Additional allocation*: in Austria, Italy, Moldova, Uzbekistan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis.

MOD

S5.315 *Alternative allocation*: in Greece, Italy and Tunisia, the band 790-838 MHz is allocated to the broadcasting service on a primary basis.

MOD

S5.316 *Additional allocation*: in Germany, Saudi Arabia, 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.

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, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. **S9.21**.

MOD

S5.331 *Additional allocation:* in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, Iran (Islamic Republic of), Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.338 In Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania and Turkmenistan, 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, 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, France, Iran (Islamic Republic of), Iraq, Israel, Kazakstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syria, Kyrgyzstan, Romania, Turkmenistan, 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**).

MOD

S5.350 *Additional allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, 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, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis.

ADD

S5.355A *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band.

[**MOD**

S5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Lithuania, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, the bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands.]

[**ADD**

S5.359A *Additional allocation:* in Germany, Saudi Arabia, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Lithuania, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, the band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005. After this date, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band.]

MOD

S5.387 *Additional allocation:* in Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, Kyrgyzstan, Slovakia, Romania, Tajikistan and Turkmenistan, 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

S5.389F In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Israel, Mali, Syria and Tunisia, the use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services.

MOD

S5.390 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Suriname and Uruguay, 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 No. **S9.11A** and to the provisions of Resolution **716 (WRC-95)**.

MOD

S5.393 *Additional allocation:* in the United States, 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)**, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz.

SUP

S5.408

MOD

S5.412 *Alternative allocation:* in Azerbaijan, Bulgaria, Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD

S5.415A *Additional allocation*: in India and 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 their national boundaries.

MOD

S5.417 *Alternative allocation:* in Greece, the band 2 520-2 670 MHz is allocated to the fixed service on a primary basis.

MOD

S5.418 *Additional allocation:* in Bangladesh, Belarus, Korea (Rep. of), India, Japan, Pakistan, Singapore, Sri Lanka and Thailand, the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to provisions of Resolution **528 (WARC-92)**. The provisions of No. **S5.416** and Article **S21**, Table **S21-4**, do not apply to this additional allocation.

MOD

S5.420A *Additional allocation:* in India and 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 operation limited to within their national boundaries.

MOD

S5.422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, Congo, Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Lebanon, Malaysia, Mali, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, the Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen and Yugoslavia, 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, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.430 *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, 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 Korea (Rep. of), 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

S5.437

MOD

S5.439 *Additional allocation:* in Iran (Islamic Republic of) and Libya, the band 4 200-4 400 MHz is also allocated to the fixed service on a secondary basis.

MOD

S5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania and Turkmenistan, the band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. 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 Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, 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

S5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis.

MOD

S5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis.

MOD

S5.477 *Different category of service:* in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, the Dem. People's Rep. 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, 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 Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, El Salvador, Ecuador, Spain, Guatemala, Japan, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People’s Rep. of Korea, Sweden, Tanzania, Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kazakstan, Kuwait, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Qatar, Kyrgyzstan, the Dem. People’s Rep. of Korea, Romania, the Russian Federation, 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

S5.495 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Denmark, France, Greece, Liechtenstein, Monaco, 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, Kyrgyzstan and Turkmenistan, 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 listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed 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 listed in this footnote.

MOD

S5.500 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, 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, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom and Turkmenistan, 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, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. 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, Bosnia and Herzegovina, France, Greece, Ireland, Iceland, Italy, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Portugal, the United Kingdom, Slovenia, Switzerland and Yugoslavia, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis.

MOD

S5.509 *Additional allocation:* in Japan the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service 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, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan 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 and Slovakia, 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, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Dem. Rep. of the Congo, Syria, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, 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 the 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, Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. 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, Georgia, Mongolia, Kyrgyzstan, the Russian Federation, 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

S5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, the Russian Federation, 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**).

MOD

S5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, 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**).

SUP

S5.551D

ARTICLE S5

Frequency allocations

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 geostationary-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 a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite system in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

S5.484A 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 a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

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 systems and subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

S5.516 The use of the band 17.3-18.1 GHz by geostationary-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-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. No. **S5.43** does not apply. Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites.

MOD

S5.520 The use of the band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 479-E
29 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document WRC2000/445 **COMMITTEE 6**

Note by the Chairperson of Working Group 1 of the Plenary to Committee 6

Upon request of Committee 5, GT PLEN-1 has considered Document 445 "Sixth series of texts submitted by the Editorial Committee to the Plenary Meeting", with respect to footnote 25 relating to Table S22-4C. GT PLEN-1 suggest the following:

As described in Annex 1 to Chapter 3 of the CPM Report, the square brackets in footnote 25 to Table S22-4C may be removed since the proposed modification in Document DT/116 to the pfd limits in section 5C to Annex 1 of Appendix S30, now contained in section 4 of Annex 1 of Appendix S30, have been adopted by GT PLEN-1.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 480-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 410, 441 and 315 **COMMITTEE 6**

TENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 at its ninth and tenth meetings unanimously adopted the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairperson, Committee 4

Annex: 1

APPENDIX S30B

ARTICLE 8

MOD

8.3 Such an assignment shall not be subject to the procedures for advance publication and coordination contained in Sections I and II of Article **S9** of the Radio Regulations[4]. Consequently, the provisions of Article **S11** of the Radio Regulations shall continue to be applicable except with respect to the coordination requirement vis-à-vis space radiocommunication stations of other administrations, under ~~regard to~~ No. **S11.32** and related provisions.

MOD Appendix S30B, Annex 2, item 1.4

1.4 *Dates* proposed for bringing into use. The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation to provide the published Radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau.

[4] For existing systems in Part B of the Plan, see Section IB of Article 6.

MOD

RESOLUTION 49 (~~WRC-97~~Rev.WRC-2000)

Administrative due diligence applicable to some satellite radiocommunication services

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

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 ~~this Conference~~WRC-97;

b) that the Director of the Radiocommunication Bureau provided a comprehensive report to ~~this Conference~~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 to WRC-97 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~~WRC-97, 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 and other satellite orbits, taking into account the needs of developing countries,

considering further

g) that ~~this Conference has~~ WRC-97 decided to reduce the regulatory time-frame for bringing a satellite network into use~~,~~;

h) that this Conference has considered the results of the implementation of the administrative due diligence procedures and prepared a report to 2002 Plenipotentiary Conference in response to Resolution 85 (Minneapolis, 1998),

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 under No. **S9.2B**, or for which the request for modifications of the Plans under Article 4, § 4.1 *b)* of Appendices **S30** and **S30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Plans under Article 4, § 4.1 *a)* of Appendices **S30** and **S30A** 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 **S30B** 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 **S30B**) has been received by the Bureau from 22 November 1997;

2 that for a satellite network or satellite system within the scope of § 1, 2 or 3 of Annex 1 to this Resolution not yet recorded in the Master International Frequency Register (MIFR) by 22 November 1997, for which the advance publication information under No. **1042** of the Radio Regulations 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 notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of No. **1550** of the Radio Regulations 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 § 1, 2 or 3 of Annex 1 to this Resolution recorded in the MIFR by 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 2000, or before the notified date of bringing the satellite network into use (including any extension period), whichever date comes later;

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;~~International Frequency Information Circular (IFIC);

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 **S30/30** and **S30A/30A** or for application of Section III of Article 6 of Appendix **S30B/30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **S30/30** and **S30A/30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **S30B/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~~International Frequency Information Circular (IFIC),

further resolves

that the procedures in this Resolution are in addition to the provisions under Article **S9** or **S11** of the Radio Regulations or Appendices **S30/30**, **S30A/30A** or **S30B/30B**, as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **S30/30**, **S30A/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 WRC-~~99~~02/03 and future competent 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~~2002 Plenipotentiary Conference.

ANNEX 1 TO RESOLUTION 49 (~~WRC-97~~Rev.WRC-2000)

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 Nos. **S9.7**, **S9.8**, **S9.9**, **S9.11**, **S9.12** and **S9.13**, Resolution **33 (Rev.WRC-97)**, and Resolution **46 (Rev.WRC-97)** shall be subject to these procedures.

2 Any modifications of the Plans under Article 4, § 4.1 *b)* of Appendices **S30/30** and **S30A/30A** that involve the addition of new frequencies or orbit positions or modifications of the Plans under Article 4, § 4.1 *a)* of Appendices **S30/30** and **S30A/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 **S30B/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 **S30B/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 to be received before the end of the 5-year period established as a limit to bringing into use in No. **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 **S30/30** and **S30A/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 **S30/30**, § 4.3.5, and with Appendix **S30A/30A**, § 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 **S30B/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 so as 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~~ International Frequency Information Circular (IFIC) 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~~ International Frequency Information Circular (IFIC).

With respect to the request for modification of the Plans of Appendices **S30/30** and **S30A/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 **S30B/30B** under § 3 above, the network shall also be deleted from the Appendix **S30B/30B** List, if applicable.

12 Before the Bureau extends the date of bringing into use under No. **S11.44**, 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 No. **S11.41** by that administration.

ANNEX 2 TO RESOLUTION 49 (~~WRC-97~~Rev.WRC-2000)

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 Appendices **S30/30** and **S30A/30A**

e) Reference to the request for coordination (not applicable for Appendices **S30/30** and **S30A/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 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 l~~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.

ADD

RESOLUTION [COM4/2] (WRC-2000)

Evaluation of the administrative due diligence procedure for satellite networks

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the World Radiocommunication Conference (Geneva, 1997) (WRC-97) adopted Resolution **49** establishing administrative due diligence procedures applicable to some satellite communication services with effect from 22 November 1997;

b) that the Plenipotentiary Conference (Minneapolis, 1998) adopted Resolution **85** on the evaluation of the administrative due diligence procedure for satellite networks;

c) that Resolution **85** (Minneapolis, 1998) instructs the Director of the Radiocommunication Bureau to inform WRC-2000 about the effectiveness of the administrative due diligence procedure, in accordance with Resolution **49** (WRC-97);

d) that Resolution **85** (Minneapolis, 1998) resolves that WRC-2000 shall evaluate the results of the implementation of administrative due diligence and shall inform the following Plenipotentiary Conference, in 2002, of its conclusions in that regard;

e) the report of the Director of the Radiocommunication Bureau on administrative due diligence applicable to some satellite networks;

f) the proposal to this conference to strengthen the administrative due diligence and the proposal to adopt financial due diligence procedures,

noting

a) that the Bureau has not encountered any administrative difficulty in applying the provisions and in gathering and publishing information;

b) that the Bureau has taken action pursuant to *resolves* 6 of Resolution **49** to cancel and publish accordingly, the related Special Sections in respect of 36 satellite networks;

c) that all of these cancellations had reached the maximum (nine year) period for bringing into use pursuant to the application of *resolves* 1 and 2 of Resolution **51** (WRC-97) and **S11.44** of the Radio Regulations and hence would have been cancelled in any event;

d) that when requested to provide due diligence information (triggered by the original date of bringing into use of their satellite networks), administrations have generally requested, wherever it is possible, extension of the regulatory period for bringing their satellites into use up to the maximum limit authorized by the Radio Regulations;

e) that the effect of administrative due diligence may not, therefore, be fully apparent until at least 21 November 2003,

recognizing

that the administrative due diligence has not yet had any impact on the problem of reservation of orbit and spectrum capacity without actual use,

resolves

1 that further experience is needed in the application of the administrative due diligence procedures adopted by WRC-97, and that several years may be needed to see whether the procedure produces satisfactory results;

[2 that it is premature to consider among other procedures the adoption of any financial due diligence procedures,]

instructs the Director of the Radiocommunication Bureau

to report to the 2002 Plenipotentiary Conference 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 2002 Plenipotentiary Conference.

ADD

DRAFT RESOLUTION [COM4/4] (WRC-2000)

Temporary procedures for improving the satellite network coordination and notification procedures

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **86** of the Plenipotentiary Conference (Minneapolis, 1998);

b) that there now exists a large backlog of satellite network coordination requests pending with the Radiocommunication Bureau such that elimination of this backlog at current processing rates and with no new filings could take the Bureau more than three years to accomplish;

c) that 95 per cent of this backlog consists of coordination requests for geostationary-satellite networks,

recognizing

a) in view of the processing delay, an administration may have to wait three years for the Bureau to publish the coordination request and, because of the five-year limit to place a network into operation, be faced with a reduced time window in which to accomplish coordination;

b) extraordinary measures are needed to enable the Bureau to eliminate the backlog in processing satellite network coordination requests;

c) that the current breakdown of ITU's satellite coordination process seriously compromises the ability of such networks to provide such services and compromises the role of ITU in this process;

d) that this Conference needs to take extraordinary measures to ensure the continued viability and credibility of the ITU satellite coordination process,

resolves

1 that for those networks whose complete coordination information is received by the Bureau on or after 3 June 2000, the Bureau and administrations shall apply the following provisions, as revised by this Conference:

a) Nos. **S9.36**, **S9.36.2**, **S9.41** and **S9.42**;

b) Section D of Annex 2A of Appendix **S4**;

c) No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5**;

2 that as of 3 June 2000 for those networks whose complete coordination information has been received by the Bureau prior to 3 June 2000 but not yet published in a Special Section of the International Frequency Information Circular (IFIC), the Bureau and administrations shall apply the following provisions, as revised by this Conference:

a) Nos. **S9.36**, **S9.36.2**, **S9.41** and **S9.42**;

b) Section D of Annex 2A of Appendix **S4**;

c) No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5**;

3 that when the Bureau, under No. **S11.32**, conducts its examination of notifications of satellite networks it shall base its findings on the requirements of coordination established by No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5**, as revised by this Conference, only for those networks published and coordinated pursuant to the provisions of this Resolution for compliance with the coordination procedure;

4 that an administration in need of assistance may inform the Bureau that it has previously filed systems which might be affected by the proposed satellite network, and may request the assistance of the Bureau in application of No. **S9.41** to determine the need for coordination by applying the provisions of No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5** (items 1, 2 and 3 of the frequency band column), as revised by this Conference. This request shall be considered as a disagreement, pending the results of the analysis by the Bureau of the need for coordination;

5 that starting from 3 June 2000 all notice forms (**APS4**/II and III), Radio Astronomy notification (**APS4**/IV) and API (**APS4**/V and VI) and Due Diligence Information (Resolution **49 (WRC-97)**) for satellite networks and earth stations submitted to the Radiocommunication Bureau pursuant to Articles **S9** and **S11** shall be submitted in electronic format which is compatible with the BR electronic notice form capture software (SpaceCap)[1]:

a) all notice forms submitted between 3 June and 3 September 2000 may initially be submitted in paper format if administrations deem it necessary;

b) these forms must be resubmitted in electronic format not later than 3 October 2000 without modification of the paper filing, in order to retain the date of receipt of the original filing. The Bureau will not compare the paper and electronic filing. However both filings will be made available to administrations who may report inconsistencies to the Bureau, until 1 March 2001;

c) if these notice forms are not resubmitted in electronic format by 3 October 2000, they shall be considered incomplete and returned to the administration;

d) all notice forms initially submitted after 3 September 2000 shall be submitted in electronic format. If the data for these notice forms is not received in electronic format the notice forms shall be considered incomplete and returned to the administration;

6 that starting from 3 June 2000 all graphical data associated with the submissions addressed in *resolves 5* should be submitted in the graphics data format which is compatible with the BR data capture software (GIMS). Submission of graphics in paper form will, however, continue to be accepted,

instructs the BR

1 to keep Members periodically informed of the results of these measures and report them to the next competent conference;

2 and administrations to monitor, in the interval until WRC-03, whether assistance to administrations in applying the provisions of this Resolution have been effective, or whether any further actions are necessary;

3 to make available coordination requests and notifications “as received” in its International Frequency Information Circular (IFIC) CD within 30 days of receipt, and also on its website;

[1 Administrations of developing countries having no more than three filings a year may continue to submit filings on paper until 3 June 2001.]

4 to provide administrations with the latest versions of the capture and validation software and any necessary technical means, training and manuals, along with any assistance requested by administrations to enable them to comply with *resolves* 5 and 6 above;

5 to integrate the validation software with the capture software to the extent practicable,

urges administrations

1 to resubmit in electronic format notices previously submitted in paper format after consultation with the Bureau;

2 to, as soon as practicable, submit the graphical relating to their notices in a format compatible with the BR graphic data capture software.

ADD

DRAFT RESOLUTION [COM4/5] (WRC-2000)

Modification to the procedures and requirements for advance publication

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **86** of the Plenipotentiary Conference (Minneapolis 1998);

b) that there is concern among a number of administrations that some of the current procedures and requirements of advance publication may cause inequities in the satellite filing and coordination process,

resolves

1 that as of 3 June 2000, the Bureau and administrations shall apply the provisions of Nos. **S9.2** and **S9.5B**, as revised by this Conference;

2 that any request for coordination or modifications to a previously submitted API received by the Bureau after 3 June 2000 shall be examined in accordance with the provisions of No. **S9.2** as revised by this Conference.

ADD

RESOLUTION [COM4/6] (WRC-2000)

Use of the band 2 630-2 655 MHz in certain Region 3 countries by non-GSO satellite systems in the broadcasting-satellite service (sound)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the band 2 535-2 655 MHz is allocated by No. **S5.418** to the broadcasting-satellite service (sound) in certain Region 3 countries;

b) that the provisions of Resolution **528** currently limit use of the band by systems in the broadcasting-satellite service (sound) to the upper 25 MHz of the band;

c) that, prior to WRC-2000, there were no coordination procedures applicable to non-GSO broadcasting-satellite (sound) systems in this band in relation to other non-GSO or GSO satellite networks;

d) that satellite technology has now advanced to the stage where non-GSO systems in the broadcasting-satellite service (sound) are technically and economically feasible when operated with high elevation angles;

e) that satellite systems in the broadcasting-satellite service as described in *considering d)* can be used for the delivery of high quality, spectrally efficient broadcasting-satellite (sound) service to portable and mobile terminals;

f) that non-GSO systems in the broadcasting-satellite service (sound) in the 2 630-2 655 MHz band in Region 3 have been communicated to ITU and are expected to be brought into use in the near future;

g) that prior to WRC-2000 the protection of existing terrestrial services was addressed through the coordination procedures of No. **S9.11**;

h) that the provision in *considering g)* may be inadequate to ensure the future deployment of terrestrial services in this band,

resolves

1 that any broadcasting-satellite service (sound) using non-GSO orbits brought into operation in the 2 630-2 655 MHz band in Region 3 shall be operated such that the minimum elevation angle over the service area is not less than 40° for sharing with terrestrial services;

2 that, before an administration notifies to the Bureau or brings into use a frequency assignment for a broadcasting-satellite service (sound) system using non-GSO satellites in the 2 630-2 655 MHz band, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, it shall seek the agreement of any administration having a primary allocation to terrestrial services in the same frequency band if the power flux-density on its territory exceeds the following thresholds:

−128	dB(W/m^2) in 1 MHz	for $0^o \le \theta \le 5^o$
−128 + 0.75 (θ − 5)	dB(W/m^2) in 1 MHz	for $5^o < \theta \le 25^o$
−113	dB(W/m^2) in 1 MHz	for $25^o < \theta \le 90^o$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees.[1]

3 that the elevation angle value in *resolves* 1 and the power flux-density threshold values in *resolves* 2 shall be applied provisionally until the end of WRC-02/03. Any broadcasting-satellite service (sound) system using non-GSO satellites in the 2 630-2 655 MHz band, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, shall be subject to the elevation angle and power flux-density threshold values determined by that conference unless Resolution **49** information has been supplied for that system by the beginning of that conference;

4 that systems in the broadcasting-satellite service (sound) using non-GSO satellites shall be limited to national services unless agreement has been reached to include the territories of other administrations in the service area;

5 that, as of 3 June 2000, the Bureau and administrations shall apply the provisions of footnotes Nos. **S5.[XXX1] (WRC-2000)**, **S5.[XXX2] (WRC-2000)** and **S5.[XXX3] (WRC-2000)**, as well as **S5.418**, as revised by this Conference,

invites ITU-R

1 to conduct the necessary studies to develop calculation methodologies and sharing criteria to be used by administrations when applying the provisions of footnotes Nos. **S5.[XXX1]**, **S5.[XXX2**] and **S5.[XXX3]**;

2 to conduct the necessary technical and regulatory studies relating to frequency sharing between systems in the broadcasting-satellite service (sound) and terrestrial services in the band 2 535-2 655 MHz with a view to not unduly constraining either service,

instructs the Radiocommunication Bureau

in its examination of requests for coordination for any broadcasting-satellite service (sound) system using non-GSO satellites in the 2 630-2 655 MHz band, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, to determine if the power flux-density thresholds given in *resolves* 2, and taking into account *resolves* 3, are exceeded on the territory of any administration other than the notifying administration and, if so, to notify both the notifying and the affected administrations.

[1] These values relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

ADD

RESOLUTION [COM5/8] (WRC-2000)

Modification of bringing into use and administrative due diligence requirements as a consequence of allocation changes above 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that pursuant to agenda item 1.16 identified in Resolution **721 (WRC-97)**, the preparatory work for WRC-2000 considered the allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and radio astronomy services;

b) that agenda item 1.16 took into account Resolution **723 (WRC-97)**, which also included consideration of the allocation of frequency bands above 71 GHz to the space research (passive) service;

c) that changes made to the allocations for these passive science services were accompanied by consequential changes to allocations above 71 GHz to active services;

d) that the allocation changes may cause delays in the design and development of space stations planning to use these allocations;

e) that the delays also impact transmitters and receivers, on the same space stations, planning to use frequencies below 71 GHz;

f) that advance publication and request for coordination information for satellite networks in the fixed-satellite, mobile-satellite, or broadcasting-satellite services which included the use of frequencies above 71 GHz have been received by the Bureau;

g) that this advance publication or request for coordination information for satellite networks in the fixed-satellite, mobile-satellite, or broadcasting-satellite services would be based upon the frequency allocations in force at the time the information was submitted;

h) that No. **S11.44** requires that the notified date of bringing into use of any space station of a satellite network be no later than nine years (for advance publication information received prior to 22 November 1997) or seven years (for advance publication information received on or after 22 November 1997) following the date of receipt by the Bureau of the advance publication information under No. **S9.1**;

i) that No. **S11.44B** allows the notified date of bringing into use to be extended by the Bureau only if the due diligence information required by Resolution **49 (WRC-97)** is provided for the satellite network; if the procedure for effecting coordination has commenced; and if the notifying administration certifies that the reason for the extension is one or more specific circumstances listed in Nos. **S11.44C** through **S11.44I**;

j) that none of the specific circumstances listed in Nos. **S11.44C** through **S11.44I** includes changes to the frequency allocations as a result of world radiocommunication conference decisions;

k) that in order to provide the necessary protection to the passive science services, satellite networks in the fixed-satellite, mobile-satellite, or broadcasting-satellite services employing frequencies above 71 GHz with advanced publication or request for coordination information which is considered as having been received by the Bureau prior to 3 June 2000, must adhere to the revised Table of Frequency Allocations resulting from WRC-2000,

resolves

1 that, for satellite networks employing frequencies above 71 GHz in the fixed-satellite, mobile-satellite, or broadcasting-satellite services, with advance publication or request for coordination information which is considered as having been received by the Bureau prior to 3 June 2000, the Bureau will extend the notified date of bringing into use under No. **S11.44** up to 3 June 2007 at the request of the notifying administration;

2 that, notwithstanding the notified date of bringing into use in *resolves* 1, there shall be no change in the date that the advance publication or request for coordination information is considered as having been received by the Bureau;

3 that, for any satellite network subject to this Resolution, the notifying administration shall have until 31 December 2000 to inform the Bureau of a re-submission of the Appendix **S4** advance information and coordination information for the space station to reflect the proposed modification in the frequency band above 71 GHz and that this Appendix **S4** information be excluded from the cost recovery procedures;

4 that the provisions contained in **S11.44B** through **S11.44I** are applicable with respect to the date of bringing into use communicated to the Bureau under *resolves* 3;

5 that, for any satellite network subject to this Resolution and Resolution **49 (WRC-97)**, the notifying administration shall have until the new date of bringing into use under *resolves* 3 to send the administrative due diligence information to the Bureau, including any revision of administrative due diligence information submitted before 3 June 2000;

6 that the foregoing *resolves* apply to any satellite network qualified under *resolves* 1, including transmitters and receivers in the same network employing frequencies below 71 GHz;

7 that any extension of the bringing into use date or due diligence requirements granted under the conditions specified in this Resolution shall be revoked and the date requirements in effect prior to the extension shall apply to all frequency bands utilized by any satellite network that does not bring into use the frequency bands above 71 GHz within the time limitations;

8 that six months before the expiry date specified in *resolves* 3, the Bureau will provide administrations with a list of the networks to which this Resolution applies and the options under the foregoing *resolves*;

9 that satellite networks employing frequencies above 71 GHz with advanced publication or request for coordination information which is considered as having been received by the Bureau prior to 3 June 2000, shall adhere to the revised Table of Frequency Allocations resulting from WRC-2000.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 1 to Document 481-E 1 June 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

R.4(Add.1) **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 5	B.5/448	**RESOLUTION [COM5/10] (WRC-2000)**

Annex: 1 page

PINK PAGES

ADD

RESOLUTION [COM5/10] (WRC-2000)

Review of sharing conditions between services in the band 13.75-14 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WARC-92 (Malaga-Torremolinos, 1992) added an allocation to the fixed-satellite service (FSS) (Earth-to-space) in the band 13.75-14 GHz;

b) that this band is shared with the radiolocation and radionavigation services and certain limitations have been placed on the fixed-satellite, radiolocation and radionavigation services under No. **S5.502**;

c) that the services operating in this band are evolving and may have new technical requirements;

d) that the band 13.772-13.778 GHz is also shared with the space research service under the conditions set out in No. **S5.503**;

e) that, in some countries, the band is also allocated to the fixed service and the mobile service (Nos. **S5.499** and **S5.500**) and to the radionavigation service (No. **S5.501**);

f) that the GSO FSS operators have expressed interest in operating earth station antennas with a diameter of less than 4.5 m in the band 13.75-14 GHz;

g) that there is a need to determine the sharing conditions affecting the radiolocation, space research and fixed-satellite services and to maintain the delicate balance between these services,

resolves to invite ITU-R

1 to conduct studies, as a matter of urgency and in time for consideration by WRC-03, on the sharing conditions indicated in Nos. **S5.502** and **S5.503**, with a view to reviewing the constraints in No. **S5.502** regarding the minimum antenna diameter of GSO FSS earth stations and the constraints on the e.i.r.p. of the radiolocation service;

2 to identify and study, in time for consideration by WRC-03, possible alternative sharing conditions to those indicated in Nos. **S5.502** and **S5.503**.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 481-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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 5	B.5/448	**ARTICLE S15** – Section I – S15.8 – Section VI – S15.28 – S15.35 – S15.37 **ARTICLE S52** – Section VI (C2) – S52.220A – S52.220B – S52.220C – S52.220D – S52.221 – S52.221A – S52.222 – S52.222A – S52.224 **APPENDIX S17** – Part B – Section I, § 5 – Sub-Section A (Notes) – Sub-Section B (Table) **RESOLUTION 207 (Rev.WRC-2000)** **RESOLUTION 214 (Rev.WRC-2000)** **RESOLUTION 218 (WRC-97)**

RESOLUTION 219 (WRC-97)

RESOLUTION 712 (Rev.WRC-95)

RESOLUTION 723 (Rev.WRC-2000)

RESOLUTION [COM5/2] (WRC-2000)

RESOLUTION [COM5/3] (WRC-2000)

RESOLUTION [COM5/5] (WRC-2000)

RESOLUTION [COM5/7] (WRC-2000)

RESOLUTION [COM5/12] (WRC-2000)

RESOLUTION [COM5/15] (WRC-2000)

RESOLUTION [COM5/16] (WRC-2000)

RESOLUTION [COM5/18] (WRC-2000)

RESOLUTION [COM5/22] (WRC-2000)

RESOLUTION [COM5/23] (WRC-2000)

RESOLUTION [GT PLEN-1/1] (WRC-2000)

Annex: 37 pages

ARTICLE S15

Interferences

Section I – Interference from radio stations

MOD

S15.8 § 4 Special consideration shall be given to avoiding interference on distress and safety frequencies, those related to distress and safety identified in Article **S31** and Appendix **S13**, and those related to safety and regularity of flight identified in Appendix **S27**.

Section VI – Procedure in a case of harmful interference

MOD

S15.28 § 20 Recognizing that transmissions on distress and safety frequencies and frequencies used for the safety and regularity of flight (see Article **S31**, Appendix **S13** and Appendix **S27**) require absolute international protection and that the elimination of harmful interference to such transmissions is imperative, administrations undertake to act immediately when their attention is drawn to any such harmful interference.

MOD

S15.35 § 27 On being informed that a station over which it has jurisdiction is believed to have been the cause of harmful interference, an administration shall, as soon as possible, acknowledge receipt of that information by the quickest means available. Such acknowledgement shall not constitute an acceptance of responsibility.

MOD

S15.37 § 29 An administration receiving a communication to the effect that one of its stations is causing harmful interference to a safety service shall promptly investigate the matter and take any necessary remedial action and respond in a timely manner.

ARTICLE S52

Special rules relating to the use of frequencies

Section VI – Use of frequencies for radiotelephony

C2 – Call and reply

ADD

S52.220A Administrations should encourage the coast stations and ship stations under their jurisdiction to use digital selective calling techniques for call and reply.

ADD

S52.220B When calling by radiotelephony is necessary, it should be done (in order of preference):

ADD

S52.220C 1) on the working frequencies assigned to the coast stations; or

ADD

S52.220D 2) when this is not possible, on the calling frequencies listed under No. **S52.221** or **S52.221A** below.

MOD

S52.221 § 97 1) Ship stations may use the following carrier frequencies for calling in radiotelephony:

4 125 kHz[3, 4, 5]
6 215 kHz[4, 5]
8 255 kHz
12 290 kHz[5] (see also No. **S52.221A**)
16 420 kHz[5] (see also No. **S52.221A**)
18 795 kHz
22 060 kHz
25 097 kHz

ADD

S52.221A Calling on the carrier frequencies 12 290 kHz and 16 420 kHz shall cease as soon as possible and no later than 31 December 2003. The alternative carrier frequencies 12 359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis, provided that the peak envelope power does not exceed 1 kW.

MOD

S52.222 2) Coast stations may use the following carrier frequencies for calling in radiotelephony[6]:

4 417 kHz[7]
6 516 kHz[7]
8 779 kHz
13 137 kHz (see No. **S52.222A**)
17 302 kHz (see No. **S52.222A**)
19 770 kHz
22 756 kHz
26 172 kHz

ADD

S52.222A The carrier frequencies 13 137 kHz and 17 302 kHz shall not be used as calling frequencies after 31 December 2003. The alternative carrier frequencies 12 359 kHz and 16 537 kHz may be used by ship stations and coast stations for calling on a simplex basis, provided that the peak envelope power does not exceed 1 kW.

MOD

S52.224 § 99 1) Before transmitting on the carrier frequencies 4 125 kHz, 6 215 kHz, 8 291 kHz, 12 290 kHz or 16 420 kHz a station shall listen on the frequency for a reasonable period to make sure that no distress traffic is being sent (see No. **S52.221A** and Recommendation ITU-R M.1171).

APPENDIX S17

Frequencies and channelling arrangements in the high-frequency bands for the maritime mobile service

PART B – Channelling arrangements

Section I – Radiotelephony

MOD

5 The following frequencies in Sub-Section A are allocated for calling purposes:

– Channel No. 421 in the 4 MHz band;

– Channel No. 606 in the 6 MHz band;

– Channel No. 821 in the 8 MHz band;

– Channel No. 1221 in the 12 MHz band;

– Channel No. 1621 in the 16 MHz band;

– Channel No. 1806 in the 18 MHz band;

– Channel No. 2221 in the 22 MHz band;

– Channel No. 2510 in the 25 MHz band.

The use of channels 1221 and 1621 for calling purposes shall cease as soon as possible and no later than 31 December 2003 (see Nos. **S52.221A** and **S52.222A**).

The remaining frequencies in Sub-Sections A, B, C-1 and C-2 are working frequencies.

Sub-Section A

Table of single-sideband transmitting frequencies (kHz) for duplex (two-frequency) operation

MOD

2 (Not used)

8 For the conditions of use of the carrier frequency 12 290 kHz, see Nos. **S52.221A** and **S52.222A** and Appendix **S15**.

9 For the conditions of use of the carrier frequency 16 420 kHz, see Nos. **S52.221A** and **S52.222A** and Appendix **S15**.

Sub-Section B

Table of single-sideband transmitting frequencies (kHz) for simplex (single-frequency) operation and for intership cross-band (two-frequency) operation

(See § 4 of Section I of this Appendix)

MOD

4 MHz band[1]		6 MHz band		8 MHz band[2]		12 MHz band	
Carrier frequency	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**
4 146	4 147.4	6 224	6 225.4	8 294	8 295.4	12 353	12 354.4
4 149	4 150.4	6 227	6 228.4	8 297	8 298.4	12 356	12 357.4
		6 230	6 231.4			12 362	12 363.4
						12 365	12 366.4

MOD

16 MHz band		18/19 MHz band		22 MHz band		25/26 MHz band	
Carrier frequency	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**	**Carrier frequency**	**Assigned frequency**
16 528	16 529.4	18 825	18 826.4	22 159	22 160.4	25 100	25 101.4
16 531	16 532.4	18 828	18 829.4	22 162	22 163.4	25 103	25 104.4
16 534	16 535.4	18 831	18 832.4	22 165	22 166.4	25 106	25 107.4
		18 834	18 835.4	22 168	22 169.4	25 109	25 110.4
16 540	16 541.4	18 837	18 838.4	22 171	22 172.4	25 112	25 113.4
16 543	16 544.4	18 840	18 841.4	22 174	22 175.4	25 115	25 116.4
16 546	16 547.4	18 843	18 844.4	22 177	22 178.4	25 118	25 119.4

For use of frequencies 12 359 kHz and 16 537 kHz, see Nos. **S52.221A** and **S52.222A**.

MOD

RESOLUTION 207 (Rev.WRC-2000)

Measures to address unauthorized use of and interference to frequencies in the bands allocated to the maritime mobile service and to the aeronautical mobile (R) service

The World Radiocommunication Conference, (Istanbul, 2000),

considering

a) that the HF frequencies currently used by the aeronautical and maritime mobile services for distress, safety and other communications, including allotted operational frequencies, suffer from harmful interference and are often subject to difficult propagation conditions;

b) that WRC-97 considered some aspects of the use of the HF bands for distress and safety communications in the context of the Global Maritime Distress and Safety System (GMDSS), especially with regard to regulatory measures;

c) that unauthorized operations using maritime and aeronautical frequencies in the HF bands are continuing to increase and are already a serious risk to HF distress, safety and other communications;

d) that some administrations have resorted to, for example, transmitting warning messages on operational HF channels as a means of deterring unauthorized users;

e) that provisions of the Radio Regulations prohibit the unauthorized use of certain safety frequencies for communications other than those related to safety;

f) that enforcing compliance with these regulatory provisions is becoming increasingly difficult with the availability of low-cost HF SSB transceivers;

g) that monitoring observations of the use of frequencies in the band 2 170-2 194 kHz and in the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 27 500 kHz and to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz show that a number of frequencies in these bands are still being used by stations of other services, many of which are operating in contravention of No. **S23.2**;

h) that, in certain situations, HF radio is the sole means of communication for the maritime mobile service and that certain frequencies in the bands mentioned in *considering g)* are reserved for distress and safety purposes;

i) that, in certain situations, HF radio is the sole means of communication for the aeronautical mobile (R) service and that this is a safety service;

j) that this conference has reviewed the use of the HF bands by the aeronautical mobile (R) and maritime mobile services with a view to protecting operational, distress and safety communications,

considering in particular

a) that it is of paramount importance that the distress and safety channels of the maritime mobile service be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

b) that it is also of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the safety of life and property,

resolves to invite ITU-R and ITU-D, as appropriate

1 to study possible technical and regulatory solutions to assist in the mitigation of interference to operational distress and safety communications in the maritime mobile service and aeronautical mobile (R) service;

2 to increase regional awareness of appropriate practices in order to help mitigate interference in the HF bands, especially on distress and safety channels;

3 to report the results of the above studies to the next competent conference,

urges administrations

1 to ensure that stations of services other than the maritime mobile service abstain from using frequencies in distress and safety channels and their guard bands and in the bands allocated exclusively to that service, except under the conditions expressly specified in Nos. **S4.4**, **S5.128**, **S5.129**, **S5.137** and **S4.13** to **S4.15**; and to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies allocated to that service except under the conditions expressly specified in Nos. **S4.4** and **S4.13**;

2 to make every effort to identify and locate the source of any unauthorized emission capable of endangering human life or property and the safe and regular conduct of aircraft operations, and to communicate their findings to the Radiocommunication Bureau;

3 to participate in the monitoring programmes that the Radiocommunication Bureau may organize pursuant to this resolution;

4 to make every effort to prevent unauthorized transmissions in bands allocated to the maritime mobile service and the aeronautical mobile (R) service;

5 to request their competent authorities to take, within their respective jurisdiction, such legislative or regulatory measures which they consider necessary or appropriate in order to prevent stations from unauthorized use of distress and safety channels or from operating in contravention of No. **S23.2**;

6 to take all necessary steps in such cases of contravention of No. **S23.2** to ensure the cessation of any transmissions contravening the provisions of the Radio Regulations on the frequencies or in the bands referred to in this resolution;

7 to participate actively in the studies requested by this resolution,

instructs the Radiocommunication Bureau

1 to continue to organize monitoring programmes, at regular intervals, in the maritime distress and safety channels and their guard bands and in the bands allocated exclusively to the maritime mobile service between 4 063 kHz and 27 500 kHz and to the aeronautical mobile (R) service between 2 850 kHz and 22 000 kHz, with a view to ensuring the timely distribution of monitoring data and identifying the stations of other services operating on these channels or in these bands;

2 to seek the cooperation of administrations in identifying the sources of those emissions by all available means and in securing the cessation of those emissions;

3 when the station of another service transmitting in a band allocated to the maritime mobile service or to the aeronautical mobile (R) service has been identified, to inform the administration concerned;

4 to include the problem of interference to maritime and aeronautical distress and safety channels on the agenda of relevant regional radiocommunication seminars,

instructs the Secretary-General

to bring this resolution to the attention of the International Maritime Organization and the International Civil Aviation Organization and to invite them to participate in these studies.

MOD

RESOLUTION 214 (Rev.WRC-2000)

Sharing studies relating to consideration of the allocation of bands below 1 GHz to the non-geostationary mobile-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

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 1999 Conference Preparatory Meeting, 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;

h) that the bands 410-430 MHz and 440-470 MHz are extensively used by existing services in Region 1, in many countries in Region 3, and in some countries in Region 2, and new terrestrial systems are planned to be introduced in these bands;

i) that studies of certain bands have not yet been completed,

noting

a) that additional studies may identify suitable bands below 1 GHz and appropriate sharing techniques to be considered for worldwide allocations to non-GSO MSS;

b) 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;

c) that interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039, 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) 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;

e) that substantial progress has been made, with recently completed ITU-R studies of sharing between the non-GSO MSS below 1 GHz in the Earth-to-space direction and specific existing services, but studies on some important issues nevertheless remain to be completed;

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 the use of some sharing techniques such as those referred to in *noting c)* results in non-GSO MSS systems which have significantly greater spectrum requirements in the Earth-to-space direction than in the space-to-Earth direction,

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 WRC-03 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,

invites ITU-R

1 to study and develop Recommendations on, as a matter of urgency, the performance requirements, sharing criteria and technical and operational issues relating to sharing between existing and planned systems of allocated services and non-GSO MSS below 1 GHz;

2 to carry out studies, as a matter of urgency, in preparation for WRC-03, having regard to *noting c)*;

3 as a matter of urgency, to carry out studies in preparation for WRC-03 with respect to interference mitigation techniques, such as the dynamic channel activity assignment system described in Recommendation ITU-R M.1039, necessary to permit the continued development of all of the services to which the bands are allocated;

4 to bring the results of these studies to the attention of WRC-03 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.

SUP

RESOLUTION 218 (WRC-97)

Use of the bands 1 525-1 559 MHz and 1 626.5-1 660.5 MHz by the mobile-satellite service

SUP

RESOLUTION 219 (WRC-97)

Studies relating to consideration of the allocation to the non-geostationary mobile-satellite service in the meteorological aids band 405-406 MHz and the impact on primary services allocated in the adjacent bands

SUP

RESOLUTION 712 (Rev.WRC-95)

Consideration by a future competent World Radiocommunication Conference of issues dealing with allocations to space services

MOD

RESOLUTION 723 (Rev.WRC-2000)

Consideration by a future competent world radiocommunication conference of issues dealing with allocations to science services

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference recognized the importance of proper consideration of science service issues based on technical and operational criteria developed in radiocommunication study groups;

b) that circumstances did not enable the completion of all necessary studies relating to a number of proposals concerning science services;

c) that a deficiency in telecommand (uplink) frequency allocations exists, compared to available telemetry (downlink) allocations in the 100 MHz to 1 GHz range;

d) that certain existing allocations may provide the means to satisfy requirements for space research applications without the need for additional frequency allocations, subject to the determination of the appropriate allocation status and/or sharing conditions,

resolves

to recommend that WRC-03 consider the following matters:

1) provision of up to 3 MHz of frequency spectrum for the implementation of telecommand links in the space research and space operations services in the frequency range 100 MHz to 1 GHz;

2) to consider incorporating in the Table of Frequency Allocations the existing primary allocation to the space research service in the band 7 145-7 235 MHz under No. **S5.460**;

3) to review the allocations to the space research service (deep space) (space-to-Earth) and the inter-satellite service, taking into account the coexistence of these two services in the frequency range 32-32.3 GHz, with a view to facilitating satisfactory operation of these services;

4) to review existing allocations to space science services near 15 GHz and 26 GHz, with a view to accommodating wideband space-to-Earth space research applications,

invites ITU-R

to complete the necessary studies, as a matter of urgency, taking into account the present use of allocated bands, with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of the conference,

instructs the Secretary-General

to bring this resolution to the attention of the international and regional organizations concerned.

ADD

RESOLUTION [COM5/2] (WRC-2000)

Criteria and process for the resolution of possible cases of misapplication of non-GSO FSS single-entry limits in Article S22

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the non-GSO FSS single-entry limits are based on certain assumptions;

b) that these single-entry limits can be misapplied and that any misapplication of single-entry limits should be avoided,

noting

that avoiding misapplication of the single-entry limits is of interest to all administrations,

recognizing

a) that misapplication of single-entry limits can reduce the number of competing non-GSO FSS systems;

b) that misapplication of single-entry limits can lead to differing regulatory effect for non-GSO FSS systems which meet the limits and those which misapply the limits in Article **S22**;

c) that misapplication of single-entry limits can disadvantage non-GSO FSS systems meeting, and intending to always meet, the single-entry limits in Article **S22**,

resolves

that misapplication of the single-entry limits in Article **S22**, either by artificial splitting or by combining of non-GSO systems, shall not be permitted,

instructs the Secretary-General of ITU

to note this resolution in the context of Article 1 of the ITU Convention,

invites ITU-R

as a matter of urgency, and in time for consideration by WRC-03, to conduct technical studies and develop regulatory procedures to avoid misapplication of the single-entry limits included in Tables **S22-1**, **S22-2** and **S22-3** of Article **S22**,

instructs the Director of the Radiocommunication Bureau

1 as of the end of WRC-03, to review and, if appropriate, revise any finding previously made in respect of compliance with the limits contained in Article **S22** for a non-GSO FSS system for which notification information has been received on or after 22 November 1997; this review and revision shall be based on the result of the studies under *invites ITU-R*;

2 to determine if and when misapplication of single-entry limits has occurred or will occur based on the process described in Annex 1;

3 to assist in the development of procedures to verify compliance with the intent of this resolution.

ANNEX 1 TO RESOLUTION [COM5/2] (WRC-2000)

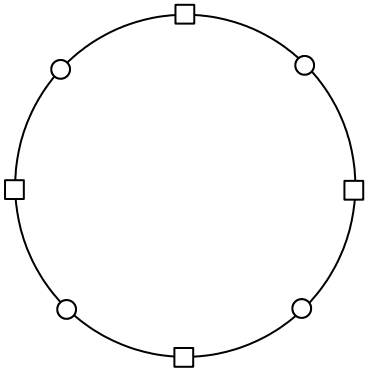
Process to be followed by BR in developing and implementing procedures to avoid misapplication of non-GSO FSS single-entry limits in Article S22

1 In following the process described below, BR will take all information available to it, or made available to it, into account in arriving at a decision or at a course of action to ensure that the requirements of this resolution are met.

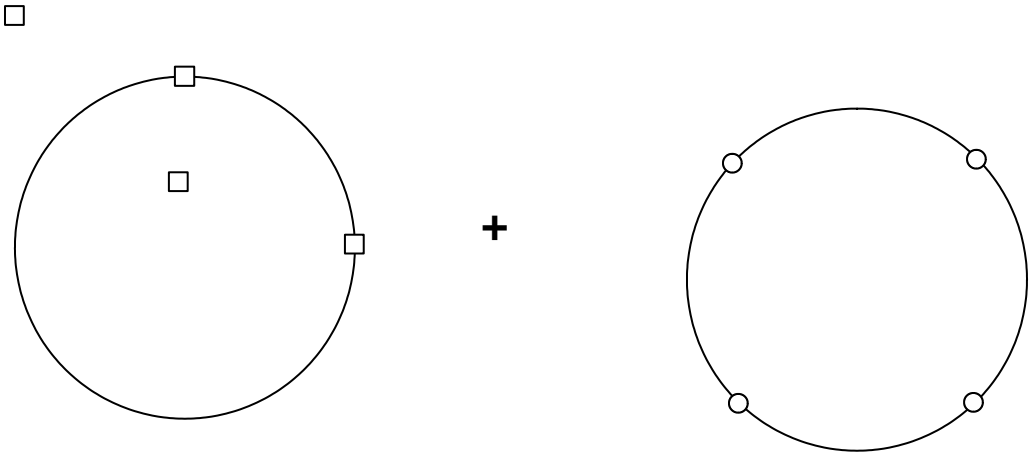
2 For the purpose of determining if misapplication of non-GSO FSS single-entry limits has occurred or will occur, it is necessary for the regulatory solutions to focus not just on "the splitting of systems", but on the "combining of systems" as well. While it is necessary to avoid the misapplication of single-entry limits through the "splitting or combining of systems", reasonable allowance needs to be made for the fact that some applications will use two or more different systems at certain times. The key then is to define certain limits in a way that will allow single-entry criteria to work effectively in practice, while at the same time allowing certain practical combinations of systems up to a point, from time to time.

Example of splitting

Before splitting: The whole system - as a single system - does not meet single-entry limits.

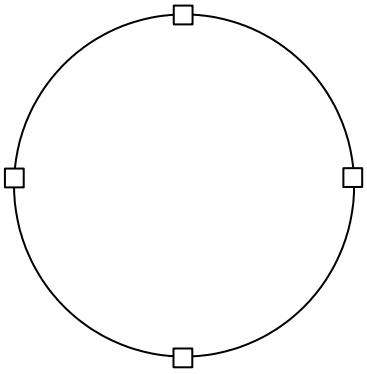


After splitting: When broken into two (or more) parts, each part system meets single-entry limits.

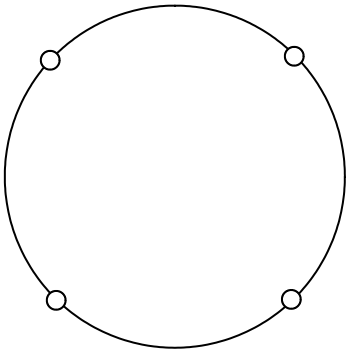


Example of combining

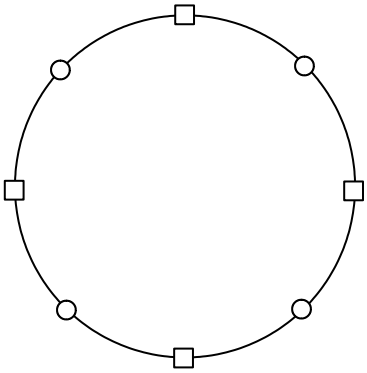
At filing stage (before combining): XYZ Ltd. owns system A. System A meets single-entry limits.



At filing stage (before combining): ABC Ltd. owns system B. System B meets single-entry limits.



At implementation stage (after combining): XYZ Ltd. and ABC Ltd. combine networks A and B to implement round-the-clock end-to-end non-GSO services (if filed as such, the total of networks A and B would fail to meet the single-entry limits).



ADD

RESOLUTION [COM5/3] (WRC-2000)

Frequency sharing in the range 37.5-50.2 GHz between GSO FSS networks and non-GSO FSS systems

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has made provisions for the operation of GSO FSS networks and non-GSO FSS systems in the 10-30 GHz frequency range;

b) that there is an emerging interest in operating GSO FSS networks and non-GSO FSS systems in the 37.5-50.2 GHz frequency range;

c) that there is a need to provide for the orderly development and implementation of new satellite technologies in the 37.5-50.2 GHz frequency range;

d) that systems based on the use of new technologies associated with both GSO FSS networks and non-GSO FSS systems are capable of providing the most isolated regions of the world with high-capacity and low-cost means of communication;

e) 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;

f) that the Radio Regulations should be sufficiently flexible to accommodate the introduction and implementation of innovative technologies as they evolve;

g) that the CPM Report to WRC-2000 stated that in the bands 37.5-50.2 GHz where there has been little or no deployment of satellite systems to date, both GSO FSS and non-GSO FSS operators should be expected to exhibit flexibility in achieving the appropriate balance in the sharing environment,

resolves to urge administrations

in the application of Article **S22** to their GSO FSS networks and non-GSO FSS systems in the 37.5-50.2 GHz frequency range prior to WRC-03, to seek balanced sharing arrangements between these systems,

invites ITU-R

1 to undertake, as a matter of urgency, the appropriate technical, operational and regulatory studies on sharing arrangements which achieve an appropriate balance between GSO FSS networks and non-GSO FSS systems in the frequency range 37.5-50.2 GHz;

2 to report the results of these studies to WRC-03.

ADD

RESOLUTION [COM5/5] (WRC-2000)

Consideration by a future competent world radiocommunication conference of issues dealing with sharing between active services above 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has made changes to the Table of Frequency Allocations above 71 GHz, following consideration of science service issues;

b) that there are several co-primary active services in some bands above 71 GHz in the Table of Frequency Allocations as revised by this conference;

c) that there is limited knowledge of characteristics of active services that may be developed to operate in bands above 71 GHz;

d) that sharing criteria for sharing between active services in bands above 71 GHz have not yet been fully developed within ITU-R;

e) that sharing between multiple co-primary active services may hinder the development of each active service in bands above 71 GHz;

f) that the technology for some active services may be commercially available earlier than for some other active services;

g) that adequate spectrum should be available for the active services for which the technology is available at a later time,

noting

that sharing criteria need to be developed, to be used by a future competent conference, for determining to what extent sharing between multiple co-primary active services is possible in each of the bands,

resolves

1 that appropriate measures should be taken to meet the spectrum requirements for active services for which the technology will be commercially available at a later time;

2 that sharing criteria be developed for co-primary active services in bands above 71 GHz;

3 that the sharing criteria developed should form the basis for a review of active service allocations above 71 GHz at a future competent conference, if necessary,

urges administrations

to note the possibility of changes to Article **S5** to accommodate emerging requirements for active services, as indicated in this resolution, and to take this into account in the development of national policies and regulations,

invites ITU-R

to complete the necessary studies with a view to presenting, at the appropriate time, the technical information likely to be required as a basis for the work of a future competent conference,

instructs the Secretary-General

to bring this resolution to the attention of the international and regional organizations concerned.

ADD

RESOLUTION [COM5/7] (WRC-2000)

Further studies on the sharing conditions between GSO FSS networks and non-GSO FSS systems and between non-GSO FSS systems

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted, in Article **S22**, epfd limits to be met by non-GSO FSS systems in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30.0 GHz;

b) that Article **S22** includes single-entry validation (Tables **S22-1A** to **S22-1D**, **S22-2** and **S22-3**), single-entry operational (Tables **S22-4A**, **S22-4B** and **S22-4C**) and, for certain antenna sizes, single-entry additional operational (Table **S22-4A1**) epfd↓ limits which apply to non-GSO FSS systems for the protection of GSO networks;

c) that compliance of a proposed non-GSO FSS system with the single-entry validation limits will be checked by the Bureau, under Nos. **S9.35** and **S11.31**;

d) that compliance of a proposed non-GSO FSS system with the single-entry operational and, for certain antenna sizes, single-entry additional operational epfd↓ limits is not subject to verification by the Bureau;

e) that Appendix **S4**, as modified by this conference, requires an administration responsible for a non-GSO FSS system to commit to meeting the single-entry additional operational epfd↓ limits;

f) that administrations with assignments to GSO FSS and/or BSS networks that have been brought into use, as well as administrations with assignments to non-GSO FSS systems that have been brought into use, in frequency bands where operational epfd↓ limits have been established, require reliable means of ascertaining that non-GSO FSS systems with overlapping frequency assignments that have been brought into use are in compliance with the single-entry operational limits referred to in *considering b)*;

g) that administrations with assignments to non-GSO FSS systems in frequency bands where additional operational epfd limits have been established require reliable means of ascertaining whether their non-GSO FSS systems would be in compliance with the single-entry additional operational limits referred to in *considering b)*;

h) that administrations with assignments to GSO FSS networks that have been brought into use in bands where additional operational epfd limits have been established require reliable means of ascertaining whether a particular non-GSO FSS system having assignments which have been brought into use in those bands is in compliance with the single-entry additional operational limits referred to in *considering b)*,

recognizing

a) that assignments to GSO FSS and/or GSO BSS networks have already been brought into use or will be brought into use in the frequency bands where operational epfd↓ limits and/or additional operational epfd↓ limits apply, and that assignments to non-GSO FSS systems subject to the limits have been submitted to the Bureau in the same bands;

b) that ITU-R has developed a recommendation containing the functional specifications for the software to be used by BR to verify the compliance of proposed non-GSO FSS systems with the single-entry validation limits included in Tables **S22-1A**, **S22-1B**, **S22-1C**, **S22-1D**, **S22-2** and **S22-3**;

c) that ITU-R has indicated that administrations will be able to check compliance of a proposed non-GSO FSS system with the single-entry operational limits by measurements at GSO earth stations and has confirmed the feasibility of such measurements;

d) that ITU-R has indicated it is not practicable for administrations to verify compliance with the single-entry additional operational epfd↓ limits by measurements at GSO earth stations;

e) that, in the light of *recognizing d)*, ITU-R is revising an existing recommendation to enable accurate prediction of the levels produced by a proposed non-GSO FSS system;

f) that ITU-R has initiated studies on the sharing criteria to be applied during 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,

recognizing further

that, taking into account Nos. **S22.5H** and **S22.5I**, it is important to discourage violations of the operational epfd↓ limits and additional operational epfd↓ limits by a non-GSO FSS system, but that if a violation nevertheless occurs, it should be corrected in the most expeditious manner,

resolves to invite ITU-R

1 to develop, with the aim of completion by 2003, methodologies to assess the interference levels (through measurement for operational limits or simulation for additional operational limits) that would be produced by a non-GSO FSS system in the frequency bands specified in Tables **S22-4A** to **S22-4C** which may be used by administrations to verify compliance of an individual non-GSO FSS system with the operational limits and additional operational limits contained in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**;

2 to develop, with the aim of completion by 2003, an appropriate recommendation or recommendations describing suitable formats for administrations operating or planning to operate non-GSO FSS systems to make available all necessary information to be used by administrations when checking compliance with the operational limits and/or the additional operational limits;

3 to develop a methodology for the generation of continuous curves of epfd↓ versus percentage time for a range of antenna diameters of the GSO FSS earth station to be protected, in order for designers of GSO FSS satellite networks to determine the expected single-entry validation and additional operational interference levels for antenna sizes other than those given in Tables **S22-1A** to **S22-1D** and **S22-4A1**;

4 to develop a methodology for the generation of values of epfd↑ for different antenna beamwidths of the GSO FSS space station to be protected, in order for designers of GSO FSS satellite networks to determine the expected single-entry interference level for antenna beamwidths other than those given in Table **S22-2**;

5 to conduct, with the aim of completion by 2003, the studies relating to the sharing criteria to be applied during 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,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

ADD

RESOLUTION [COM5/12] (WRC-2000)

Study on interference caused to the distress and safety frequencies 12 290 kHz and 16 420 kHz by routine calling

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the distress and safety frequencies 12 290 kHz and 16 420 kHz are the ship station transmitting frequencies of the maritime radiotelephony channels 1221 and 1621;

b) that, at the date of this conference, some coast stations are still using channels 1221 and 1621 for calling purposes and have indicated a wish to continue calling on these channels in the future;

c) that this conference decided that calling on channels 1221 and 1621 shall cease on 31 December 2003 at the latest;

d) that replacement channels may need to be made available for the coast stations mentioned under *considering b)*;

e) that there are differing opinions on whether calling on channels 1221 and 1621 causes significant interference to distress and safety communications;

f) that this issue can be resolved by analysing the results of an ITU-R study;

g) that this conference has adopted additional measures that may significantly reduce this interference;

h) that IMO and several Member States have requested that the distress and safety frequencies 12 290 kHz and 16 420 kHz be reserved solely for distress and safety communications;

i) that the full implementation of the cessation of calling on 31 December 2003 on the distress and safety frequencies 12 290 kHz and 16 420 kHz will allow this issue to be reconsidered by the next world radiocommunication conference,

resolves

1 to invite ITU-R to study the interference to the distress and safety frequencies 12 290 kHz and 16 420 kHz caused by routine calling on channels 1221 and 1621;

2 to instruct the Radiocommunication Bureau, in consultation with administrations, to organize monitoring programmes for the support of these studies;

3 to urge administrations to participate actively in these studies;

4 to invite ITU-R to complete these studies in time for consideration by WRC-03;

5 to invite WRC-03 to consider this issue,

instructs the Secretary-General

to communicate this resolution to the International Maritime Organization.

ADD

RESOLUTION [COM5/15] (WRC-2000)

Studies on compatibility between stations of the radionavigation-satellite service (Earth-to-space) operating in the frequency band 5 000-5 010 MHz and the international standard system (microwave landing system) operating in the band 5 030-5 150 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the band 5 000-5 250 MHz is allocated to the aeronautical radionavigation service on a primary basis;

b) that this conference added a primary allocation to the radionavigation-satellite service (RNSS) (Earth-to-space) in the 5 000-5 010 MHz band;

c) that the band 5 030-5 150 MHz is to be used for the operation of the international standard microwave landing system (MLS) for precision approach and landing; the requirements for this system shall take precedence over other uses of this band in accordance with No. **S5.444**;

d) that unwanted emissions from RNSS stations may fall into the frequency band used by the MLS;

e) that studies have not been carried out to determine the compatibility between such RNSS transmitters and the MLS receivers operated on board aircraft used during approach and landing;

f) that the MLS can be well protected through the implementation of an adequate separation distance between RNSS (Earth-to-space) transmitters and MLS receivers, and other mitigation techniques,

resolves to invite ITU-R

to conduct, as a matter of urgency, the appropriate technical, operational and regulatory studies to ensure that stations of the RNSS (Earth-to-space) do not cause harmful interference to the operation of the international standard MLS, and to develop, if needed, appropriate recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Secretary-General

to bring this resolution to the attention of ICAO.

ADD

RESOLUTION [COM5/16] (WRC-2000)

Studies on compatibility between the radionavigation-satellite service (space-to-Earth) operating in the frequency band 5 010-5 030 MHz and the radio astronomy service operating in the band 4 990-5 000 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that new radiocommunication services are developing, many of which require satellite transmitters, and need to be allocated sufficient spectrum;

b) that research in radio astronomy depends critically upon the ability to make observations at the extreme limits of sensitivity and/or precision;

c) that transmissions from space stations of the radionavigation-satellite service (RNSS) in the frequency band 5 010-5 030 MHz near the radio astronomy service operating in the band 4 990-5 000 MHz may cause interference harmful to the radio astronomy service (RAS);

d) that Recommendation ITU-R RA.769-1 recommends, *inter alia*, that all practicable steps be taken to reduce to the absolute minimum all unwanted emissions falling into RAS bands, particularly emissions from aircraft, spacecraft and balloons;

e) that protection requirements for RAS are explained and interference threshold values detailed in the Annex to Recommendation ITU-R RA.769-1;

f) that different coupling mechanisms apply to interfering emissions from terrestrial transmitters or from transmitters on board GSO or non-GSO satellites;

g) that this conference has revised Recommendation 66, which calls for study of those frequency bands and instances where, for technical or operational reasons, out-of-band emission limits may be required in order to protect safety services and passive services such as radio astronomy, and the impact on all concerned services of implementing or not implementing such limits;

h) that administrations may require criteria to protect RAS from interference detrimental to radio astronomy observations caused by space-to-Earth transmissions of space stations,

noting

a) that this conference has adopted No. **S5.444C** specifying a provisional pfd limit in the band 4 990-5 000 MHz for out-of-band space-to-Earth emissions of the RNSS operating in the band 5 010-5 030 MHz;

b) that the general problem of protection of radio astronomy and passive services is under study in ITU-R, *inter alia* in response to Recommendation 66,

resolves

1 to invite WRC-03 to review the provisional pfd limit on the RNSS in the band 4 990-5 000 MHz for out-of-band space-to-Earth emissions of the RNSS operating in the band 5 010-5 030 MHz;

2 that the limits indicated in No. **S5.444C** shall be applied provisionally for systems for which complete notification information has been received by the Bureau after 2 June 2000;

3 that, as of 3 June 2000, when notifying frequency assignments to a satellite network in the radionavigation-satellite service in the bands 5 010-5 030 MHz, the responsible administration shall provide the calculated values of the aggregate power flux-density in the bands above 5 030 MHz and in the band 4 990-5 000 MHz, as defined in No. **S5.444C**, in addition to the relevant characteristics listed in Appendix **S4**,

invites ITU-R

1 to conduct, or continue to conduct, as a matter of urgency and in time for consideration by WRC-03, the appropriate technical, operational and regulatory studies to review the provisional pfd limit concerning the operation of space stations, including the development of a methodology for calculating the aggregate power levels in order to ensure that the RNSS (space-to-Earth) in the band 5 010-5 030 MHz will not cause interference detrimental to the RAS in the band 4 990-5 000 MHz;

2 to report to CPM-03 on the conclusions of these studies,

urges administrations

1 to participate actively in the aforementioned studies by submitting contributions to ITU-R;

2 to ensure that, to the extent feasible, systems designed to operate in the RNSS frequency band 5 010-5 030 MHz incorporate interference avoidance techniques, such as filtering,

instructs the Radiocommunication Bureau

as of the end of WRC-03, to review and, if appropriate, revise any finding previously made in respect of the compliance with the out-of-band emission limits contained in No. **S5.444C** of an RNSS (space-to-Earth) system for which notification information has been received before the end of WRC-03; this review shall be based on the values, as revised, if appropriate, by WRC-03.

ADD

RESOLUTION [COM5/18] (WRC-2000)

Protection of terrestrial services in all Regions from geostationary-satellite networks in the fixed-satellite service in Region 2 using the frequency band 11.7-12.2 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in Regions 1 and 3, the band 11.7-12.2 GHz is allocated on a co-primary basis to terrestrial services and to the broadcasting-satellite service;

b) that, in Region 2, the band 11.7-12.1 GHz is allocated on a co-primary basis to terrestrial services (except in the countries listed in No. **S5.486**) and to the fixed-satellite service;

c) that, in Region 2, the band 12.1-12.2 GHz is allocated on a co-primary basis to terrestrial services in Peru (see No. **S5.489**) and to the fixed-satellite service;

d) that protection of the broadcasting-satellite service in Regions 1 and 3 from the fixed-satellite service in Region 2 is assured by Article 7 and Annex 4 of Appendix **S30**;

e) that protection of the fixed-satellite service in Region 2 from the fixed-satellite service in that Region is assured either by Article **S9** (Nos. **S9.7** or **S9.12**) or Article **S22**;

f) that protection of terrestrial services in Regions 1, 2 and 3 from non-geostationary-satellite systems in the fixed-satellite service in Region 2 is assured by Article **S21**;

g) that there is a need to protect terrestrial services in Regions 1, 2 and 3 from geostationary-satellite networks in the fixed-satellite service in Region 2;

h) that this conference has modified No. **S5.488** by revising the regulatory limitations on the operation of geostationary-satellite networks in the fixed-satellite service in Region 2 in the band 11.7-12.2 GHz,

recognizing

that ITU-R has developed Recommendation ITU-R SF.674-1, dealing with sharing between the fixed-satellite service in Region 2 and the fixed service in the band 11.7-12.2 GHz in Region 2,

resolves

that, before an administration notifies to the Bureau or brings into use, in Region 2, a frequency assignment for a geostationary-satellite network in the fixed-satellite service in the 11.7-12.2 GHz band, it shall seek the agreement of any administration of Regions 1, 2, and 3 having a primary allocation to terrestrial services in the same frequency band if the power flux-density produced on its territory exceeds the following thresholds:

–124	dB(W/m^2) in 1 MHz	for $0° \leq \Theta \leq 5°$
$-124 + 0.5 (\Theta-5)$	dB(W/m^2) in 1 MHz	for $5° < \Theta \leq 25°$
–114	dB(W/m^2) in 1 MHz	for $\Theta > 25°$

where Θ is the angle of arrival of the incident wave above the horizontal plane, in degrees,*

instructs the Radiocommunication Bureau

in its examination of requests for coordination for any geostationary space station in the fixed-satellite service operating in the band 11.7-12.2 GHz in Region 2, to determine if the power flux-density thresholds under *resolves* above are exceeded on the territory of any administration, other than the notifying administration, having a primary allocation to terrestrial services and, if so, to so notify both the notifying and the affected administrations.

ADD

RESOLUTION [COM5/22] (WRC-2000)

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 (Istanbul, 2000),

considering

a) that prior to WRC-97, the bands 1 530-1 544 MHz (space-to-Earth) and 1 626.5-1 645.5 MHz (Earth-to-space) were allocated to the maritime mobile-satellite service and the bands 1 545-1 555 MHz (space-to-Earth) and 1 646.5-1 656.5 MHz (Earth-to-space) were allocated on an exclusive basis to the aeronautical mobile-satellite (R) service (AMS(R)S) in most countries;

b) that WRC-97 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;

* These values relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

c) that WRC-97 adopted No. **S5.353A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference distress, urgency and safety communications of the Global Maritime Distress and Safety System (GMDSS) in the bands 1 530-1 544 MHz and 1 626.5-1 645.5 MHz and No. **S5.357A** giving priority to accommodating spectrum requirements for and protecting from unacceptable interference the AMS(R)S providing transmission of messages with priority categories 1 to 6 in Article **S44** in the bands 1 545-1 555 MHz and 1 646.5-1 656.5 MHz,

further considering

a) that coordination between satellite networks is required on a bilateral basis in accordance with the ITU Radio Regulations, and, in the bands 1 525-1 559 MHz (space-to-Earth) and 1 626.5-1 660.5 MHz (Earth-to-space), coordination is partially assisted by regional multilateral meetings;

b) that, in these bands, GSO satellite system operators currently use a capacity-planning approach at multilateral coordination meetings, with the guidance and support of their administrations, to periodically coordinate access to the spectrum needed to accommodate their requirements;

c) that the GMDSS and AMS(R)S spectrum requirements are currently satisfied through the capacity-planning approach and that, in the bands to which Nos. **S5.353A** or **S5.357A** apply, this approach, and other methods such as intra- and inter-system prioritization, pre-emption and interoperability, may assist in accommodating the expected increase of spectrum requirements for GMDSS and AMS(R)S;

d) that the feasibility of prioritization, real-time pre-emptive access and the mechanism to transfer spectrum between different mobile-satellite systems that may or may not provide GMDSS and/or AMS(R)S has yet to be established,

recognizing

a) that priority access and immediate availability of spectrum for distress, urgency and safety communications of the GMDSS and AMS(R)S communications is of vital importance for the safety of life;

b) that ICAO has adopted Standards and Recommended Practices (SARPs) addressing satellite communications with aircraft in accordance with the Convention on International Civil Aviation;

c) that all air traffic communications as defined in Annex 10 to the Convention on International Civil Aviation fall within priority categories 1 to 6 of Article **S44**;

d) that Table **S15-2** of Appendix **S15** to the Radio Regulations 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,

resolves

1 that, in frequency coordination of mobile-satellite services in the bands 1 525-1 559 and 1 626.5-1 660.5 MHz, administrations shall ensure that the spectrum needed for distress, urgency and safety communications of GMDSS, as elaborated in Articles **S32** and **S33,** in the bands where No. **S5.353A** applies, and for AMS(R)S communications within priority categories 1 to 6 of Article **S44** in the bands where No. **S5.357A** applies is accommodated;

2 that administrations shall ensure the use of the latest technical advances, which may include prioritization and real-time pre-emptive access between MSS systems, when necessary and where feasible, in order to achieve the most flexible and practical use of the generic allocations;

3 that administrations shall ensure that mobile-satellite service operators carrying non-safety-related traffic yield capacity, as and when necessary, to accommodate the spectrum requirements for distress, urgency and safety communication of GMDSS communications, as elaborated in Articles **S32** and **S33,** and for AMS(R)S communications within priority categories 1 to 6 of Article **S44**; this could be achieved in advance through the coordination process in *resolves* 1, and, when necessary and where feasible, through prioritization and real-time pre-emptive access,

invites ITU-R

to complete studies to determine the feasibility and practicality of prioritization and real-time pre-emptive access between different networks of mobile-satellite systems as referred to in *resolves* 2 above, while taking into account the latest technical advances in order to maximize spectral efficiency,

invites

ICAO, IMO, IATA, administrations and other organizations concerned to participate in the studies identified in *invites ITU-R* above.

ADD

RESOLUTION [COM5/23] (WRC-2000)

Development of procedures in case the operational or additional operational limits in Article S22 are exceeded

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted in Article **S22** single-entry operational limits (see Tables **S22-4A** through **S22-4C**) and single-entry additional operational limits (see Table **S22-4A1**) applicable to non-GSO FSS systems (space-to-Earth) in certain parts of the frequency range 10.7-20.2 GHz;

b) that, taking into account Nos. **S22.5H** and **S22.5I**, wherever the limits referred to in *considering a)* are exceeded by a non-GSO FSS system to which the limits apply, this constitutes a violation of No. **S22.2** of the Radio Regulations;

c) that ITU-R has identified the need for specific procedures that correct in the most expeditious manner any cases where the limits in *considering a)* are exceeded, by the inclusion of appropriate procedures in the Radio Regulations;

d) that the growth in use of non-GSO satellites is unlikely to lead to many cases of the limits mentioned in *considering a)* being exceeded before WRC-03,

resolves

that further study is needed to develop procedures suitable for application in the long term,

invites ITU-R

taking into consideration the guidelines in Annex 1, to conduct, as a matter of urgency, and in time for consideration by WRC-03, the appropriate regulatory studies to develop procedures, not limited to modification of Article **S15**, for application in cases where the power limits referred to in *considering a)* are exceeded at an operational earth station.

ANNEX 1 TO RESOLUTION [COM5/23] (WRC-2000)

Guidelines for the development of procedures for ensuring compliance with single-entry operational and additional operational limits in Section II of Article S22

1 It is essential that Member States exercise the utmost goodwill and mutual assistance in the application of the provisions of Article 45 of the Constitution and of these procedures for the settlement of problems stemming from epfd↓ interference from non-GSO FSS systems in excess of the operational limits given in Tables **S22-4A, S22-4B** and **S22-4C** and/or the additional operational limits given in Table **S22-4A1** ("excess epfd↓ interference").

2 In the settlement of such problems, due consideration shall be given to all factors involved, including the relevant technical and operational factors.

3 For the purpose of these procedures, the term “administration” may include the centralizing office designated by the administration, in accordance with No. **S16.3**.

4 Administrations shall cooperate in the detection and elimination of excess epfd↓ interference.

5 Where practicable, and subject to agreement between the administrations concerned, the case of excess epfd↓ interference may be dealt with directly between their operating organizations.

6 When a case of excess epfd↓ interference to a receiving GSO earth station associated with a transmitting space station is reported, and such excess epfd↓ interference cannot be accepted by the affected administration, the affected administration should first attempt to identify the source of the excess epfd↓ interference.

7 If the administration having jurisdiction over the receiving earth station has difficulty in determining the source or characteristics of the excess epfd↓ interference:

a) It may send a request for cooperation to all administrations responsible for non-GSO FSS systems with overlapping frequency assignments that have been brought into use, providing all relevant details. A copy of any such request shall be sent to Bureau.

b) Upon receipt of such a request, each administration shall, as soon as possible, acknowledge receipt and send to the requesting administration, within 15 days, with a copy to the Bureau, the information that may be used to identify the source of the problem. Such acknowledgement shall not constitute acceptance of responsibility.

c) If an administration fails to respond within 15 days, the affected administration may request the assistance of the Bureau, in which case Bureau shall immediately send a fax to the administration responsible for the non-GSO system, requesting action within an additional 15 days.

d) If the administration fails to respond to the Bureau within the time period established in § 7 *c)* above, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess epfd↓ interference.

8 Once the administration having jurisdiction over the receiving GSO earth station identifies the source(s) of the excess epfd↓ interference, it may send a letter, by fax or other mutually agreed electronic means, to the administration(s) concerned and request immediate corrective action. It shall give all useful information to enable the responding administration(s) to take such steps as may be necessary to reduce the interference to the epfd↓ levels required in Table **S22-4A, S22-4A1, S22-4B** or **S22-4C,** as appropriate, or to a higher level that is acceptable to the administration having jurisdiction over the receiving GSO earth station suffering the interference.

9 Upon receipt of such a request, an administration shall acknowledge receipt to the requesting administration within 15 days, with a copy to the Bureau. Such acknowledgement shall not constitute acceptance of responsibility.

10 Within 15 days after receipt of a request for corrective action pursuant to § 7 above, the administration receiving the request shall either:

a) provide the requesting administration and the Bureau with information indicating that no non-GSO FSS system for which it is responsible could have caused the excess epfd↓ interference experienced by the receiving GSO earth station; or

b) acknowledge responsibility for causing the excess epfd↓ interference and immediately reduce emissions of the interfering system into the affected receiving GSO earth station to the epfd↓ levels laid down in Table **S22-4A, S22-4A1, S22-4B** or **S22-4C,** as appropriate.

In either case, the Bureau shall be informed of the action taken.

11 If an administration fails to respond within 15 days, the affected administration may request the assistance of the Bureau, in which case the Bureau shall immediately send a fax to the administration responsible for the non-GSO system, requesting action within an additional 15 days.

12 If the administration fails to respond to the Bureau within the time period established in § 11 above, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the responsible administration did not respond to a request for cooperation regarding an unresolved complaint of excess epfd↓ interference.

13 If an administration acknowledges responsibility for causing the excess epfd↓ interference pursuant to § 10 *b)* above, but fails to reduce immediately emissions of the interfering system as required:

a) The administration responsible for the interference shall have an additional 10 days to take the necessary action to correct the excess epfd↓ interference situation pursuant to No. **S15.21** of the Radio Regulations.

b) If, after the 10 day period, the administration responsible for the interference has still not reduced emissions of the interfering system as required, the Bureau shall enter a remark in the Remarks column of the Master Register against the relevant frequency assignments of the non-GSO FSS system in question to the effect that the use of the affected frequency bands by the interfering system is in violation of Nos. **S22.2** and **S22.5I** of the Radio Regulations. Notice of the entry of the remark shall be included in the IFIC.

14 The Bureau shall retain any entry in the Remarks column of the Master Register made pursuant to § 7 *d)*, § 12 or § 13 *b)* above, which shall remain in place until such time as the non-responding administration responds and/or remedies the excess epfd↓ interference, as appropriate.

15 If it considers necessary, and particularly if the steps taken in accordance with the procedures described above have not produced satisfactory results, the administration concerned shall forward details of the case to the Bureau for its information.

16 In such a case, the administration concerned may also request the Bureau to act in accordance with the provisions of Section I of Article **S13**; but it shall then supply the Bureau with the full facts of the case, including all the technical and operational details and copies of the correspondence.

ADD

RESOLUTION [GT PLEN-1/1] (WRC-2000)

Application and study of the regulatory procedures and associated sharing criteria contained in Appendices S30 and S30A and in the associated provisions of Articles S9 and S11

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted a revision of the Regions 1 and 3 broadcasting-satellite service (BSS) and associated feeder-link Plans contained in Appendices **S30** and **S30A**, respectively;

b) that this conference has adopted revisions to the sharing criteria contained in Annex 1 to Appendix **S30** to identify whether terrestrial services may be affected by BSS;

c) that this conference has suppressed the method that was contained in section 3 of Annex 4 to Appendix **S30A** and replaced it with the method contained in Appendix **S7**;

d) that this conference has modified the criteria in section 1 of Annex 4 to Appendix **S30A** concerning sharing between non-planned transmitting space stations and planned receiving BSS feeder-link space stations;

e) that this conference has revised the orbital position limitations on Region 1 BSS in section A3 of Annex 7 to Appendix **S30** to allow more flexibility for new and modified assignments in the list of Region 1 BSS assignments, while continuing to guarantee access to Region 2 fixed-satellite service (FSS) in the orbital arc from [37° W to 10° E];

f) that the power flux-density limits currently appearing in section 6 of Annex 1 to Appendix **S30** for BSS to protect FSS do not vary as a function of orbital separation between the FSS and BSS space stations, and therefore do not provide adequate protection to FSS networks at small orbital separations, and at large orbital separations overly constrain the implementation of BSS networks;

g) that the sharing criteria in Appendices **S30** and **S30A** should provide appropriate protection to the BSS, FSS and terrestrial services whilst not unduly constraining the services involved;

h) that, worldwide, in various sub-bands of the frequency range 11.7-12.7 GHz, FSS networks as well as BSS networks are in operation, and others will be operated in the near future and, consequently, difficulties may be experienced in modifying their characteristics;

i) that this conference has also revised the regulatory procedures contained in Appendices **S30** and **S30A**, and the associated provisions in Articles **S9** and **S11** and associated Appendices,

recognizing

a) that there are differing geographic situations between the ITU Regions and that this may have an impact on the sharing criteria and therefore should be taken into account in any revision to the sharing criteria in the relevant Annexes of Appendices **S30** and **S30A**;

b) the need to protect existing and future terrestrial and space services and systems,

further noting

that the Bureau has been instructed by this conference to analyse the newly established Regions 1 and 3 BSS and feeder-link Plans with respect to compatibility with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan (Resolution **53 (Rev.WRC-2000)**),

resolves

1 that, until section 6 of Annex 1 to Appendix **S30** is modified by [WRC-03], the pfd limits appearing in the Annex to this resolution shall be applied in place of the –138 dB(W/(m^2 · 27 MHz)) and –160 dB(W/(m^2 · 4 kHz)) criteria appearing in paragraph 3 of section 6 of Annex 1 to Appendix **S30**;

2 to instruct the Director of the Radiocommunication Bureau to apply this resolution as of 3 June 2000,

invites ITU-R

to undertake, as a matter of urgency, additional studies and complete them by [WRC-03] on:

1 the sharing criteria in Annexes 1, 3, 4 and 6 to Appendix **S30** and Annexes 1 and 4 to Appendix **S30A**, except the criteria referred to in *considering b)* and *c)*, taking into account *considering g)* and *h)* and *recognizing a)*;

2 review the changes made by WRC-2000 to the regulatory procedures contained in:

a) Articles 4 and 5 to Appendices **S30** and **S30A** with a view to establishing a list of additional uses for Regions 1 and 3 and providing for its implementation;

b) Articles 6 and 7 to Appendices **S30** and **S30A**, including related modifications to Articles **S9** and **S11** and the associated Appendix **S5**,

with a view to ensuring consistency among these provisions, as appropriate, taking into account *considering i)*;

3 the limitations of section A3 of Annex 7 to Appendix **S30** in the context of any changes to the sharing criteria studied by ITU-R,

instructs the Secretary-General

to bring this resolution to the attention of the ITU Council so as to include in the agenda of the next WRC consideration of the results of the ITU-R studies carried out pursuant to *invites ITU-R* above.

ANNEX 1 TO RESOLUTION [GT PLEN-1/1] (WRC-2000)

Pfd limits to be applied in place of –138 dB(W/(m² · 27 MHz)) and –160 dB(W/(m² · 4 kHz)) in paragraph 3 of section 6 of Annex 1 to Appendix S30[1]

Instead of the uniform pfd limits of –138 dB(W/(m² · 27 MHz)) and –160 dB(W/(m² · 4 kHz)), apply new pfd limits to protect FSS in all Regions from BSS in all Regions, as given below:

For Regions 1 and 3 BSS → Region 2 FSS (space-to-Earth in the band 11.7-12.2 GHz):

–160 dB(W/(m² · 27 MHz))	0° ≤ θ < 0.054°
(–137.46 + 17.74 log θ) dB(W/(m² · 27 MHz))	0.054° ≤ θ < 3.67°
(–141.56 + 25 log θ) dB(W/(m² · 27 MHz))	3.67° ≤ θ < 11.54°
–115 dB(W/(m² · 27 MHz))	11.54° ≤ θ

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 1 BSS → Region 3 FSS (space-to-Earth in the band 12.2-12.5 GHz):

–160 dB(W/(m² · 27 MHz))	0° ≤ θ < 0.054°
(–137.46 + 17.74 log θ) dB(W/(m² · 27 MHz))	0.054° ≤ θ < 3.67°
(–141.56 + 25 log θ) dB(W/(m² · 27 MHz))	3.67° ≤ θ < 16.69°
–111 dB(W/(m² · 27 MHz))	16.69° ≤ θ

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

For Region 2 BSS → Regions 1 and 3 FSS (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):

–160 dB(W/(m² · 27 MHz))	0° ≤ θ < 0.054°
(–137.46 + 17.74 log θ) dB(W/(m² · 27 MHz))	0.054° ≤ θ < 3.67°
(–141.56 + 25 log θ) dB(W/(m² · 27 MHz))	3.67° ≤ θ < 11.54°
–115 dB(W/(m² · 27 MHz))	11.54° ≤ θ

where θ corresponds to the minimum geocentric angular separation between the interfering BSS and the interfered-with FSS space station.

It is understood that, in the implementation of these criteria, the Bureau should take into account the pertinent station-keeping accuracy of the BSS and FSS space stations as filed by the notifying administrations.

NOTE - In addition, the 0.25 dB allowed increase over the pfd resulting from the original Plan assignments of all Regions should be maintained.

[1] For those sharing situations not listed here, the provisions of Appendix **S30** and Appendix **S30A** apply.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 482-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note by the Chairperson of Committee 4

Committee 4, on examination of the requirements of Resolution 85 of the Plenipotentiary Conference (Minneapolis, 1998), found that there were three issues that it could not resolve. These were:

1) There was strong opposition to any effect on filings because of financial arrears.

2) There was strong support for there to be some impact on filings as a result of financial arrears so that administrations would not be held liable for financial failure by their satellite operators.

3) There was strong opposition to any provision being part of the body of the Radio Regulations.

Two draft resolutions were prepared and are attached.

Before text can be prepared, the fundamental principles need to be agreed. These are:

a) Can cancellation of filings be used as a measure in case of non-payment?

b) If not, what measures are needed?

c) Where should the text be placed? In the Radio Regulations or in a resolution?

On settlement of the above, I will prepare a text for your consideration.

H. RAILTON
Chairperson of Committee 4

RESOLUTION [COM4/7] (WRC-2000)

Regulatory consequences of non-payment of cost-recovery charges for satellite networks filings

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **88** of the Plenipotentiary Conference (Minneapolis, 1998) instructed the Council to implement cost recovery, and instructed WRC-2000 to consider whether, in light of the Council decisions, any relevant amendments to the Radio Regulations, with respect to the procedures for production of special sections for the space radiocommunication services, may be necessary;

b) Decision 482 of the Council established the schedule of charges and the earliest date for receipt of payment as well as asking WRC-2000 to possibly consider the consequence of non-payment;

c) that a number of administrations at this conference were of the view that the regulatory consequence of non-payment of the cost-recovery charges should only be the suppression of the special section to which the charge is related, while others believed that it is totally unacceptable that the sanctions imposed on an administration, for an amount of money due, could be any different from an economic one;

d) that some administrations at WRC-2000 were of the view that identification measures to be taken in respect of non-payment for cost recovery are within the authority of this conference . However, they do not consider that the conference is competent to adopt any measure that would affect the rights of Member States as a result of such non-payment;

e) that any measure that affects the rights of Member States shall be the exclusive competence of the plenipotentiary conference,

resolves to invite the ITU Council

1 to apply, as a temporary measure, a ruling inspired by that established for the payments of publications, to the cost recovery of satellite network filings, including, if necessary, advanced payment under certain conditions;

2 a report for the next plenipotentiary conference containing the results of the application of these latter rulings,

instructs the Radiocommunication Bureau

to make publicly available, via a website, information on compliance with the cost-recovery charges,

instructs the Secretary-General

to bring this resolution to the attention of Council-01 along with reports from the Bureau with respect to the experience gained,

invites the next plenipotentiary conference

to evaluate whether the provisions of this resolution are satisfactory or whether modifications or other approaches would be more appropriate.

DRAFT RESOLUTION [COM4/8] (WRC-2000)

Administrative procedures for cost recovery for satellite network filings

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **88** of the Plenipotentiary Conference (Minneapolis, 1998);

b) Decision 482 of the Council, which instructed this conference to consider whether, in light of the Council decision, any relevant amendments to the Radio Regulations with respect to the procedures covered by the Council decision may be necessary;

c) that this conference decided, pursuant to Resolution **88** and Council Decision 482, to adopt provisions in Article **S9** of the Radio Regulations for the consequences of non-payment of the cost-recovery charges,

considering further

a) that all administrations endorsed the principle of cost-recovery charges for satellite network filings, while some administrations questioned the regulatory consequences of non-payment of such charges;

b) some administrations were of the view that this conference was not competent to address the financial implications and consequences of such non-payment;

c) that these administrations believed that the modifications to Article **S9** referred to in *considering c)* above, affected their rights under the Constitution and Convention, and that the plenipotentiary conference was the only competent body to address the financial implications resulting from any consequences that might be introduced into the Radio Regulations,

recognizing

a) that this conference is competent only to amend the Radio Regulations with respect to the regulatory and procedural matters related to the consequences of non-payment of the charges pursuant to Decision 482;

b) that only a world radio conference is competent to amend the Radio Regulations,

noting

a) that pursuant to Decision 482 and the modifications to Article **S9** adopted by this conference, the consequences of non-payment, under the Radio Regulations, are that the satellite networks in question would no longer be taken into account by the Bureau and other administrations;

b) that Decision 482 allows an administration to designate to ITU, a satellite network operator to receive and make payment of the invoice in question, and that the decision whether to do so or not is entirely within the discretion of each administration, and does not effect the rights and obligations of the administration under the Radio Regulations;

c) that when an administration elects under Decision 482 to designate a network operator to receive and make payment, non-payment of the charges in this instance will not be reflected in the arrears of the notifying administration,

resolves

1 to instruct the Radiocommunication Bureau to report to the Council at its next two sessions on the experience gained in the application of the cost-recovery provision adopted by this conference in Article **S9**;

2 to request the Council, at its next two sessions, to consider in detail the issues and concerns raised by several administrations referred to in *considering further* above;

3 to further request the Council to consider the reports of the Bureau with respect to the experience gained with the new Article **S9** provisions;

4 to further invite the Council to consider adoption of a decision, in implementation of Decision 482, whereby if a satellite network is cancelled due to non-payment of the invoice for that network, that invoice would be cancelled;

5 to further request the Council to report its conclusions and recommendations to the next plenipotentiary conference;

6 invites the 2002 Plenipotentiary Conference to consider such Council reports and recommendations, determine whether the provisions adopted have been satisfactory or whether modifications to those provisions, or other approaches, should be considered.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 483-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 2

SUMMARY RECORD

OF THE

SECOND AND LAST MEETING OF COMMITTEE 2 (CREDENTIALS)

Friday, 26 May 2000, at 0930 hours

Chairperson: Mr A.M.T. ABU (Nigeria)

Subjects discussed		**Documents**
1	Examination of credentials (continued)	-
2	Transfer of powers (continued)	416(Rev.1)
3	Draft report of Committee 2 to the Plenary Meeting	DT/100
4	Approval of the summary record of the first meeting of Committee 2	202

1 Examination of credentials (continued)

1.1 The **Chairperson** invited the committee to examine the credentials deposited since the committee's first meeting.

1.2 Following the examination of the credentials, the **Chairmen** invited the Secretary to read out the names of the countries for which credentials had been verified: Albania, Algeria, Armenia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bhutan, Bulgaria, Burkina Faso, Chile, Colombia, Congo, Côte d'Ivoire, Croatia, Denmark, Dominican Republic, Ecuador, Spain, Estonia, United States, Ethiopia, France, Gabon, Ghana, Greece, Hungary, Islamic Republic of Iran, Israel, Italy, Lao People's Democratic Republic, Lesotho, Latvia, Libya, Madagascar, Malaysia, Mauritius, Mexico, Moldova, Monaco, Mozambique, Namibia, Uzbekistan, Pakistan, Paraguay, Peru, Philippines, Qatar, Kyrgyzstan, Democratic People's Republic of Korea, Czech Republic, Senegal, Seychelles, Singapore, Slovenia, Sri Lanka, South Africa, Tanzania, Trinidad and Tobago, Venezuela, Yemen and Zambia.

1.3 The **Chairman** concluded that credentials of a total of 129 countries had now been verified by the committee and found to be in order.

1.4 The list of countries whose credentials had been verified at the present meeting was **approved**.

2 Transfer of powers (continued) (Document 416(Rev.1))

2.1 The statement by the Government of Micronesia that it had transferred its full powers to the United States, contained in Document 416(Rev.1), was **noted**.

3 Draft report of Committee 2 to the Plenary Meeting (Document DT/100)

3.1 The **Secretary** suggested that the delegates of Australia, Bulgaria, Canada, France, Indonesia, Israel, Libya and Nigeria should be added to those listed in § 2 of Document DT/100 and that the square brackets should be deleted.

3.2 It was so **agreed**.

3.3 With regard to § 3 of the same document, the **Chairman** suggested that "128" should be replaced by "129", following the recent deposit of its credentials by Côte d'Ivoire.

3.4 It was so **agreed**.

3.5 In reply to a request for clarification by the **delegate of the Netherlands** regarding the situation concerning a country whose credentials had been questioned by a delegation in Plenary, the **Chairperson** said that, since the question had arisen in Plenary, it was for the Plenary to deal with it.

3.6 The **delegate of Indonesia** said that, to his understanding of § 6 of Document DT/100, the Chairperson could override the date limit for the submission of credentials as stipulated in Document 213. His delegation had been unable to deposit its credentials owing to an administrative problem and would like to request that the deadline be extended to Monday, 29 May 2000.

3.7 The **Chairperson** regretted that he could not override a Plenary decision.

3.8 The **Secretary** drew attention to the Annex to Document DT/100, §§ 1 and 2 of which contained the countries whose credentials had been verified at the two meetings of the Committee. Côte d'Ivoire should be transferred from § 4 to § 1.

3.9 The **Chairperson** said that, in § 3, a reference to Document 416(Rev.1) should be inserted after that to Document 215.

3.10 Document DT/100, as amended, was **approved**.

4 Approval of the summary record of the first meeting of Committee 2 (Document 202)

4.1 The **Chairperson** said that a corrigendum would be issued in respect of § 3.1 of Document 202, since Liechtenstein had deposited its credentials in order and in accordance with CV330 and CV331 of the Convention.

4.2 Document 202, as amended, was **approved**.

The meeting rose at 1035 hours.

The Secretary:
D. SCHUSTER

The Chairperson:
A.M.T. ABU

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 484-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document DT/109 **PLENARY MEETING**

Note by the Chairperson of Committee 4

In order to streamline the procedures both in administrations and in the Radiocommunication Bureau it is proposed that Appendix S4 should be used for proposed modifications to the Appendix **S30B** Plan. Since GT PLEN-1 has decided to propose the use of Appendix S4 for filings under Appendices S30 and S30B, adoption of the Draft Resolution, presented below, would mean that all satellite filings would use the format of Appendix S4. This will facilitate the development of software and databases in the Radiocommunication Bureau.

H. RAILTON
Chairperson, Committee 4

DRAFT RESOLUTION [COM 4/9]

Use of Appendix S4 in lieu of Annex 2 in application of Appendix S30B

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference decided to use Appendix **S4** in lieu of Annex 2 for the submission of data under Appendix **S30/30A**;

b) that it is critical to harmonize the data structure of the space service and to integrate space plans data in the existing Space Data Base (SNS),

noting

that the issue of Appendix **S30B** is not on the agenda of this conference,

resolves

to instruct the BR to develop a Rule of Procedure for adoption by the RRB which would require administrations to use Appendix **S4** when furnishing the basic data relating to stations in the fixed-satellite service subject to Appendix **S30B**,

instructs the Director, BR

to bring this Resolution to the attention of RRB.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 485-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents DT/90(Rev.1), 36(Add.1), DT/119, 367, 386, 408, 410, 434, 441, 445

COMMITTEE 6

Chairperson, Committee 4

MODIFICATION TO RR APPENDICES S4 AND S5

The attached text is a compilation from the source documents listed above of all currently adopted or proposed modifications to Annex 2A and Annex 2B of Appendix S4 and to Appendix S5. It takes into account proposals from Committees 4 and 5 and from GT PLEN-1. For that reason the source text has been indicated in the Remarks column of Table S5-1 of Appendix S5.

H. RAILTON
Chairperson of Committee 4
Box 2895

MODIFICATIONS TO APPENDIX S4

ANNEX 2A

Characteristics of satellite networks or earth or radio astronomy stations[2]

A General characteristics to be provided for the satellite network or the earth or radio astronomy station

A.2 Date of bringing into use

MOD

a) The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation[2a] to provide the published radiocommunication service with the technical parameters within the technical characteristics notified to the Bureau. Whenever the assignment is changed in any of its basic characteristics (except in the case of a change in § A.1 *a)*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

ADD

[2a] Pending further studies by ITU-R on the applicability of the term "regular operation" to non-GSO networks, the condition of regular operation shall be limited to GSO networks.

ADD

A.4 *b)*

In addition, if the stations operate in a frequency band subject to **S22.5C**, **S22.5D** or **S22.5F**.

6) new data elements required to characterize properly the orbital operation of the non-GSO satellite systems:

a) for each range of latitudes provide:

– the maximum number of non-GSO satellites transmitting with overlapping frequencies to a given location; and

– the associated latitude range;

b) the minimum altitude of the space station above the surface of the Earth at which any satellite transmits;

c) an indicator identifying if the space station uses station-keeping to maintain a repeating ground track;

d) where the space station uses station-keeping to maintain a repeating ground track, the time in seconds that it takes for the constellation to return to its starting position, i.e. such that all satellites are in the same location with respect to the Earth and each other;

e) an indicator identifying if the space station should be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term;

f) for a space station that is to be modelled with a specific precession rate of the ascending node of the orbit instead of the J_2 term, the precession rate in degrees/day, measured counter-clockwise in the equatorial plane;

g) the longitude of the ascending node for the *j*-th orbital plane, measured counter-clockwise in the equatorial plane from the Greenwich meridian to the point where the satellite orbit makes its south-to-north crossing of the equatorial plane ($0° \leq \Omega_j < 360°$) (NOTE 1);

h) the time at which the satellite is at the location defined by Ω_j (NOTE 1);

i) the longitudinal tolerance of the longitude of the ascending node.

NOTE 1 - Currently non-GSO space stations are referenced by the "right ascension of ascending node" (A.4 *b)* 5) Ω_j) to the first point of Aries. However, for the evaluation of epfd a reference to a point on the Earth is used and hence the "longitude of the ascending node" is required. All satellites in the constellation should use the same reference time.

7) new data elements required to characterize properly the performance of the non-GSO satellite systems:

a) the maximum number of non-GSO satellites receiving simultaneously with overlapping frequencies from the associated earth stations within a given cell;

b) the average number of associated earth stations with overlapping frequencies per square kilometre within a cell;

c) the average distance between co-frequency cells;

d) for the exclusion zone about the geostationary satellite orbit provide:

– the type of zone;

– the width of the zone in degrees.

A.7 Earth station site characteristics

MOD

a) The horizon elevation angle in degrees~~ and, in the case of a station submitted in accordance with Appendix **S30A**, the antenna gain in the direction of the horizon for each azimuth around the earth station~~.

SUP

b)

ADD

b) The distance in kilometres from the earth station to the horizon for each azimuth around the earth station.

SUP

c)

ADD

c) That is operating to an associated geostationary space station and having due regard to possible inclined-orbit operation of the associated space station:

1) the planned minimum angle of elevation of the antenna in the direction of maximum radiation in degrees from the horizontal plane;

2) the planned range of operating azimuthal angles for the direction of maximum radiation in degrees, clockwise from True North.

ADD

d) That is operating to associated non-geostationary space stations, the minimum angle of elevation of the antenna in the direction of maximum radiation in degrees from the horizontal plane for each azimuth around the earth station.

(MOD)

~~*d*~~*e)* The altitude (metres) of the antenna above mean sea level.

SUP

A.9

ADD

A.14 Spectrum masks

For stations operating in a frequency band subject to **S22.5C**, **S22.5D** or **S22.5F**.

a) for each e.i.r.p. mask used by the non-GSO space station provide:

– the type of mask;
– the mask identification code;
– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;
– the lowest frequency for which the mask is valid;
– the highest frequency for which the mask is valid;

b) for each associated earth station e.i.r.p. mask provide:

– the type of mask;
– the mask identification code;
– the mask pattern defined in terms of the power in the reference bandwidth for a series of off-axis angles with respect to a specified reference point;
– the lowest frequency for which the mask is valid;
– the highest frequency for which the mask is valid;
– the minimum elevation angle at which any associated earth station can transmit to a non-GSO satellite;
– the minimum separation angle between the GSO arc and the associated earth station main beam-axis at which the associated earth station can transmit towards a non-GSO satellite;

c) for each pfd mask used by the non-GSO space station provide:

– the type of mask;

– the mask identification code;

– the mask pattern of the power flux-density defined in three dimensions;

– the lowest frequency for which the mask is valid;

– the highest frequency for which the mask is valid.

(The space-station pfd mask is defined by the maximum power flux-density generated by any space station in the interfering non-GSO system as seen from any point on the surface of the Earth.)

ADD

A.15 Commitment regarding compliance with additional operational epfd↓ limits

For non-geostationary satellite systems operating in the fixed-satellite service in the bands 10.7-11.7 GHz (in all Regions), 11.7-12.2 GHz (Region 2), 12.2-12.5 GHz (Region 3), and 12.5-12.75 GHz (Regions 1 and 3), a commitment that the filed for system will meet the additional operational epfd↓ limits that are specified in Table **S22-4A** under No. **S22.5I**.

ADD

A.16 Commitment regarding compliance with off-axis power limitations

A commitment that the earth stations operating with a geostationary-satellite network in the FSS meet the off-axis power limitations given in **S22.26** to **S22.28** or **S22.32** (as appropriate) under the conditions specified in **S22.30**, **S22.31** and **S22.34** to **S22.39**, where the earth stations are subject to those power limitations.

ADD

A.17 Compliance with aggregate pfd limits

A.17.a)

For non-geostationary satellite systems operating in the radionavigation-satellite service in the band 5 010-5 030 MHz, the aggregate power flux-density radiated in the bands above 5 030 MHz in a 150 kHz bandwidth and in the band 4 990-5 000 MHz in a 10 MHz bandwidth as defined in No. **S5.444C**.

A.17.b)

For non-geostationary satellite systems operating in the FSS and BSS in the band 41.5-42.5 GHz the calculated aggregate power flux-density radiated in the bands 42.5-43.5 GHz as defined in No. **S5.RAS**.

A.17.c)

For satellite systems operating in the radionavigation-satellite service in the band 1 164-1 215 MHz the calculated aggregate power flux-density produced by all the space stations within all radionavigation-satellite systems at the Earth’s surface as defined in No. **S5.328A**.

MOD

B.3 *g)*

1) ~~the maximum isotropic antenna gain (dBi)~~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;

MOD

5) for beams of other than circular or elliptical shape:

– 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 or 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator. Whenever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted should be provided;

– beam aim point longitude and latitude;

– where a steerable beam (see No. **S1.191**) is used, the maximum antenna gain and the effective antenna gain contours (see No. **S1.176**); these contours shall be provided as defined above;

– 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 to show estimated isotropic gain relative to orbit longitude;

SUP

6)

SUP

7)

C.8 Power characteristics of the transmission

MOD

h) In the case of a space station submitted in accordance with Appendix **S30**:

~~– the power supplied to the antenna (dBW) (Regions 1 and 3);~~

– the 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, ~~40 kHz and 4~~ kHz and 27 MHz, [as well as averaged over the worst 40 kHz in the case of Region 2]~~supplied to the antenna (Region 2)~~.

C.9 *b)*

ADD

9) in the case of a digital modulation, the effective and transmitted bit rate (Mbits/s) and symbol rate (Msymbols/s);

ADD

d) For stations operating in a frequency band subject to **S22.5C**, **S22.5D** or **S22.5F**, provide:

– the type of mask;

– the mask identification code.

C.11 Service area

MOD

b) In the case of a space station submitted in accordance with Appendix **S30A**:

~~– where the feeder-link earth station is in Region 2, the geographical coordinates of the feeder-link station in the frequency band 17.7-17.8 GHz, including the rain climatic zone;~~

– a set of a maximum of twenty feeder-link test points, and

– ~~in all other cases, the feeder-link service area identified by a set of a maximum of ten feeder-link test points, including the rain climatic zone for each test point, and by~~ a service area contour on the surface of the Earth or a service area defined by a minimum elevation angle in degrees.

c) In the case of a space station submitted in accordance with Appendix **S30** or Appendix **S30B**, the service area identified by a set of a maximum of twenty ~~ten~~ test points and by a service area contour on the surface of the Earth or a service area defined by a minimum elevation angle in degrees.

SUP

C.14

ADD

C.15 Description of the group(s) required in the case of non-simultaneous emissions

MOD

D Overall link characteristics

To be provided only when simple frequency-changing transponders are used on the space station onboard a geostationary satellite.

In the case of FSS networks using the frequency bands specified in No. **S9.7** (GSO/GSO) of Appendix **S5**, Table **S5-1** (items 1, 2 and 3 of the frequency band column), the data specified in this section of the Appendix is not mandatory and should not be submitted to the Bureau.

ANNEX 2B

Table of characteristics to be submitted for space and radio astronomy services

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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.b.6					X[13]					A.4.b.6	
A.4.b.7					X[13]					A.4.b.7	
A.4.c						X				A.4.c	
A.5				X	X	X[11]	X	X	X	A.5	
A.6				X	X	X[11]	X	X	X	A.6	
A.7.a						X[11]		X		A.7.a	
A.7.b						~~X~~O		~~X~~		A.7.b	
A.7.c 1)						X[11]		X		A.7.c i)	
A.7.c 2)						X[11]				A.7.c ii)	
A.7.d						X[11]		~~X~~		A.7.d	
A.7.e						X[11]		X		A.7.e	

A – General characteristics of the satellite network or the earth station *(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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service under Appendix S30B	Items in Appendix	Radio astronomy
A.8							X			A.8	
~~A.9~~							~~X~~			~~A.9~~	
A.10						X[11]				A.10	
A.11							X	X		A.11	
A.12								X		A.12	
A.13				X	X	X				A.13	
A.14.a					X					A.14	
A.14.b					X					A.14	
A.14c					X					A.14	
A.15					X					A.15	
A.16				X						A.16	
A.17.a					X					A.17	
A.17.b					X					A.17	
A.17.c					X					A.17	

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.~~

[11] Not required for coordination under No. **S9.7A** or **S9.7B**.

[13] Required for networks operating in the bands defined in No. S22.5C, S33.5D or S22.5F.

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]			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 – Characteristics to be provided for each satellite antenna beam and for each 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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the fixed-satellite service under Appendix S30B	Items in Appendix	Radio astronomy
~~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[11]				B.5.b	
B.5.c						X[12]				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.

11 Not required for coordination under No. **S9.7A** or **S9.7B**.

12 In the case of coordination under **S9.7A**, the reference radiation pattern is to be provided.

~~* The application of this column is suspended pending the decision of WRC-99.~~

MOD

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30 *	Notice for feeder-link stations under Appendix S30A *	Notice for stations in the fixed-satellite service 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[11]	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[11]				C.8.b	

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the fixed-satellite service under Appendix S30B	Items in Appendix	Radio astronomy
C.8.c			O	X[6]	X[6]	X[6, 11]				C.8.c	
C.8.d				X[2]	X[2]					C.8.d	
C.8.e			O	X[6]	X[6]	X[6, 11]				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	
C.9.a.1			O	C	C					C.9.a	
C.9.a.2			O	C	C					C.9.a	
C.9.a.3			O	C	C					C.9.a	
C.9.a.4			O	C	C					C.9.a	
C.9.a.5			O	C	C					C.9.a	
C.9.a.6			O	C	C					C.9.a	
C.9.b.1							X	X		C.9.b	
C.9.b.2							X	X		C.9.b	
C.9.b.3							X	X		C.9.b	
C.9.b.4							X	X		C.9.b	
C.9.b.5							X	X		C.9.b	
C.9.b.6							X	X		C.9.b	
C.9.b.7							X	X		C.9.b	
C.9.b.8							X	X		C.9.b	
C.9.b.9							X	X		C.9.b	
C.9.b.10							X	X		C.9.b	

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 geostationary-satellite 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 broadcasting-satellite service under Appendix S30	Notice for feeder-link stations under Appendix S30A	Notice for stations in the fixed-satellite service under Appendix S30B	Items in Appendix	Radio astronomy
C.9.c			X		X					C.9.c	
C.9.d							X	X		C.9.b	
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~~	
C.15							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

[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**.

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

[11] Not required for coordination under No. **S9.7A or S9.7B**.

~~* The application of this column is suspended pending the decision of WRC-99.~~

APPENDIX S5

SUP

TABLE S5-1

ADD

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
No. **S9.7** GSO/GSO	A station in a satellite network using the geostationary-satellite orbit (GSO), 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	1) 3 400-4 200 MHz 5 725-5 850 MHz (Region 1) and 5 850-6 725 MHz	i) Bandwidth overlap; and ii) Any network in the fixed-satellite service with a space station within an orbital arc of ±10 degrees of the nominal orbital position of a proposed network in the fixed-satellite service		With respect to FSS in the bands in (1), (2) and (3) an administration may request, pursuant to **S9.41**, to be included in requests for coordination, indicating the networks for which the value of $\Delta T/T$ calculated by the method in sections 2.2.1.2 and 3.2 of Appendix **S8** exceeds 6 %. When the Bureau, on request by an affected administration, studies this information pursuant to **S9.42**, the calculation method given in sections 2.2.1.2 and 3.2 of Appendix **S8** shall be used. With respect to FSS in the bands in 1), 2) and 3) an administration may request, pursuant to **S9.41**, that an administration be excluded in
		2) 10.95-11.2 GHz 11.45-11.7 GHz 11.7-12.2 GHz (Region 2) 12.2-12.5 GHz (Region 3) 12.5-12.75 GHz (Regions 1 and 3) 12.7-12.75 GHz (Region 2) and 13.75-14.5 GHz	i) Bandwidth overlap; and ii) Any network in the fixed-satellite service with a space station within an orbital arc of ±9 degrees of the nominal orbital position of a proposed network in the fixed-satellite service		

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
		3) 17.7-20.2 GHz and 27.5-30 GHz	i) Bandwidth overlap; and ii) Any network in the fixed-satellite service with a space station within an orbital arc of ±8 degrees of the nominal orbital position of a proposed network in the fixed-satellite service		requests for coordination, giving the reason that the network of this administration will not be affected because value of $\Delta T/T$ calculated by the method in sections 2.2.1.2 and 3.2 of Appendix **S8** do not exceed 6%. When the Bureau, on request by an administration, studies this information pursuant to **S9.42**, the calculation method given in sections 2.2.1.2 and 3.2 of Appendix **S8** shall be used. **[Document 441 C4[**
		4) All~~Any~~ frequency bands, other than those in items 1, 2 and 3, allocated to a space service, ~~where this service is not subject to a Plan~~ and the bands in items 1), 2) and 3) where the radio service of the proposed network or affected networks is other than the fixed-satellite service or in the case of coordination of space stations operating in the opposite direction of transmission.	Value of $\Delta T/T$ exceeds 6 %	4)Appendix **S8**	**[Document 441 C4[**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.7A** GSO earth station/ non-GSO system	A specific earth station in a geostationary-satellite network in the fixed-satellite service in respect of a non-geostationary-satellite system in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meet all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency bands 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher; c) emission bandwidth of 250 MHz or higher for the frequency bands below 12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination does not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit **[Document 445 C5]**

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
			iii) the $epfd_{down}$ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency band 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/ (m^2 · 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude; b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude	iii) use the $epfd_{down}$ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	**[Document 445 C5]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.7B** non-GSO system/ GSO earth station	A non-geostationary-satellite system in the fixed-satellite service in respect of a specific earth station in a geostationary-satellite network in the fixed-satellite service.	The following frequency bands: 10.7-11.7 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, 17.8-18.6 GHz (space-to-Earth), and 19.7-20.2 GHz (space-to-Earth)	Conditions: i) bandwidths overlap; and ii) the satellite network using the geostationary-satellite orbit has specific receive earth stations which meets all of the following conditions: a) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency bands 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz; b) G/T of 44 dB/K or higher; c) emission bandwidth of 250 MHz or higher for the frequency bands below 12.75 GHz or 800 MHz or higher for the frequency bands above 17.8 GHz; and	i) Check by using the assigned frequencies and bandwidths; ii) use the maximum antenna gain (G), the lowest total receiving system noise temperature (T), and the emission bandwidth of the specific receive earth station as given in the Appendix **S4** data;	The threshold/condition for coordination do not apply to typical receive earth stations operating in satellite networks using the geostationary-satellite orbit **[Document 445 C5]**

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
			iii) the $epfd_{down}$ from the satellite system using the non-geostationary orbit exceeds: a) in the frequency bands 10.7-12.75 GHz: –174.5 dB(W/(m^2 · 40 kHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –202 dB(W/(m^2· 40 kHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude; b) in the frequency bands 17.8-18.6 GHz or 19.7-20.2 GHz: –157 dB(W/(m^2 · MHz)) for any percentage of time for non-GSO systems with all satellites only operating at or below 2 500 km altitude, or –185 dB(W/(m^2 · MHz)) for any percentage of the time for non-GSO systems with any satellites operating above 2 500 km altitude	iii) use the $epfd_{down}$ radiated by the non-GSO FSS system into the earth station employing the very large antenna when this antenna is pointed towards the wanted GSO satellite	**[Document 445 C5]**

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
~~No. **S9.8** GSO/GSO~~	~~A transmitting space station in the fixed-satellite service (FSS) using the GSO in a frequency band shared with the broadcasting-satellite service (BSS) on an equal primary basis, in respect of space stations in the latter service which are subject to the Plans in Appendix **S30**~~	~~11.7-12.2 GHz (Region 2)~~ ~~12.2-12.7 GHz (Region 3)~~ ~~12.5-12.7 GHz (Region 1)~~	~~i) There is an overlap in the necessary bandwidths of the FSS and BSS space stations; and~~ ~~ii) the power flux-density (pfd) of the FSS space station 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 WRC-99 on the revision of these two Appendices.~~ **[Document DT/90(Rev. 1) GT PLEN-1]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
~~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 (Region 1)~~ ~~17.7-18.1 GHz (Region 3)~~ ~~17.7-17.8 GHz (Region 2)~~	~~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 an FSS transmitting space station and a receiving space station in the feeder-link plan, exceeds 150° of arc and the free-space pfd of the FSS transmitting space station 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 WRC-99 on the revision of these two Appendices.~~ **[Document DT/90(Rev. 1) GT PLEN-1]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.11** GSO, non-GSO/ terrestrial	A space station in the BSS in any band shared on an equal primary basis with terrestrial services and where the BSS 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 (Region 3) 17.~~7~~3-17.8 GHz (Region 2) 21.4-22 GHz (Region 1 and 3) ~~40.5-42.5 GHz~~ ~~84-86~~74-76 GHz	Condition: bandwidths overlap; See RES [COM4/6] (WRC-00)	Check by using the assigned frequencies and bandwidths	**[Document 386 C4]** **[Document 408 C5]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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** or **S9.12** 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	~~2 630-2 655 MHz~~ [2 310-2 360 MHz] ~~See also Table S5-2~~ Also frequency bands for which a footnote refers to No. **S9.11A** or **S9.12** ~~[S5.393]~~ ~~[S5.XXX2]~~	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	**[Document 410 C4]** **[Document 441 C4]**
No. **S9.12A** ~~2)~~ Non-GSO/ GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote ~~[or a Resolution]~~ refers to **S9.11A** or to **S9.12A** 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	~~2 630-2 655 MHz~~ [2 310-2 360 MHz] ~~See Table S5-2~~ ~~[See modifications by 4A]~~ Also frequency bands for which a footnote refers to No. **S9.11A** or **S9.12A** ~~[S5.XXX1]~~ ~~[S5.393]~~	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	**[Document 408 C5]** **[Document 410 C4]** **[Document 441 C4]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.13** GSO/non-GSO	A station in a satellite network using the GSO in the frequency bands for which a footnote ~~[or a Resolution]~~refers to No. **S9.11A** or to **S9.13** in respect of any other satellite network using a non-GSO, with the exception of coordination between earth stations operating in the opposite direction of transmission	~~See Table S5-2[See modifications by 4A]~~ ~~2 630-2 655 MHz~~ [2 310-2 360 MHz] Also frequency bands for which a footnote refers to No. **S9.11A** or **S9.13** ~~[S5.XXX3]~~ ~~[S5.393]~~	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	**[Document 408 C5]** **[Document 441 C4]** **Document 410 C4]**
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~~Frequency bands for which a footnote refers to No. **S9.11A**	See § 1 of Annex 1 of this Appendix	See § 1 of Annex 1 of this Appendix	**]Document 410 C4]**
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~~Frequency bands for which a footnote refers to No. **S9.11A**	The coordination area of the earth station covers the territory of another administration	~~See § 2 of Annex 1 of this Appendix~~Appendix **S7**	**]Document 410 C4]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.16** Terrestrial/ non-GSO	A transmitting station in a terrestrial service within the coordination area of an earth station in a non-GSO network in frequency bands for which a footnote refers to No. **S9.11A**	~~See Table S5-2~~Frequency bands for which a footnote refers to No. **S9.11A**	Transmitting terrestrial station is situated within the coordination area of a receiving earth station	~~See § 2 of Annex 1 of this Appendix~~	The coordination area of the affected earth station has already been determined using the calculation method of ~~No. **S9.15**~~Appendix **S7** **]Document 410 C4]**
No. **S9.17** GSO, non-GSO/ terrestrial	A specific earth station or a typical mobile earth station in frequency bands above ~~1 GHz~~100 MHz 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 in 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 MHz, 2 483.5-2 500 MHz 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~~ **[Document 410 C4]** **[DT 90(Rev. 1) GT PLEN-1]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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 WRC-99 on the revision of these two Appendices~~ **[Document 410 C4]** **[DT 90(Rev. 1) GT PLEN-1]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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**~~ with the exception of coordination under **S9.19**	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 § 2 of Annex 1 of this Appendix~~ ~~ii) See Recommendations ITU-R IS.847, ITU-R IS.848 and ITU-R IS.849~~ Appendix **S7**	**[Document 410 C4]** **[DT 90 (Rev. 1) GT PLEN-1]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.18** Terrestrial/ GSO, non-GSO	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**	Any frequency band allocated to a space service.	Transmitting terrestrial station is situated within the coordination area of a receiving earth station	See Remarks column	The coordination area of the affected earth station has already been determined using the calculation method of No. **S9.17** **[Current Radio Regulations]**
No. **S9.19** Terrestrial/ GSO, non-GSO	~~A transmitting station in 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**~~For any transmitting station of a terrestrial service or a transmitting earth station in the fixed-satellite service (Earth-to-space) in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to typical earth stations included in the service area of a space station in the broadcasting-satellite service	Bands listed in No. **S9.11** and the band 11.7-12.7 GHz	i) Necessary bandwidths overlap; and ii) the pfd of the ~~terrestrial~~interfering station at the edge of the BSS service area exceeds the permissible level	Check by using the assigned frequencies and bandwidths	See also Article 6 of Appendix **S30** **[DT 90 (Rev. 1) GT PLEN-1]**

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.21** Terrestrial, GSO, non-GSO/ terrestrial, GSO, non-GSO	A station of a service for which the requirement to obtain the agreement of other administrations is included in a footnote to the Table of Frequency Allocations, referring to No. **S9.21**	Band(s) indicated in the relevant footnote	Condition: Incompatibility established by the use of Appendices **S7**, **S8**, technical annexes of Appendices **S30**, **S30A**, ~~**S30B**~~ pfd values specified in some of the footnotes, other technical provisions of the Radio Regulations or ITU-R Recommendations as appropriate	Methods specified in, or adapted from, Appendices **S7**, **S8**, **S30**, **S30A**, ~~**S30B**~~ other technical provisions of the Radio Regulations or ITU-R Recommendations	**[Document 386 C4]**

MOD

TABLE S5-1A

Applicability of No. S9.11A, S9.12, S9.13 or S9.14 for space services

NOTE – Annex 1 contains the relevant coordination thresholds for sharing between the mobile-satellite service (MSS) (space-to-Earth) and terrestrial services ~~as well as the relevant coordination areas for mobile earth stations operating below 3 GHz~~. It also contains the relevant coordination thresholds for sharing between non-GSO MSS feeder links (space-to-Earth) and terrestrial services ~~as well as the relevant coordination areas for earth stations providing feeder links for non-GSO satellites operating in the MSS and for non-GSO FSS earth stations.~~

Frequency band	**RR foot-note/Res.**	**Space services [1] in the footnote to which No. S9.11A applies**		**Other space services [1] to which No. S9.11A applies equally**	**Date of provisional application of allocation if later than 22.11.1997**
137-137.025 MHz 137.175-137.825 MHz	**S5.208**	MSS	↓	SPACE OPERATION METEOROLOGICAL-SATELLITE SPACE RESEARCH	
137.025-137.175 MHz 137.825-138 MHz	**S5.208**	mss	↓	---	
148-149.9 MHz	**S5.219**	MSS	↑	---	
149.9-150.05 MHz	**S5.220**	MSS	↑	--- (See **S5.220**)	Limited to LMSS until 1.1.2015
312-315 MHz	**S5.255**	mss	↑	---	
387-390 MHz	**S5.255**	mss	↓	---	
399.9-400.05 MHz	**S5.220**	MSS	↑	--- (See **S5.220**)	Limited to LMSS until 1.1.2015
400.15-401 MHz	**S5.264**	MSS	↓	METEOROLOGICAL-SATELLITE SPACE RESEARCH	
454-455 MHz	**S5.286A**	MSS (**S5.286D**, **S5.286E**)	↑	---	1.1.1999
455-456 MHz	**S5.286A**	MSS (R2, **S5.286E**)	↑	---	1.1.1999
459-460 MHz	**S5.286A**	MSS (R2, **S5.286E**)	↑	---	1.1.1999
1 492-1 525 MHz	**S5.348**	MSS (R2, except USA)	↓	---	
1 525-1 530 MHz	**S5.354**	MSS	↓	SPACE OPERATION	1.1.1999 (LMSS, AMSS in R1)
1 530-1 533 MHz	**S5.354**	MSS	↓	SPACE OPERATION	1.1.1999 (AMSS)
1 533-1 535 MHz	**S5.354**	MSS	↓	SPACE OPERATION	1.1.1999 (LMSS, AMSS)
1 535-1 544 MHz	**S5.354**	MSS	↓	---	1.1.1999 (LMSS, AMSS)
1 544-1 545 MHz	**S5.354**	MSS	↓	---	
1 545-1 555 MHz	**S5.354**	MSS	↓	---	1.1.1999 (LMSS, MMSS)
1 555-1 559 MHz	**S5.354**	MSS	↓	---	1.1.1999 (AMSS, MMSS)
1 610-1 626.5 MHz	**S5.364**	MSS, RDSS (R2, **S5.369**)	↑	---	
1 610-1 626.5 MHz	**S5.364**	rdss (R1, R3,VEN)	↑	---	

TABLE S5-1A (*CONT.*)

Frequency band	RR foot-note/Res.	Space services [1] in the footnote to which No. S9.11A applies		Other space services [1] to which No. S9.11A applies equally	Date of provisional application of allocation if later than 22.11.1997
1 613.8-1 626.5 MHz	**S5.365**	mss	↓	---	
1 626.5-1 631.5 MHz	**S5.354**	MSS	↑	---	(LMSS, AMSS in R1)
1 631.5-1 634.5 MHz	**S5.354**	MSS	↑	---	1.1.1999 (AMSS)
1 634.5-1 645.5 MHz	**S5.354**	MSS	↑	---	1.1.1999 (LMSS, AMSS)
1 645.5-1 646.5 MHz	**S5.354**	MSS	↑	---	
1 646.5-1 656.5 MHz	**S5.354**	MSS	↑	---	1.1.1999 (LMSS, MMSS)
1 656.5-1 660 MHz	**S5.354**	MSS	↑	---	1.1.1999 (AMSS, MMSS)
1 660-1 660.5 MHz	**S5.354**	MSS	↑	---	1.1.1999 (AMSS, MMSS)
1 675-1 700 MHz	**S5.377**	MSS (R2)	↑	--- (see **S5.377**)	
1 700-1 710 MHz	**S5.377**	MSS (R2)	↑	SPACE RESEARCH (**S5.384**)	
1 980-2 010 MHz	**S5.389A**	MSS	↑	---	1.1.2000 (1980-1990 MHz: 2005 in R2)
2 010-2 025 MHz	**S5.389C**	MSS (R2)	↑	---	1.1.2002 (1.1.2000 in CAN, USA)
2 160-2 170 MHz	**S5.389C**	MSS (R2)	↓	SPACE RESEARCH **S5.392A** (RUS)	1.1.2002 (1.1.2000 in CAN, USA)
2 170-2 200 MHz	**S5.389A**	MSS	↓	SPACE RESEARCH **S5.392A** (RUS)	1.1.2000
2 483.5-2 500 MHz	**S5.402**	MSS RDSS (R2, **S5.400**)	↓	---	
2 483.5-2 500 MHz	**S5.402**	rdss (R1, R3)	↓	---	
2 500-2 520 MHz	**S5.414** **S5.403**	MSS	↓	FSS (R2, R3), RDSS (**S5.404**)	1.1.2005 (until 2005: Article **14**: MSS (–AMSS)) 1.1.2000 (AMSS in J)
2 520 -2 535 MHz	**S5.403**	MSS (–AMSS)	↓	BSS, FSS (R2, R3)	1.1.2000 (AMSS in J)
2 655-2 670 MHz	**S5.420**	MSS (–AMSS)	↑	BSS, FSS (R2, R3)	
2 670-2 690 MHz	**S5.419** **S5.420**	MSS	↑	FSS (R2, R3)	1.1.2005 (until 2005: Article **14**: MSS (–AMSS)) 1.1.2000 (AMSS in J)
5 091-5 150 MHz	**S5.444A**	FSS (limited to non-GSO MSS feeder link)	↑	AMSS (**S5.367**)	
5 150-5 250 MHz	**S5.447A** **S5.447C**	FSS (limited to non-GSO MSS feeder link)	↑	RDSS (**S5.447C**)	
5 150-5 216 MHz	**S5.447B**	FSS (limited to non-GSO MSS feeder link)	↓	RDSS (**S5.447C**)	
6 700-7 075 MHz	**S5.458B**	FSS (limited to non-GSO MSS feeder link)	↓	Non-GSO FSS	

TABLE S5-1A (*END*)

Frequency band	RR footnote/Res.	Space services[1] in the footnote to which No. S9.11A applies		Other space services[1] to which No. S9.11A applies equally	Date of provisional application of allocation if later than 22.11.1997
10.7-11.7 GHz	**S5.441** **S5.484A**	Non-GSO FSS[2]	↓	---	see Res. **130**[3]
11.7-12.2 GHz (R2) 12.2-12.75 GHz (R3) 12.5-12.75 GHz (R1)	**S5.484A**	Non-GSO FSS[2]	↓	---	see Res. **130** and Res. **538**[3], as appropriate
11.7-12.5 GHz (R1) 11.7-12.2 GHz (R3) 12.2-12.7 GHz (R2)	**S5.487A**	Non-GSO FSS[2]	↓	---	see Res. **538**
12.5-12.75 GHz	Res. **130**	Non-GSO FSS[2]	↑	---	see Res. **130**
12.75-13.25 GHz	**S5.441**	Non-GSO FSS[2]	↑	---	see Res. **130**
13.75-14.5 GHz	**S5.484A**	Non-GSO FSS[2]	↑	---	see Res. **130**
15.43-15.63 GHz	**S5.511A**	FSS (limited to non-GSO MSS feeder link)	↓	---	
15.63-15.65 GHz	**S5.511D**	Non-GSO FSS	↓	FSS ↑	
17.3-18.1 GHz (R1,R3)	**S5.516**	Non-GSO FSS[2]	↑	BSS	see Res. **538**
17.8-18.1 GHz (R2)	**S5.516**	Non-GSO FSS[2]	↑	---	see Res. **538**
17.8-18.6 GHz	**S5.484A**	Non-GSO FSS[2]	↓	---	see Res. **130**, for 17.8-18.1 GHz, see also Res. **538**
18.8-19.3 GHz	**S5.523A**	Non-GSO FSS	↓	GSO FSS	
19.3-19.6 GHz	**S5.523B**	FSS (non-GSO MSS feeder link)	↑	---	
19.3-19.7 GHz	**S5.523D**	FSS (GSO and non-GSO MSS feeder link)	↓	---	
19.7-20.2 GHz	**S5.484A**	Non-GSO FSS[2]	↓	---	see Res. **130**
27.5-28.6 GHz	**S5.484A**	Non-GSO FSS[2]	↑	---	see Res. **130**
28.6-29.1 GHz	**S5.523A**	Non-GSO FSS	↑	GSO FSS	
29.1-29.5 GHz	**S5.535A**	FSS (GSO and non-GSO MSS feeder link)	↑		
29.5-30 GHz	**S5.484A**	Non-GSO FSS[2]	↑	---	see Res. **130**

[1] NOTE: AMSS: AERONAUTICAL MOBILE-SATELLITE SERVICE
BSS: BROADCASTING-SATELLITE SERVICE
FSS: FIXED-SATELLITE SERVICE
LMSS: LAND MOBILE-SATELLITE SERVICE
MMSS: MARITIME MOBILE-SATELLITE SERVICE
MSS: MOBILE-SATELLITE SERVICE
RDSS: RADIODETERMINATION-SATELLITE SERVICE
(small letters show secondary allocations.)

R1: Region 1
R2: Region 2
R3: Region 3
↓ space-to-Earth
↑ Earth-to-space

[2] **S9.12** only for c~~C~~oordination of non-GSO FSS systems only with respect to other non-GSO FSS systems.

[3] For information: Non-GSO FSS systems operated in accordance with Resolutions **130 (WRC-97)** and **538 (WRC-97)** shall also apply the provisions of Nos. **S9.17** and **S9.17A**, as appropriate.

ANNEX 1

SUP

2 Hard limits

SUP

3 Coordination areas for mobile earth stations operating below 3 GHz and earth stations providing feeder links for non-GSO satellites operating in the MSS and for non-GSO FSS earth stations

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 486-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents WRC2000/401, 421, 441 and 453 **COMMITTEE 6**

ELEVENTH SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 at its ninth and tenth meetings unanimously adopted the attached changes to Article S5 and Resolution 80 (WRC-97).

Committee 4 also considered PP Resolution 88 but was unable to reach agreement on changes to Article S9. The text containing the proposed changes therefore has certain parts in square brackets.

As a result of these deliberations the Committee produced the attached text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairperson, Committee 4

Annex: 1

ANNEX

MOD

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
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 ADD S5.[XXX2] ADD S5.[XXX3]	**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 ADD S5.[XXX2] ADD S5.[XXX3]	**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 S5.415A **2 535-2 655** FIXED S5.409 S5.411 MOBILE except aeronautical mobile BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.418 ADD S5.[XXX1] ADD S5.[XXX2] ADD S5.[XXX3]

ADD

S5.[XXX1] Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems in the broadcasting-satellite service (sound) in certain Region 3 countries listed in **S5.418** for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **[S9.12A]**, in respect of geostationary-satellite networks for which complete Appendix **S4** coordination information, or notification information, is considered to have been received after 2 June 2000, and **S22.2** does not apply in this case. **S22.2** shall continue to apply with respect to geostationary-satellite networks for which complete Appendix **S4** coordination information, or notification information, is considered to have been received before 3 June 2000. Use of the band by non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to the provisions of Resolution **[COM4/6]**, and such systems shall be in accordance with Resolution **528**.

ADD

S5.[XXX2] Use of the band 2 630-2 655 MHz by non-geostationary-satellite systems for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, is subject to the application of the provisions of No. **[S9.12]**. Resolution **[COM4/6]** applies.

ADD

S5.[XXX3] Use of the band 2 630-2 655 MHz by geostationary-satellite networks for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000 is subject to the application of the provisions of No. **S9.13** with respect to non-geostationary-satellite systems operating in the broadcasting-satellite service (sound), and **S22.2** does not apply. Resolution **[COM4/6]** applies.

MOD

S5.418 *Additional allocation:* in Bangladesh, Belarus, ~~China,~~ Rep. of Korea, India, Japan, Pakistan, ~~Russian Federation,~~ Singapore, Sri Lanka~~,~~ and Thailand, ~~and Ukraine~~ the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to provisions of Resolution **528 (WARC-92)**. The provisions of No. **S5.416** and Article **S21**, Table **S21-4**, do not apply to this additional allocation. Use of non-geostationary-satellite systems in the broadcasting-satellite service (sound) is subject to Resolution **[COM4/6]**.

MOD

S5.342 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Uzbekistan, Kyrgystan, Russian Federation and Ukraine, the band 1 429-1 535 MHz is also allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within the national territory. As of 1 April 2007, the use of the band 1 452-1 492 MHz is subject to agreement between the administrations concerned.

MOD

RESOLUTION 80 (Rev.WRC-~~97~~2000)

Due diligence in applying the principles embodied in the Constitution

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that Articles 12 and 44 of the ITU Constitution ~~(Geneva, 1992)~~ lay down the basic principles for the use of the radio-frequency spectrum and the geostationary-satellite and other satellite orbits;

b) that those principles have been ~~incorporated~~ included in the Radio Regulations [through No. **S0.3**];

[*bbis)* that Article I of the Agreement between the United Nations and the International Telecommunication Union provides that "the United Nations recognizes the International Telecommunication Union (hereinafter called "the Union") as the specialized agency responsible for taking such action as may be appropriate under its basic instrument for the accomplishment of the purposes set forth therein";]

c) that, in accordance with Nos. **S11.30**, **S11.31** and **S11.31.2**, notices shall be examined with respect to the provisions of the Radio Regulations, including the provision relating to the basic principles, appropriate rules of procedure being developed for the purpose~~,~~;

d) that WRC-97 instructed the Radio Regulations Board to develop, with the framework of Nos. **S11.30**, **S11.31** and **S11.31.2**, Rules of Procedure to follow in compliance with the principles in No. **S0.3**;

dbis) that the Board, in accordance with Resolution **80 (WRC-97)** submitted a report to this conference suggesting possible solutions and stating that, after examining the Radio Regulations, it had concluded that there are no provisions currently in the Radio Regulations that link the formal notification or coordination procedures with the principles stated in No. **S0.3** of the Preamble to the Regulations;

e) that the Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space of the United Nations General Assembly has drawn up recommendations in this respect,

noting

a) that in accordance with the provisions of No. 127 of the Convention the Conference may give instructions to the Sectors of the Union;

b) that according to No. 160C of the Convention, the Radiocommunication Advisory Group shall review any matter as directed by a conference;

c) that in the RRB Report to the conference that several Members of the Board noted some difficulties likely to be experienced by administrations, particularly administrations of developing countries, as follows:

– the "first-come first-served" concept restricts and sometimes prevents access and use of certain frequency bands and orbit positions;

– a relative disadvantage for developing countries in coordination negotiations due to various reasons such as a lack of resources and expertise;

– perceived differences in consistency of application of the Radio Regulations;

– the submitting of "paper" satellites that restricts access options;

– the growing use of the bands of the Plans of Appendices **S30** and **S30A** by regional, multichannel systems, which may modify the main purpose of these Plans to provide equitable access to all countries;

– the considerable processing delays in the Radiocommunication Bureau are due to the very complex procedures required and the large number of filings submitted. These delays contribute to a coordination backlog of 18 months which could extend to three years and creates uncertain regulatory situations, additional delay in the coordination process that cannot be overcome by administrations, and the possible loss of the assignment because the allotted time is exceeded;

– satellite systems may already be in orbit before completion of coordination;

– statutory time-frames, such as in **S11.48**, may often be insufficient for developing countries to be able to complete the regulatory requirements as well as the design, construction and launch of satellite systems;

– no provisions for international monitoring to confirm the bringing into use of satellite networks (assignments and orbits),

invites

the Radio Regulations Board and the other organs of the Sector to make contributions to the Director of the Radiocommunication Bureau for inclusion in his report to WRC-03 under *resolves 3*,

resolves

~~1 to instruct the Radio Regulations Board, as a matter of urgency and within the framework of Nos. **S11.30**, **S11.31** and **S11.31.2**, to develop the rules of procedure to be followed in examining due compliance with the principles reflected in No. **S0.3** in the process leading up to the recording of frequency assignments in the International Frequency Register. These rules shall be applied from a date to be decided by WRC-99;~~

1 to instruct the Radiocommunication Advisory Group to carry out studies and consider possible draft recommendations and draft provisions linking the formal notification, coordination and registration procedures with the principles contained in Article 44 of the Constitution and No. **S0.3** in the Preamble to the Radio Regulations. The study should take into account *inter alia* the report of the Radio Regulations Board to this conference (Document 29) in particular the difficulties pointed out in section 3.2, and contributions, if any, from Members;

2 to instruct the Radio Regulations Board to report to the next WRC with regard to this Resolution~~that the Board shall circulate the draft of these rules of procedure toadministrations by 31 October 1998 with a view to receiving comments by 31 March 1999~~;

3 to instruct ~~that~~ the ~~Board~~ Director of the Radiocommunication Bureau ~~shall~~ to submit to WRC-~~99~~03 a detailed report on the action taken on this Resolution.

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 or modification of the orbital location by more than ±12º for a space station using the geostationary satellite orbit will require the application of the advance publication procedure for this band or orbital location, as appropriate.

MOD

S9.5B If, upon receipt of the ~~Weekly Circular~~International Frequency Information Circular (IFIC) containing information published under No. **S9.2B**, any administration considers its existing or planned satellite systems or networks or terrestrial stations[7] 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~~may 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.

MOD

S9.36 *b)* identify in accordance with No. **S9.27** any administration with which coordination may need to be effected[14, 14*bis*];

ADD

14*bis* **S9.36.2** In the case of coordination under Nos. **S9.7**, **[S9.8** and **S9.9]**, the Bureau shall also identify the specific satellite networks with which coordination needs to be effected. The list of the networks identified by the Bureau under No. **S9.27** is only for information purposes, to help administrations comply with this procedure.

MOD

S9.41 Following receipt of the ~~Weekly Circular~~International Frequency Information Circular (IFIC) referring to requests for coordination under Nos. **S9.7** to **S9.9**, an administration believing that it should have been included in the request or the initiating administration believing that an administration identified under **S9.36** in accordance with the provisions of No. **S9.7** (GSO/GSO) of Table **S5-1** of Appendix **S5** (items 1, 2 and 3 of the frequency band column) should not have been included in the request, shall, within four months of the date of publication of the relevant ~~Weekly Circular~~International Frequency Information Circular (IFIC), inform the initiating administration or the identified administration, as appropriate, and the Bureau, giving its technical reasons for doing so, and shall request that its name be included or that the name of the identified administration be excluded, as appropriate.

MOD

S9.42 The Bureau shall study this information on the basis of Appendix **S5** and shall inform both administrations of its conclusions. Should the Bureau agree to include or exclude, as appropriate, the administration in the request, it shall publish an addendum to the publication under No. **S9.38**.

MOD

S9.2B On receipt of the complete information sent under Nos. **S9.1** and **S9.2**, the Bureau shall publish[6A] it in a Special Section of its ~~Weekly Circular~~International Frequency Information Circular (IFIC) 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 therefore.

[ADD

6A **S9.2B.1** If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.]

MOD

S9.38 *d)* publish[14A], as appropriate, the complete information in the ~~Weekly Circular~~International Frequency Information Circular (IFIC) within four 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 therefore.

[ADD

14A **S9.38.1** If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.]

Modification to Appendix S30

MOD

4.3.6 The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of [§ 4.3.1 or § 4.3.3]. The Bureau shall include the names of those administrations with the information received under [§ 4.3.5.2] and shall publish[3A] the complete information in a special section of its ~~Weekly Circular~~International Frequency Information Circular (IFIC). The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the appropriate Regional Plan.

[ADD

3A If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.]

Modification to Appendix S30A

MOD

4.2.7 The Bureau shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of [§ 4.2.1 and 4.2.3]. The Bureau shall include the names of those administrations with the information received under [§ 4.2.6.2] and shall publish[3A] the complete information in a special section of its ~~Weekly Circular~~International Frequency Information Circular (IFIC). The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the Plan.

[ADD

3A If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.]

Modification to Appendix S30B

MOD

ARTICLE 6

Procedures for implementation of the Plan and regulation of the fixed-satellite service in the planned bands[1A]

[ADD

1A If the payments are not received in accordance with the provisions of Council Decision 482, as amended, on the implementation of cost recovery for satellite network filings, the Bureau shall cancel the publication specified in Nos. 6.26, 6.33, 6.49 or cancel the entry in the list under No. 6.44 as appropriate after the concerned administration has been informed. The Bureau shall inform all administrations of such action and that the network specified in this publication no longer has to be taken into consideration by the Bureau and other administrations. The Bureau shall

send a reminder to the notifying administration, with a copy to the operating entity as appropriate, not later than 60 days prior to due date of the payment if payment has not been received by that point.]

MOD

ARTICLE S59

Entry into force and ~~P~~provisional application of the Radio Regulations

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 WRC-95 ~~and~~, WRC-97 and WRC-2000, shall ~~have provisional application~~be applied, pursuant to Article 54 of the Constitution, on the following basis.

S59.2 The provisions of these Regulations, as revised by WRC-95, concerning new or modified frequency allocations (including any new or modified conditions applying to existing allocations) and the related provisions of Articles **S21** and **S22,** and Appendix **S4**, apply provisionally as of 1 January 1997.

S59.3 The other provisions of these Regulations, as revised by WRC-95 and WRC-97, ~~shall~~ apply provisionally as of 1 January 1999, with the following exceptions:

S59.4 – the revised provisions for which other effective dates of application are stipulated in Resolutions **49 (WRC-97)**, **51 (WRC-97)**, **52 (WRC-97)**, **54 (WRC-97)**, **130 (WRC-97)**, **533 (WRC-97)**, **534 (WRC-97)** and **538 (WRC-97)**.

S59.5 The other provisions of these Regulations, as revised by WRC-2000, shall enter into force on [1 January 2002], with the following exceptions:

S59.6 – the revised provisions for which other effective dates of application are stipulated in Resolutions **49 (Rev.WRC-2000)**, **51 (Rev.WRC-2000)**, **53 (Rev.WRC-2000)**, **533 (Rev.WRC-2000)**, **[COM4/4]**, **[COM4/5]**, **[COM4/6]**, **[GT PLEN-1/1]** and **[GT PLEN-1/2]**.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 487-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 454 **PLENARY MEETING**

ITU-R RECOMMENDATIONS CONTAINING TEXTS INCORPORATED BY REFERENCE IN THE RADIO REGULATIONS

DRAFT TABLE OF CONTENTS OF VOLUME 4 OF THE RADIO REGULATIONS (EDITION, 2000) (STATUS AS AT 30 MAY 2000)

Attached is the draft table of contents of Volume 4 of the Radio Regulations (edition, 2000), which contains the provisional list of the ITU-R Recommendations containing texts incorporated by reference in the Radio Regulations.

The list reflects the decisions taken by the conference by 30 May 2000 and will be completed on the basis of the subsequent decisions that may be taken in this regard.

Following the conference, the Radiocommunication Bureau and the General Secretariat shall review the decisions taken by this conference with a view to complete the list in accordance with Resolution 27 (Rev.WRC-2000) and to publish Volume 4 of the Radio Regulations accordingly.

F. YURDAL
Chairperson, WRC-2000

VOLUME 4

ITU-R Recommendations incorporated by reference

Recommendation	Title	Provision No.[1]
ITU-R M.257-3	Sequential single frequency selective-calling system for use in the maritime mobile service	**S19.38**, S19.83, **S19.92**, **S19.96A**, S52.188, **S52.222.1**, **S52.235**, S54.2, AP S13, Part A5, § 11
ITU-R TF.460-5	Standard-frequency and time-signal emissions	**S1.14**
ITU-R M.476-5	Direct-printing telegraph equipment in the maritime mobile service	**S19.83**, **S19.96A**, **S51.41**
ITU-R M.489-2	Technical characteristics of VHF radiotelephone equipment operating in the maritime mobile service in channels spaced by 25 kHz	**S51.77**, **S52.231**, **AP S13**, **Part A2, § 10 1)** AP S18, Note *e)*
ITU-R M.492-6	Operational procedures for the use of direct-printing telegraph equipment in the maritime mobile service	**S52.27**, S56.2
ITU-R M.541-8	Operational procedures for the use of digital selective-calling (DSC) equipment in the maritime mobile service	**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	S19.83, **S51.41**
ITU-R M.627-1	Technical characteristics for HF maritime radio equipment using narrow-band phase-shift keying (NBPSK) telegraphy	S19.83, **S51.41**
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	**AP S13**, **Part A5**, **§ 1 *b)*** and **4 2)** AP S15, Table S15-2, 121.5 MHz
ITU-R S.672-4[2]	Satellite antenna radiation pattern for use as a design objective in the fixed-satellite service employing geostationary satellites	
ITU-R SM.1138	Determination of necessary bandwidths including examples for their calculation and associated examples for the designation of emissions	AP S1, § 1 2) and **2 3.1)**
ITU-R SA.1154[3]	Provisions to protect the space research (SR), space operations (SO), and Earth-exploration satellite services (EES) and to facilitate sharing with the mobile service in the 2 025-2 110 MHz and 2 200-2 290 MHz bands	**S5.391**
ITU-R M.1169	Hours of service of ship stations	**S47.26**, **S47.27**, **S47.28**, **S47.29**, **S50.9**

[1] This column is provided only for convenience to delegates so that they may trace the process of incorporation by reference and will not appear in Volume 4.

[2] Adopted by the sixth Plenary Meeting (30 May 2000).

[3] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

ITU-R M.1170	Morse telegraphy procedures in the maritime mobile service	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	S51.71, S52.192, **S52.195**, S52.213, **S52.224**, S52.234, **S52.240**, **S57.1**, **AP S13**, **Part A2, § 14A 1)**
ITU-R M.1172	Miscellaneous abbreviations and signals to be used for radiocommunications in the maritime mobile service	**S19.48**, S32.7, AP S13, Part A1, § 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	**S52.181**, **S52.229**, **AP S17**, **Part B, Section I**, **§ 2, 6** ***a)*** and ***b)***
ITU-R M.1174-1[4]	Characteristics of equipment used for on-board communications in the bands between 450 and 470 MHz	**S5.287**, **S5.288**
ITU-R M.1175	Automatic receiving equipment for radiotelegraph and radiotelephone alarm signals	**AP S13**, **Part A5**, **§ 9**
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	**AP S4**, **§ C.11** ***d)***
ITU-R S.1256[5]	Methodology for determining the maximum aggregate power flux-density at the geostationary-satellite orbit in the band 6 700-7 075 MHz from feeder links of non-geostationary satellite systems in the mobile-satellite service in the space-to-Earth direction	**S22.5A**
ITU-R BO.1293-1[6]	Protection masks and associated calculation methods for interference into broadcast satellite systems involving digital emissions	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**
ITU-R BO.1295	Reference transmit earth station antenna off-axis e.i.r.p. patterns for planning purposes to be used in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.5.3**
ITU-R BO.1296	Reference receive space station antenna patterns for planning purposes to be used for elliptical beams in the revision of the Appendix 30A (Orb-88) Plans of the Radio Regulations at 14 GHz and 17 GHz in Regions 1 and 3	**AP S30A**, **§ 9A.1** **AP S30A**, **Annex 3**, **§ 3.7.3**

[4] Committee 5 has indicated in Document 229 that the updated version of the subject ITU-R Recommendation should be included.

[5] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[6] GT PLEN-1, in Document 426 proposes to incorporate by reference Recommendation ITU-R BO.1293-1.

ITU-R BO.1297	Protection ratios to be used for planning purposes in the revision of the Appendices 30 (Orb-85) and 30A (Orb-88) Plans of the Radio Regulations in Regions 1 and 3	**AP S30**, **Annex 5**, **§ 3.4** **AP S30A**, **Annex 3**, **§ 3.3**
ITU-R S.1340[7]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the Earth-to-space direction in the band 15.4-15.7 GHz	**S5.511C**
ITU-R S.1341[8]	Sharing between feeder links for the mobile-satellite service and the aeronautical radionavigation service in the space-to-Earth direction in the band 15.4-15.7 GHz and the protection of the radio astronomy service in the band 15.35-15.4 GHz	**S5.511A**
ITU-R S.1428[9]	Reference FSS earth station radiation patterns for use in interference assessment involving non-GSO satellites in frequency bands between 10.7 GHz and 30 GHz	
ITU-R BO.1443[10]	Reference BSS earth station antenna patterns for use in interference assessment involving non-GSO satellites in frequency bands covered by RR Appendix S30	

NOTE - Recommendations ITU-R IS.847-1, IS.848-1, IS.849-1 and M.1185-1, which appeared in Volume 4 of the Radio Regulations (edition, 1998) will not appear in the forthcoming edition of Volume 4, bearing in mind the decisions of WRC-2000 related to Appendix S7.

Committee 5 and GT PLEN-1 decided to suppress the incorporation by reference of Recommendations ITU-R RA.769-1 and BO.1213 respectively (see Documents 229 and 433).

_____

[7] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[8] This ITU-R Recommendation was erroneously omitted from Volume 4 (edition, 1998); see Document 196.

[9] Adopted by the sixth Plenary Meeting (30 May 2000).

[10] Adopted by the sixth Plenary Meeting (30 May 2000).

PINK PAGES

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 488-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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	B.7/460	**ARTICLE S21** – Table S21-4 – S21.16.6 – S21.16.6*bis* – S21.16.8 – S21.16.9 **ARTICLE S22** – S22.5B – S22.5C – S22.5C.1, D.1, F.1 – Table S22-1 – Table S22-1A – Table S22-1B – Table S22-1C – Table S22-1D – S22.5CA – S22.5D – S22.5D.1 – Table S22-2 – S22.5E – S22.5E.1 – S22.5F – S22.5F.1 – Table S22-3, Part A – Table S22-3, Part B – S22.5G – S22.5H – S22.5I – Table S22-4, Part A – Table S22-4, Part B – Table S22-4A – Table S22-4A1 – Table S22-4B

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– Table S22-4C
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RESOLUTION 131 (WRC-97)

RESOLUTION [COM5/19] (WRC-2000)

RESOLUTION [COM5/20] (WRC-2000)

RESOLUTION [COM5/21] (WRC-2000)

Annex: 21 pages

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

MOD

TABLE **S21-4** *(continued)*

Frequency band	Service*	Limit 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 (space-to-Earth), geostationary-satellite orbit	–150	–150 + 0.5(δ – 5)	–140	4 kHz
10.7-11.7 GHz	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	–126	–126 + 0.5(δ – 5)	–116	1 MHz
11.7-12.5 GHz (Region 1) 12.5-12.75 GHz (Region 1 countries listed in Nos. S5.494 and S5.496) 11.7-12.7 GHz (Region 2) 11.7-12.75 GHz (Region 3)	Fixed-satellite (space-to-Earth), non-geostationary-satellite orbit	–124	–124 + 0.5(δ – 5)	–114	1 MHz
12.2-12.75 GHz[7] (Region 3) 12.5-12.75 GHz[7] (Region 1 countries listed in Nos. **S5.494** and **S5.496**)	Fixed-satellite (space-to-Earth), geostationary-satellite orbit	–148	–148 + 0.5(δ – 5)	–138	4 kHz
15.43-15.63 GHz	Fixed-satellite (space-to-Earth)	–127	5°-20°: –127 20°-25°: $-127 + 0.56(\delta - 20)^2$	25°-29°: –113 29°-31°: $-136.9 + 25 \log (\delta - 20)$ 31°-90°: –111	1 MHz

17.7-19.3 GHz[7, 8]	Fixed-satellite (space-to-Earth) Meteorological-satellite (space-to-Earth)	–115[12bis] or –115–X[12]	–115 + 0.5(δ – 5)[12bis] or –115 – X + ((10 + X)/20) (δ – 5)[12]	–105[12bis] or –105 [12]	1 MHz
19.3-19.7 GHz 22.55-23.55 GHz 24.45-24.75 GHz 25.25-27.5 GHz	Fixed-satellite (space-to-Earth) Earth exploration-satellite (space-to-Earth) Inter-satellite	–115	–115 + 0.5(δ – 5)	–105	1 MHz

MOD

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[12] **S21.16.6** The function X is defined as a function of the number, N, of satellites in the non-GSO FSS constellation, as follows:

– for N ≤ 50 $X = 0$ (dB)

– for 50 < N ≤ 288 $X = \frac{5}{119}(N - 50)$ (dB)

– for N > 288 $X = \frac{1}{69}(N + 402)$ (dB)

In the band 18.8-19.3 GHz, these limits apply to emissions of any space station in a non-GSO FSS system for which complete coordination or notification information, as appropriate, has been received by the Radiocommunication Bureau after 17 November 1995, and which was not operational by that date.

ADD

[12*bis*] **S21.16.6*bis*** These limits apply to emissions of a space station on a meteorological satellite and on a GSO FSS satellite. They also apply to emissions of any space station in a non-GSO FSS system in the band 18.8-19.3 GHz for which complete coordination or notification information has been received by the Radiocommunication Bureau by 17 November 1995, or which was in operation by that date.

SUP

[14] **S21.16.8**

SUP

[15] **S21.16.9**

ARTICLE S22

Space services[1]

Section II – Control of interference to geostationary-satellite systems

SUP

S22.5B

MOD

S22.5C § 6 1) The equivalent power flux-density[2], epfd↓ 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 in the fixed-satellite service in the frequency bands listed in Tables **S22-1A** to **S22-1D**, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the limits given in Tables **S22-1A** to **S22-1D** 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 specified in Tables **S22-1A** to **S22-1D**, for all pointing directions towards the geostationary-satellite orbit.

MOD

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[2] **S22.5C.1, D.1, F.1** The equivalent power flux-density is defined as the sum of the power flux-densities produced at a GSO receive station on the Earth's surface or in the geostationary orbit, as appropriate, by all the transmit stations within a non-geostationary-satellite system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction. The equivalent power flux-density is calculated using the following formula:

$$epfd = 10 \cdot \log_{10}\left[\sum_{i=1}^{N_a} 10^{\frac{P_i}{10}} \cdot \frac{G_t(\theta_i)}{4.\pi d_i^2} \cdot \frac{G_r(\phi_i)}{G_{r,\max}}\right]$$

where:

N_a: is the number of transmit stations in the non-GSO system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i: is the index of the transmit station considered in the non-GSO system;

P_i: is the RF power at the input of the antenna of the transmit station, considered in the non-GSO system in dBW in the reference bandwidth;

θ_i: is the off-axis angle between the boresight of the transmit station considered in the non-GSO system and the direction of the GSO receive station;

$G_t(\theta_i)$: is the transmit antenna gain (as a ratio) of the station considered in the non-GSO system in the direction of the GSO receive station;

d_i: is the distance in metres between the transmit station considered in the non-GSO system and the GSO receive station;

ϕ_i: is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the ith transmit station considered in the non-GSO system;

$G_r(\phi_i)$: is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the ith transmit station considered in the non-GSO system;

$G_{r,max}$: is the maximum gain (as a ratio) of the antenna of the GSO receive station;

epfd: is the computed equivalent power flux-density in dB(W/m^2) in the reference bandwidth.

SUP

TABLE **S22-1**

ADD

TABLE **S22-1A**[3, 5, 6, 6*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ 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[4]
10.7-11.7 in all Regions; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–175.4 –174 –170.8 –165.3 –160.4 –160 –160	0 90 99 99.73 99.991 99.997 100	40	60 cm Recommendation ITU-R S.1428
	–181.9 –178.4 –173.4 –173 –164 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.74 99.857 99.954 99.984 99.991 99.997 99.997 99.9993 100	40	1.2 m Recommendation ITU-R S.1428
	–190.45 –189.45 –187.45 –182.4 –182 –168 –164 –162 –160 –160	0 90 99.5 99.7 99.855 99.971 99.988 99.995 99.999 100	40	3 m Recommendation ITU-R S.1428
	–195.45 –195.45 –190 –190 –172.5 –160 –160	0 99 99.65 99.71 99.99 99.998 100	40	10 m Recommendation ITU-R S.1428

[3] For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

[4] Under this section, reference patterns of Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

5 In addition to the limits shown in Table **S22-1A**, the following single-entry epfd↓ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **S22-1A**.

100% of the time epfd↓ (dB(W/(m^2 · 40 kHz)))	**Latitude (North or South) (°)**
–160	0 < |Latitude| ≤ 57.5
–160 + 3.4 (57.5 – |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
–165.3	63.75 ≤ |Latitude|

6 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

6*bis* In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30B** will be fully protected.

ADD

TABLE **S22-1B**[7, 9, 9*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd↓ dB(W/m^2)**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[8]
17.8-18.6	–175.4 –175.4 –172.5 –167 –164 –164	0 90 99 99.714 99.971 100	40	1 m Recommendation ITU-R S.1428
	–161.4 –161.4 –158.5 –153 –150 –150	0 90 99 99.714 99.971 100	1 000	
17.8-18.6	–178.4 –178.4 –171.4 –170.5 –166 –164 –164	0 99.4 99.9 99.913 99.971 99.977 100	40	2 m Recommendation ITU-R S.1428
	–164.4 –164.4 –157.4 –156.5 –152 –150 –150	0 99.4 99.9 99.913 99.971 99.977 100	1 000	

17.8-18.6	–185.4 –185.4 –180 –180 –172 –164 –164	0 99.8 99.8 99.943 99.943 99.998 100	40	5 m Recommendation ITU-R S.1428
	–171.4 –171.4 –166 –166 –158 –150 –150	0 99.8 99.8 99.943 99.943 99.998 100	1 000	

7 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

8 Under this section, reference patterns of Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

9 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

9*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

ADD

TABLE **S22-1C**[10, 12, 12*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd↓ dB(W/m^2)**	**Percentage of time during which epfd↓ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter and reference radiation pattern**[11]
19.7-20.2	–187.4 –182 –172 –154 –154	0 71.429 97.143 99.983 100	40	70 cm Recommendation ITU-R S.1428
	–173.4 –168 –158 –140 –140	0 71.429 97.143 99.983 100	1 000	

19.7-20.2	–190.4 –181.4 –170.4 –168.6 –165 –160 –154 –154	0 91 99.8 99.8 99.943 99.943 99.997 100	40	90 cm Recommendation ITU-R S.1428
	–176.4 –167.4 –156.4 –154.6 –151 –146 –140 –140	0 91 99.8 99.8 99.943 99.943 99.997 100	1 000	
19.7-20.2	–196.4 –162 –154 –154	0 99.98 99.99943 100	40	2.5 m Recommendation ITU-R S.1428
	–182.4 –148 –140 –140	0 99.98 99.99943 100	1 000	
	–200.4 –189.4 –187.8 –184 –175 –164.2 –154.6 –154 –154	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	40	5 m Recommendation ITU-R S.1428
	–186.4 –175.4 –173.8 –170 –161 –150.2 –140.6 –140 –140	0 90 94 97.143 99.886 99.99 99.999 99.9992 100	1 000	

[10] For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

[11] Under this section, reference patterns of Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS networks.

[12] For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

[12*bis*] A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

ADD

TABLE **S22-1D**[13, 15, 16, 16*bis*]

Limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands 30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	epfd↓ 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[14]
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–165.841 –165.541 –164.041 –158.6 –158.6 –158.33 –158.33	0 25 96 98.857 99.429 99.429 100	40	30 cm Recommendation ITU-R BO.1443 Annex 1
	–175.441 –172.441 –169.441 –164 –160.75 –160 –160	0 66 97.75 99.357 99.809 99.986 100	40	45 cm Recommendation ITU-R BO.1443 Annex 1
	–176.441 –173.191 –167.75 –162 –161 –160.2 –160 –160	0 97.8 99.371 99.886 99.943 99.971 99.997 100	40	60 cm Recommendation ITU-R BO.1443 Annex 1
	–178.94 –178.44 –176.44 –171 –165.5 –163 –161 –160 –160	0 33 98 99.429 99.714 99.857 99.943 99.991 100	40	90 cm Recommendation ITU-R BO.1443 Annex 1

	–182.44 –180.69 –179.19 –178.44 –174.94 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.68 99.68 99.85 99.915 99.94 99.97 99.99 99.998 100	40	120 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 in Region 1; 11.7-12.2 and 12.5-12.75 in Region 3; 12.2-12.7 in Region 2	–184.941 –184.101 –181.691 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.571 99.946 99.974 99.993 99.999 100	40	180 cm Recommendation ITU-R BO.1443 Annex 1
	–187.441 –186.341 –183.441 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.786 99.957 99.983 99.994 99.999 100	40	240 cm Recommendation ITU-R BO.1443 Annex 1
	–191.941 –189.441 –185.941 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.857 99.914 99.951 99.983 99.991 100	40	300 cm Recommendation ITU-R BO.1443 Annex 1

13 For BSS antenna diameters 180 cm, 240 cm and 300 cm, in addition to the single-entry limits shown in Table **S22-1D**, the following single-entry 100% of the time epfd↓ limits also apply in the frequency bands listed in Table **S22-1D**:

100% of the time epfd↓ (dB(W/(m^2 · 40 kHz)))	**Latitude (North or South) (°)**
–160	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160 + 3.4\ (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \leq \lvert \text{Latitude} \rvert \leq 63.75$
–165.3	$63.75 \leq \lvert \text{Latitude} \rvert$

14 Under this section, reference patterns of Recommendation ITU-R BO.1443 shall be used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

15 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd levels and logarithmic for the time percentages, with straight lines joining the data points.

16 For a BSS earth station antenna diameter of 240 cm, in addition to the single-entry 100% of the time epfd↓ limit specified in note 13 to this table, a single-entry 100% of the time operational epfd↓ limit is specified in Table **S22-4C**.

16*bis* In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plan of [Appendix **S30**] will be fully protected.

ADD

S22.5CA 2) The limits given in Tables **S22-1A** to **S22-1D** may be exceeded on the territory of any country whose administration has so agreed.

MOD

S22.5D 3) The equivalent power flux-density[2], epfd↑, produced at any point in the geostationary-satellite orbit by emissions from all the earth stations in a non-GSO FSS system in the frequency bands listed in Table **S22-2**, 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 equivalent power flux-density which would be obtained under free-space propagation conditions, into a reference antenna and in the reference bandwidth specified in Table **S22-2**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary-satellite orbit.

(SUP)

3 **S22.5D.1**

MOD

TABLE **S22-2**[17*bis*]

Limits to the epfd↑ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↑ dB(W/m^2)	Percentage of time epfd↑ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna beamwidth and reference radiation pattern[17]
12.50-12.75 12.75-13.25 13.75-14.5	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.3-18.1 (Regions 1 and 3) 17.8-18.1 (Region 2)*	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
27.5-28.6	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10
29.5-30.0	–162	100	40	1.55 degrees Rec. ITU-R S.672-4, Ls = –10

17 Under this section, reference patterns of Recommendation ITU-R S.672-4 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. For the case of Ls = –10, the values a = 1.83 and b = 6.32 shall be used in the equations in Annex 1 to Recommendation ITU-R S.672-4 for single-feed circular beams. In all cases of Ls, the parabolic main beam equation shall start at zero.

17*bis* In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plans of Appendices **S30A** and **S30B** will be fully protected.

* This epfd↑ level also applies to the frequency band 17.3-17.8 GHz to protect BSS feeder links in Region 2 from non-GSO FSS Earth-to-space transmissions in Regions 1 and 3.

SUP

S22.5E

(SUP)

4 **S22.5E.1**

(SUP)

5 **S22.5F.1**

MOD

S22.5F 4) The equivalent power flux-density[2], $epfd_{is}$, produced at any point in the geostationary-satellite orbit by emissions from all the space stations in a non-GSO FSS system 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 specified 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 specified in Table **S22-3**, for all pointing directions towards the Earth's surface visible from any given location in the geostationary orbit.

MOD

TABLE **S22-3**[18*bis*]

Limits to the $epfd_{is}$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**$epfd_{is}$ dB(W/m^2)**	**Percentage of time during which $epfd_{is}$ level may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna beamwidth and reference radiation pattern**[18]
10.7-11.7 (Region 1) 12.5-12.75 (Region 1) 12.7-12.75 (Region 2)	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20
17.8-18.4	–160	100	40	4 degrees Rec. ITU-R S.672-4, Ls = –20

[18] Under this section, this reference pattern of Recommendation ITU-R S.672-4 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems. In applying the equations of Annex 1 to Recommendation ITU-R S.672-4, the parabolic main beam equation shall start at zero.

[18*bis*] In meeting these limits, the administrations intending to develop such systems shall ensure that the assignments appearing in the Plan of Appendix **S30A** will be fully protected.

SUP

S22.5G

ADD

S22.5H 5) The limits specified in Nos. **S22.5C** to **S22.5D** and **S22.5F** apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau after 22 November 1997. The limits in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C** do not apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau before 22 November 1997.

ADD

S22.5I 6) An administration operating a non-GSO FSS system which is in compliance with the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** 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 coordination or notification information, as appropriate, for the non-GSO system and the GSO network, provided that the epfd↓ radiated by the non-GSO FSS system into any operating GSO FSS earth station does not exceed the operational and additional operational limits given in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A**, **S22-4A1** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite. Except as otherwise agreed between concerned administrations, an administration operating a non-GSO FSS system that is subject to the limits in Nos. **S22.5C**, **S22.5D** and **S22.5F** and which radiates epfd↓ into any operating GSO FSS earth station at levels in excess of the operational or additional operational limits given in Tables **S22-4A**, **S22-4A1**, **S22-4B** and **S22-4C**, when the diameter of the earth station antenna is equal to the values given in Table **S22-4A**, **S22-4A1** or **S22-4C**, or the gain of the earth station is equal to or greater than the values given in Table **S22-4B** for the corresponding orbital inclination of the GSO FSS satellite, shall be considered to be in violation of its obligations under No. **S22.2**.

SUP

TABLE **S22-4**

PART A

PART B

ADD

TABLE **S22-4A**[20, 22, 22*bis*]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna diameter[21] (m)	Orbital inclination of GSO satellite (degrees)
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (prior to 31 December 2005)	–163 –166 –167.5 –169.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–160 –163 –164.5 –166.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3 (from 31 December 2005)	–161.25 –164 –165.5 –167.5	100	40	3 6 9 ≥ 18	≤ 2.5
	–158.25 –161 –162.5 –164.5	100	40	3 6 9 ≥ 18	> 2.5 and ≤ 4.5

20 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

21 For antenna diameters between the values given in this table, the limits are given by linear interpolation using a linear scale for epfd↓ in decibels and a logarithmic scale for antenna diameter in metres.

22 In addition to the operational limits shown in Table **S22-4A**, the additional operational limits in Table **S22-4A1** apply to certain GSO FSS earth station antenna sizes in the frequency bands listed in Table **S22-4A**.

22*bis* The operational limits on the epfd↓ radiated by non-GSO FSS systems shall be the values given in note 5 to Table **S22-1A** or Table **S22-4A**, whichever are the more stringent.

ADD

TABLE **S22-4A1**

Additional operational limits on the epfd↓ radiated by non-GSO FSS systems into 3 m and 10 m GSO FSS earth station antennas

epfd↓ (dB(W/(m^2 · 40 kHz)))	Percentage of time during which epfd↓ may not be exceeded	Receive GSO earth station antenna diameter (m)
–182 –179 –176 –171 –168 –165 –163 –161.25 –161.25	99.9 99.94 99.97 99.98 99.984 99.993 99.999 99.99975 100	3
–185 –183 –179 –175 –171 –168 –166 –166	99.97 99.98 99.99 99.996 99.998 99.999 99.9998 100	10

ADD

TABLE **S22-4B**[23]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna gain (dBi)	Orbital inclination of GSO satellite (degrees)
19.7-20.2	–157 –157 –155	100 100 100	40 40 40	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
19.7-20.2	–143 –143 –141	100 100 100	1 000 1 000 1 000	≥ 49 ≥ 43[24] ≥ 49	≤ 2.5 ≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–164 –162	100 100	40 40	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5
17.8-18.6	–150 –148	100 100	1 000 1 000	≥ 49 ≥ 49	≤ 2.5 > 2.5 and ≤ 4.5

23 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

24 The operational limit applies to non-GSO systems operating at altitudes of 7 000 km or above in order to protect GSO FSS systems employing adaptive coding.

ADD

TABLE **S22-4C**[25]

Operational limits to the epfd↓ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd↓ dB(W/m^2)	Percentage of time during which epfd↓ may not be exceeded	Reference bandwidth (kHz)	Receive GSO earth station antenna diameter (m)	Orbital inclination of GSO satellite (degrees)
12.2-12.7 GHz in Region 2	–167	100	40	2.4	≤ 0.5

25 These limits apply into GSO earth stations located in Region 2 west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.]

ADD

S22.5J 7) In case of *force majeure*, telecommand and ranging carriers transmitted to non-GSO FSS satellites are not subject to the limits given in Table **S22-2**.

ADD

S22.5K 8) Administrations operating or planning to operate non-GSO FSS systems in the bands listed in Tables **S22-1A** to **S22-1D** of No. **S22.5C** will apply the provisions of Resolution **[COM5/6] (WRC-2000)** to ensure that the actual aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not exceed the aggregate power levels shown in Tables **[COM5/6]-1A** to **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**. In the event that an administration operating a GSO network in conformity with the Radio Regulations identifies epfd levels from non-GSO FSS systems which may be in excess of the aggregate limits contained in Tables **[COM5/6]-1A** to **[COM5/6]-1D** of Resolution **[COM5/6] (WRC-2000)**, the administrations responsible for the non-GSO FSS systems will apply the provisions contained in *resolves* 2 of Resolution **[COM5/6] (WRC-2000)**.

SUP

RESOLUTION 131 (WRC-97)

Power flux-density limits applicable to non-geostationary fixed-satellite service systems for protection of terrestrial services in the bands 10.7-12.75 GHz and 17.7-19.3 GHz

ADD

RESOLUTION [COM5/19] (WRC-2000)

Use of the frequency band 1 164-1 215 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that in accordance with the Radio Regulations, the band 960-1 215 MHz is allocated on a primary basis to the aeronautical-radionavigation service in all the ITU Regions;

b) that this conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 164-1 215 MHz, with a provisional limit on the aggregate power flux-density produced by all the space stations within all radionavigation-satellite systems at the Earth's surface of –115 dB(W/m^2) in any 1 MHz band for all angles of arrival;

c) that it is likely that no radionavigation-satellite service system will be fully operational in this band before the next WRC;

d) that only a few radionavigation-satellite service systems are expected to be deployed in this band;

e) that it is unlikely that more than two systems will have overlapping frequencies,

noting

a) that the studies conducted to date by ICAO to ensure protection of current operation of distance measuring equipments (DME) indicate that a provisional power flux-density value for the radionavigation-satellite service allocation in this band should be in the range of –115 to –119 dB(W/m^2) in any 1 MHz band for the aggregate interference from all space stations of all radionavigation-satellite service systems operating in the same band;

b) that no methodology is available to derive an aggregate power flux-density for all radionavigation-satellite service space stations of one system from the aggregate power flux-density for all systems given in No. **S5.328A**,

resolves

1 that the provisional power flux-density limit given in No. **S5.328A** shall be applied for all radionavigation-satellite service (space-to-Earth) systems as of 2 June 2000;

2 to recommend that WRC-03 review the results of the studies in *invites ITU-R* 1 and take appropriate action;

3 that the administrations planning to implement radionavigation-satellite service systems in this band shall consult each other in order to ensure that the provisional aggregate power flux-density limit is not exceeded;

4 that, as of 3 June 2000, when notifying frequency assignments to a satellite network in the radionavigation-satellite service in the bands 1 164-1 215 MHz, the responsible administration shall provide the calculated values of the aggregate power flux-density, as defined in No. **S5.328A**, in addition to the relevant characteristics listed in Appendix **S4**,

invites ITU-R

to conduct, as a matter of urgency and in time for WRC-03, the appropriate technical, operational and regulatory studies on the overall compatibility between the radionavigation-satellite service and the aeronautical radionavigation service in the band 960-1 215 MHz, including an assessment of the need for an aggregate power flux-density limit, and revision, if necessary, of the provisional pfd limit given in No. **S5.328A** concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 164-1 215 MHz,

instructs the Radiocommunication Bureau

as of the end of WRC-03, to review and, if necessary, revise any finding previously made on the compliance with the limit of a radionavigation-satellite service (space-to-Earth) system for which notification information has been received before the end of WRC-03; this review shall be based on the values as revised, if necessary, by WRC-03,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

instructs the Secretary-General

to communicate the contents of this resolution to the ICAO for such actions as it may consider appropriate and to invite ICAO to participate actively in the study activity identified under *invites ITU-R* 1.

ADD

RESOLUTION [COM5/20] (WRC-2000)

Use of the frequency band 1 215-1 300 MHz by systems of the radionavigation-satellite service (space-to-Earth)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has decided to introduce a new allocation for the radionavigation-satellite service (space-to-Earth) in the frequency band 1 260-1 300 MHz;

b) that in the band 1 215-1 260 MHz radionavigation-satellite service (space-to-Earth) systems have been successfully operated for a considerable time in a band used by radars;

c) the importance of the radionavigation service authorized in certain countries in accordance with No. **S5.331** and of the radiolocation service, and the need for adequate protection and continued operation of these services throughout the band 1 215-1 300 MHz,

resolves

1 that no additional constraints shall be placed on radionavigation-satellite service (space-to-Earth) systems operating in the band 1 215-1 260 MHz;

2 to recommend that WRC-03 review the results of the studies in *invites ITU-R* 1 and take appropriate action,

invites ITU-R

to conduct, as a matter of urgency and in time for WRC-03, the appropriate technical, operational and regulatory studies, including an assessment of the need for a power flux-density limit concerning the operation of radionavigation-satellite service (space-to-Earth) systems in the frequency band 1 215-1 300 MHz in order to ensure that the radionavigation-satellite service (space-to-Earth) will not cause harmful interference to the radionavigation and the radiolocation services,

instructs the Secretary-General

to communicate the contents of this resolution to ICAO for such actions as it may consider appropriate and to invite ICAO to participate actively in the study activity identified under *invites ITU-R* 1.

ADD

RESOLUTION [COM5/21] (WRC-2000)

Studies on compatibility between stations of the radionavigation-satellite service (Earth to space) and the radiolocation service operating in the frequency band 1 300-1 350 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has added a primary allocation to the radionavigation-satellite service (Earth-to-space) in the 1 300-1 350 MHz band;

b) that this conference has raised the status of the radiolocation service from secondary to primary in the 1 300-1 350 MHz band;

c) that studies to determine compatibility between airborne radar systems operating in the radiolocation service and the radionavigation-satellite service have not yet been carried out;

d) that there is a potential for interference between ground-based beacons in the radionavigation-satellite service and airborne radiolocation systems;

e) that airborne radiolocation systems can be protected with the implementation of adequate separation distances, if necessary;

f) that a maximum of twenty ground-based beacons in the radionavigation satellite service are expected to be deployed globally,

resolves to invite ITU-R

to conduct, as a matter of urgency, the appropriate studies to ensure that stations of the radionavigation-satellite service (Earth-to-space) in the band 1 300-1 350 MHz do not cause harmful interference to the operation of airborne radiolocation systems and to develop, if needed, appropriate recommendations,

urges administrations

to participate actively in these studies by submitting contributions to ITU-R.

PINK PAGES

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 489-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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	B.8/462	**ARTICLE S21** – Table S21-4 – S21.16.4 – S21.16.10 – S21.16.FSS – S21.16.BSS **ARTICLE S22** – Section VI – S22.VI.1 – S22.VI.2 – S22.26 – S22.27 – S22.28 – S22.30 – S22.30.1 – S22.31 – S22.31.1 – S22.32 – S22.33 – S22.34 – S22.35 – S22.36 – S22.37 – S22.38 – S22.39 **RESOLUTION 128 (Rev.WRC-2000)** **RESOLUTION 129 (WRC-97)** **RESOLUTION 133 (WRC-97)** **RESOLUTION 134 (WRC-97)**

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		RESOLUTION 213 (Rev.WRC-95) **RESOLUTION 220 (WRC-97)** **RESOLUTION 538 (WRC-97)** **RESOLUTION 726 (WRC-97)** **RESOLUTION [COM5/6] (WRC-2000)** **RESOLUTION [COM5/13] (WRC-2000)** **RESOLUTION [COM5/17] (WRC-2000)** **RESOLUTION [COM5/24] (WRC-2000)** **RESOLUTION [COM5/25] (WRC-2000)** **RESOLUTION [COM5/26] (WRC-2000)** **RESOLUTION [COM5/27] (WRC-2000)** **RESOLUTION [COM5/28] (WRC-2000)** **RESOLUTION [COM5/29] (WRC-2000)** **RESOLUTION [COM5/30] (WRC-2000)**
COM 6	B.8A1/462A1	**ARTICLE S5** – Table of allocations 470-890 MHz 890-1 350 MHz – S5.CCC – Table of allocations 1 525-1 610 MHz 1 610-1 660 MHz 1 660-1 710 MHz 1 710-2 170 MHz 2 170-2 520 MHz 2 520-2 700 MHz – S5.388 – S5.XXX – S5.AAA – S5.SSS – S5.BBB
COM 6	B.8A2/462A2	**ARTICLE S5** – Table of allocations 34.2-40.5 GHz – S5.547 – S5.NGSO – Table of allocations 40.5-55.78 GHz – S5.551B – S5.551C – S5.551D – S5.551E – S5.RAS

Annex: 52 pages

ARTICLE S21

Terrestrial and space services sharing frequency bands above 1 GHz

ADD

Table S21-4 *(end)*

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°**	
37.5-40.0 GHz	Fixed-satellite (Non-geostationary) Mobile-satellite (Non-geostationary)	–120 [10, 16, FSS]	–120 + 0.75(δ-5) [10, 16, FSS]	–105 [10, 16, FSS]	1 MHz
37.5-40.0 GHz	Fixed-satellite (Geostationary) Mobile-satellite (Geostationary)	–127 [16, FSS]	**5°-20°**: –127 + (4/3)(δ-5) [16, FSS] **20°-25°**: –107 + 0.4(δ-20) [16, FSS]	–105 [16, FSS]	1 MHz
40-40.5 GHz	Fixed-satellite	–115	–115 + 0.5(δ-5)	–105	1 MHz
40.5-42.0 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-geostationary)	–115 [10, 16, FSS, BSS]	–115 + 0.5(δ-5) [10,16, FSS, BSS]	–105 [10, 16, FSS, BSS]	1 MHz
40.5-42.0 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	–120 [16, FSS, BSS]	**5°-15°**: –120 + (δ-5) [16, FSS, BSS] **15°-25°**: –110 + 0.5(δ-15) [16, FSS, BSS]	–105 [16, FSS, BSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Non-geostationary) Broadcasting-satellite (Non-geostationary)	–120 [10, 16, FSS, BSS]	–120 + 0.75(δ-5) [10, 16, FSS, BSS]	–105 [10, 16, FSS, BSS]	1 MHz
42.0-42.5 GHz	Fixed-satellite (Geostationary) Broadcasting-satellite (Geostationary)	–127 [16, FSS, BSS]	**5°-20°**: –127 + (4/3)(δ-5) [16, FSS, BSS] **20°-25°**: –107 + 0.4(δ-20) [16, FSS, BSS]	–105 [16, FSS, BSS]	1 MHz

MOD

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[10] **S21.16.4** The values given in this table entry shall apply to emissions of space stations of non-geostationary satellites in networks operating with 99 or fewer satellites. Further study concerning the applicability of these values is necessary in order to apply them to networks operating with 100 or more satellites.

ADD

[16] **S21.16.10** Except to the extent provided in footnote S21.16.FSS, these values are provisional and shall be applied subject to Resolution **[COM5/28] (WRC-2000)**.

ADD

FSS **S21.16.FSS** In the bands 37.5-40 and 40.5-42.5 GHz, notwithstanding any further studies, the power flux-density limits in this table shall be applied to stations in the fixed-satellite service for which complete coordination (GSO) or notification information (non-GSO), as appropriate, has been received by the Bureau after 2 June 2000 and before the end of WRC-03.

ADD

BSS **S21.16.BSS** The values given for the BSS are provisional and need review by a future conference.

ARTICLE S22

Space services[1]

MOD

Section VI – Off-axis power limits on earth stations of a geostationary-satellite network in the fixed-satellite service[11, 12]

MOD

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[11] **S22.VI.1** The provisions of this section shall not be used for coordination of, or to evaluate interference between, GSO FSS networks (see No. **S9.50.1**).

ADD

[12] **S22.VI.2** Although the provisions of this section cover off-axis power limitations in all directions, the radiation pattern of GSO FSS earth station antennas in more than two orthogonal planes is not required.

MOD

S22.26 § 9 The level of equivalent isotropically radiated power (e.i.r.p.) emitted by an earth station of a geostationary-satellite network shall not exceed the following values for any off-axis angle φ which is 3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p.*
3° ≤ φ ≤ 7°	(42 – 25 log φ) dB(W/40 kHz)
7° < φ ≤ 9.2°	21 dB(W/40 kHz)
9.2° < φ ≤ 48°	(45 – 25 log φ) dB(W/40 kHz)
48° < φ ≤ 180°	3 dB(W/40 kHz)

MOD

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.*
3° ≤ φ ≤ 7°	(56 – 25 log φ) dBW
7° < φ ≤ 9.2°	35 dBW
9.2° < φ ≤ 48°	(59 – 25 log φ) dBW
48° < φ ≤ 180°	17 dBW

MOD

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.*
$3° \leq \varphi \leq 7°$	$(56 - 25 \log \varphi)$ dBW
$7° < \varphi \leq 9.2°$	35 dBW
$9.2° < \varphi \leq 48°$	$(59 - 25 \log \varphi)$ dBW
$48° < \varphi \leq 180°$	17 dBW

ADD

S22.30 The e.i.r.p. limits given in Nos. **S22.26**, **S22.27**, **S22.28** and **S22.32** do not apply to earth station antennas in service or ready to be in service[13] prior to 2 June 2000, nor to earth stations associated with a satellite network in the fixed-satellite service for which complete coordination or notification information has been received before 2 June 2000.

ADD

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[13] **S22.30.1** "Ready to be in service" relates to the case where antennas have been installed but the start of service has been delayed due to *force majeure*.

ADD

S22.31 Telecommand and ranging[x] carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directional receiving antenna on the space station) may exceed the levels given in No. **S22.26** by no more than 16 dB in the frequency bands 12.75-13.25 GHz and 13.75-14.5 GHz. In all other modes of operation, and in case of *force majeure*, telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in No. **S22.26**.

ADD

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[x] **S22.31.1** Measurement of the distance to the satellite.

ADD

S22.32 § 10 The level of equivalent isotropically radiated power (e.i.r.p.) density emitted by an earth station in a geostationary-satellite network in the 29.5-30 GHz frequency band shall not exceed the following values for any off-axis angle φ which is 3° or more off the main-lobe axis of an earth station antenna:

Off-axis angle	*Maximum e.i.r.p. density*
$3° \leq \varphi \leq 7°$	$(28 - 25 \log \varphi)$ dB(W/40 kHz)
$7° < \varphi \leq 9.2°$	7 dB(W/40 kHz)
$9.2° < \varphi \leq 48°$	$(31 - 25 \log \varphi)$ dB(W/40 kHz)
$48° < \varphi \leq 180°$	–1 dB(W/40 kHz)

ADD

S22.33 Not used.

ADD

S22.34 Telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service in normal mode of operation (i.e. earth station transmitting telecommand and ranging carriers to a directional receiving antenna on the space station) may exceed the levels given in No. **S22.32** by no more than 10 dB in the frequency band 29.5-30 GHz. In all other modes of operation, and in case of *force majeure,* telecommand and ranging carriers transmitted to geostationary satellites in the fixed-satellite service are exempted from the levels given in No. **S22.32**.

ADD

S22.35 For GSO systems in which the earth stations are expected to transmit simultaneously in the same 40 kHz band, e.g. for GSO systems employing CDMA, the maximum e.i.r.p. values given in No. **S22.32** should be decreased by 10log(N) dB, where N is the number of earth stations which are in the receive satellite beam of the satellite with which these earth stations are communicating and which are expected to transmit simultaneously on the same frequency.

ADD

S22.36 Earth stations operating in the frequency band 29.5-30 GHz should be designed in such a manner that 90% of their peak off-axis e.i.r.p. density levels do not exceed the values given in No. **S22.32**. Further study is needed to determine the off-axis angular range over which these exceedences would be permitted, taking into account the interference level into adjacent satellites. The statistical processing of the off-axis e.i.r.p. density peaks should be carried out using the method given in Recommendation ITU-R S.732.

ADD

S22.37 The limits given in Nos. **S22.26** to **S22.28** and **S22.32** apply under clear-sky conditions. During rain-fade conditions, the limits may be exceeded by earth stations when using uplink power control.

ADD

S22.38 Earth stations in the fixed-satellite service operating in the 29.5-30 GHz band, which have lower elevation angles to the geostationary-satellite orbit, will require higher e.i.r.p. levels relative to the same terminals at higher elevation angles to achieve the same power flux-densities at the GSO, due to the combined effect of increased distance and atmospheric absorption. Earth stations with low elevation angles may exceed the levels given in No. **S22.32** by the following amounts:

Elevation angle to GSO (ε)	*Increase in e.i.r.p. density (dB)*
$\varepsilon \leq 5°$	2.5
$5 < \varepsilon \leq 30°$	$0.1(25 - \varepsilon) + 0.5$

ADD

S22.39 The values in No. **S22.32** applicable to the off-axis angle range from 48° to 180° are intended to account for spillover effects.

MOD

RESOLUTION 128 (Rev.WRC-2000)

Protection of the radio astronomy service in the 42.5-43.5 GHz band

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 added a primary allocation to the fixed-satellite service (FSS) (space-to-Earth) in the band 40.5-42.5 GHz in Regions 2 and 3 and in certain countries in Region 1, that this conference has extended this allocation to include all of 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 there is also a worldwide primary allocation to the broadcasting-satellite service (BSS) in the 40.5-42.5 GHz band;

c) that unwanted emissions from GSO BSS and FSS (space-to-Earth) space stations in the band 42-42.5 GHz may result in harmful interference to the radio astronomy service in the band 42.5-43.5 GHz;

d) that aggregate unwanted emissions from non-GSO BSS and FSS (space-to-Earth) space stations 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;

e) that various technical and operational means may be used to reduce unwanted emissions from these space stations;

f) that a limited number of radio astronomy stations worldwide require protection in the band 42.5-43.5 GHz, and that there may be means to limit the susceptibility of radio astronomy stations to interference,

recognizing

a) that WRC-97 required that FSS systems not be implemented in the band 41.5-42.5 GHz band 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;

b) that this conference has established provisional power flux-density limits for out-of-band emissions from BSS and FSS stations in accordance with No. **S5.RAS**,

resolves

that, notwithstanding any further studies, the power flux-density limits in No. **S5.RAS** shall be applied to BSS and FSS stations for which complete coordination (GSO) or notification (non-GSO) information, as appropriate, has been received by the Bureau after the end of WRC-2000 and before the end of WRC-03,

invites ITU-R

1 to study, as a matter of urgency and in time for WRC-03, the provisional power flux-density limits given in No. **S5.RAS**;

2 to identify technical and operational measures in the band 41.5-42.5 GHz, including possible mitigation techniques, that may be implemented 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 BSS and FSS space stations, as well as measures that may be implemented to reduce the susceptibility of stations in the radio astronomy service to harmful interference,

urges administrations

1 to participate actively in the aforementioned studies by submitting contributions to ITU-R;

2 when planning to implement BSS or FSS space stations in the band 41.5-42.5 GHz for which complete coordination (GSO) or notification (non-GSO) has been received prior to this conference, to take into consideration the provisions of No. **S5.RAS** in order to protect the radio astronomy service in the band 42.5-43.5 GHz,

recommends

that WRC-03 take appropriate action based on those studies.

SUP

RESOLUTION 129 (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

SUP

RESOLUTION 133 (WRC-97)

Sharing between the fixed service and other services in the band 37-40 GHz

SUP

RESOLUTION 134 (WRC-97)

Use of the frequency band 40.5-42.5 GHz by the fixed-satellite service

SUP

RESOLUTION 213 (Rev.WRC-95)

Sharing studies concerning possible use of the band 1 675-1 710 MHz by the mobile-satellite service

SUP

RESOLUTION 220 (WRC-97)

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)

SUP

RESOLUTION 538 (WRC-97)

Use of the frequency bands covered by Appendices S30/30 and S30A/30A by non-geostationary-satellite systems in the fixed-satellite service

SUP

RESOLUTION 726 (WRC-97)

Frequency bands above 30 GHz available for high-density applications in the fixed service

ADD

RESOLUTION [COM5/6] (WRC-2000)

Protection of GSO FSS and GSO BSS networks from the maximum aggregate equivalent power flux-density produced by multiple non-GSO FSS systems in frequency bands where equivalent power flux-density limits have been adopted

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 adopted, in Article **S22**, provisional equivalent power flux-density (epfd) limits to be met by non-GSO FSS systems in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30 GHz;

b) that this conference has revised Article **S22** to ensure the limits contained therein provide adequate protection to GSO systems without placing undue constraints on any of the systems and services sharing these frequency bands;

c) that this conference has decided that a combination of single-entry validation, single-entry operational and, for certain antenna sizes, single-entry additional operational epfd limits, contained in Article **S22**, along with the aggregate limits in Tables **COM5/6-1A** to **COM5/6-1D**, which apply to non-GSO FSS systems, protects GSO networks in these bands;

d) that these single-entry validation limits have been derived from aggregate epfd masks contained in Tables **COM5/6-1A** to **COM5/6-1D**, assuming a maximum effective number of non-GSO FSS systems of 3.5;

e) that the aggregate interference caused by all co-frequency non-GSO FSS systems in these bands into GSO FSS systems should not exceed the aggregate epfd levels in Tables **COM5/6-1A** to **COM5/6-1D**;

f) that WRC-97 decided, and this conference has confirmed, that non-GSO FSS systems in the bands in question are to mutually coordinate the use of frequencies in these bands under the provisions of No. **S9.12**;

g) that the orbital characteristics of such systems are likely to be inhomogeneous;

h) that, as a result of this likely inhomogeneity, the aggregate epfd levels from multiple non-GSO FSS systems will not be directly related to the actual number of systems sharing a frequency band, and the number of such systems operating co-frequency is likely to be small;

i) that the possible misapplication of single-entry limits should be avoided,

recognizing

a) that non-GSO FSS systems are likely to need to implement interference mitigation techniques to mutually share frequencies;

b) that, on account of the use of such interference mitigation techniques, it is likely that the number of non-GSO systems will remain small, as will the aggregate interference caused by non-GSO FSS systems into GSO systems;

c) that, notwithstanding *considering d)* and *e)* and *recognizing b)*, there may be instances where the aggregate interference from non-GSO systems could exceed the interference levels given in Tables **COM5/6-1A** to **COM5/6-1D**;

d) that administrations operating GSO systems may wish to ensure that the aggregate epfd produced by all operating co-frequency non-GSO FSS systems in the frequency bands referred to in *considering a)* above into GSO FSS and/or GSO BSS networks does not exceed the aggregate interference levels given in Tables **COM5/6-1A** to **COM5/6-1D**,

resolves

1 that administrations operating or planning to operate non-GSO FSS systems, for which coordination or notification information, as appropriate, was received after 21 November 1997, in the frequency bands referred to in *considering a)* above, individually or in collaboration, shall take all possible steps, including, if necessary, by means of appropriate modifications to their systems, to ensure that the aggregate interference into GSO FSS and GSO BSS networks caused by such systems operating co-frequency in these frequency bands does not cause the aggregate power levels given in Tables **COM5/6-1A** to **COM5/6-1D** to be exceeded (see No. **S22.5K**);

2 that, in the event that the aggregate interference levels in Tables **COM5/6-1A** to **COM5/6-1D** are exceeded, administrations operating non-GSO FSS systems in these frequency bands shall take all necessary measures expeditiously to reduce the aggregate epfd levels to those given in Tables **COM5/6-1A** to **COM5/6-1D**, or to higher levels where those levels are acceptable to the affected GSO administration (see No. **S22.5K)**,

invites ITU-R

1 to develop, as a matter of urgency and in time for the next WRC, a suitable methodology for calculating the aggregate epfd produced by all non-GSO FSS systems operating or planning to operate co-frequency in the frequency bands referred to in *considering a)* above into GSO FSS and GSO BSS networks, which may be used to determine whether the systems are in compliance with the aggregate power levels given in Tables **COM5/6-1A** to **COM5/6-1D**;

2 to continue its studies and to develop, as a matter of urgency, a recommendation on the accurate modelling of interference from non-GSO FSS systems into GSO FSS and GSO BSS networks in the frequency bands referred to in *considering a)* above, in order to assist administrations planning or operating non-GSO FSS systems in their efforts to limit the aggregate epfd levels produced by their systems into GSO networks, and to provide guidance to GSO network designers on the maximum $epfd_{\downarrow}$ levels expected to be produced by all non-GSO FSS systems when accurate modelling assumptions are used;

3 to develop, as a matter of urgency, a recommendation containing procedures to be used among administrations in order to ensure that the aggregate epfd limits given in Tables **COM5/6-1A** to **COM5/6-1D** are not exceeded by operators of non-GSO FSS systems;

4 to attempt to develop measurement techniques to identify the interference levels from non-GSO systems in excess of the aggregate limits given in Tables **COM5/6-1A** to **COM5/6-1D**, and to confirm compliance with these limits,

instructs the Director of the Radiocommunication Bureau

1 to assist in the development of the methodology referred to in *invites ITU-R* 1 above;

2 to report to WRC-03 on the results of studies in *invites ITU-R* 1 and 3 above.

ANNEX 1 TO RESOLUTION [COM5/6] (WRC-2000)

TABLE **COM5/6-1A**[1, 3, 4]

Limits on aggregate epfd$_\downarrow$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	**epfd$_\downarrow$ dB(W/m^2)**	**Percentage of time during which epfd$_\downarrow$ may not be exceeded**	**Reference bandwidth (kHz)**	**Reference antenna diameter, and reference radiation pattern[2]**
10.7-11.7 in all Regions 11.7-12.2 in Region 2 12.2-12.5 in Region 3 and 12.5-12.75 in Regions 1 and 3	–170 –168.6 –165.3 –160.4 –160 –160	0 90 99 99.97 99.99 100	40	60 cm Recommendation ITU-R S.1428
	–176.5 –173 –164 –161.6 –161.4 –160.8 –160.5 –160 –160	0 99.5 99.84 99.945 99.97 99.99 99.99 99.9975 100	40	1.2 m Recommendation ITU-R S.1428
	–185 –184 –182 –168 –164 –162 –160 –160	0 90 99.5 99.9 99.96 99.982 99.997 100	40	3 m[3bis] Recommendation ITU-R S.1428
	–190 –190 –166 –160 –160	0 99 99.99 99.998 100	40	10 m[3bis] Recommendation ITU-R S.1428

1 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

2 Under this section, reference patterns in Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 In addition to the limits shown in Table **COM5/6-1A**, the following aggregate epfd$_\downarrow$ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **COM5/6-1A**:

100% of the time epfd$_\downarrow$ dB(W/(m^2 · 40 kHz))	**Latitude (North or South) (°)**
–160	0 ≤ |Latitude| ≤ 57.5
–160 + 3.4(57.5 – |Latitude|)/4	57.5 < |Latitude| ≤ 63.75
–165.3	63.75 < |Latitude|

3*bis* The values for the 3 m and 10 m antennas are applicable only for the methodology referred to *invites ITU-R* 1.

4 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd$_\downarrow$ levels and logarithmic for the time percentages, with straight lines joining the data points.

MOD

TABLE **COM5/6-1B**[1, 3, 3*bis*]

Limits on aggregate epfd$_\downarrow$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd$_\downarrow$ dB(W/m^2)	Percentage of time during which epfd$_\downarrow$ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[2]
17.8-18.6	–170 –170 –164 –164	0 90 99.9 100	40	1 m Recommendation ITU-R S.1428
	–156 –156 –150 –150	0 90 99.9 100	1 000	
17.8-18.6	–173 –173 –166 –164 –164	0 99.4 99.9 99.92 100	40	2 m Recommendation ITU-R S.1428
	–159 –159 –152 –150 –150	0 99.4 99.9 99.92 100	1 000	
17.8-18.6	–180 –180 –172 –164 –164	0 99.8 99.8 99.992 100	40	5 m Recommendation ITU-R S.1428
	–166 –166 –158 –150 –150	0 99.8 99.8 99.992 100	1 000	

1 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

2 Under this section, reference patterns in Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd$_\downarrow$ levels and logarithmic for the time percentages, with straight lines joining the data points.

3*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

MOD

TABLE COM5/6-1C[1, 3, 3*bis*]

Limits on aggregate epfd$_\downarrow$ radiated by non-GSO FSS systems in certain frequency bands

Frequency band (GHz)	epfd$_\downarrow$ dB(W/m^2)	Percentage of time during which epfd$_\downarrow$ may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[2]
19.7-20.2	–182 –172 –154 –154	0 90 99.94 100	40	70 cm Recommendation ITU-R S.1428
	–168 –158 –140 –140	0 90 99.94 100	1 000	
19.7-20.2	–185 –176 –165 –160 –154 –154	0 91 99.8 99.8 99.99 100	40	90 cm Recommendation ITU-R S.1428
	–171 –162 –151 –146 –140 –140	0 91 99.8 99.8 99.99 100	1 000	
19.7-20.2	–191 –162 –154 –154	0 99.933 99.998 100	40	2.5 m Recommendation ITU-R S.1428
	–177 –148 –140 –140	0 99.933 99.998 100	1 000	
19.7-20.2	–195 –184 –175 –161 –154 –154	0 90 99.6 99.984 99.9992 100	40	5 m Recommendation ITU-R S.1428
	–181 –170 –161 –147 –140 –140	0 90 99.6 99.984 99.9992 100	1 000	

1 For certain GSO FSS receive earth stations, see also Nos. **S9.7A** and **S9.7B**.

2 Under this section, reference patterns in Recommendation ITU-R S.1428 shall be used only for the calculation of interference from non-GSO FSS systems into GSO FSS systems.

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd$_\downarrow$ levels and logarithmic for the time percentages, with straight lines joining the data points.

3*bis* A non-GSO system shall meet the limits of this table in both the 40 kHz and the 1 MHz reference bandwidths.

TABLE **COM5/6-1D**[2, 3]

Limits on aggregate epfd↓ radiated by non-GSO FSS systems in certain frequency bands

30 cm, 45 cm, 60 cm, 90 cm, 120 cm, 180 cm, 240 cm and 300 cm BSS antennas

Frequency band (GHz)	epfd$_\downarrow$ dB(W/m^2)	Percentage of time during which epfd$_\downarrow$ level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter, and reference radiation pattern[1]
11.7- 12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–160.4 –160.1 –158.6 –158.6 –158.33 –158.33	0 25 96 98 98 100	40	30 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–170 –167 –164 –160.75 –160 –160	0 66 97.75 99.33 99.95 100	40	45 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–171 –168.75 –167.75 –162 –161 –160.2 –160 –160	0 90 97.8 99.6 99.8 99.9 99.99 100	40	60 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–173.75 –173 –171 –165.5 –163 –161 –160 –160	0 33 98 99.1 99.5 99.8 99.97 100	40	90 cm Recommendation ITU-R BO.1443 Annex 1

11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz In Region 2	–177 –175.25 –173.75 –173 –169.5 –167.8 –164 –161.9 –161 –160.4 –160	0 90 98.9 98.9 99.5 99.7 99.82 99.9 99.965 99.993 100	40	120 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–179.5 –178.66 –176.25 –163.25 –161.5 –160.35 –160 –160	0 33 98.5 99.81 99.91 99.975 99.995 100	40	180 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz in Region 1 11.7-12.2 GHz and 12.5-12.75 GHz in Region 3 12.2-12.7 GHz in Region 2	–182 –180.9 –178 –164.4 –161.9 –160.5 –160 –160	0 33 99.25 99.85 99.94 99.98 99.995 100	40	240 cm Recommendation ITU-R BO.1443 Annex 1
11.7-12.5 GHz In Region 1 11.7-12.2 GHz and 12.5-12.75 GHz In Region 3 12.2-12.7 GHz In Region 2	–186.5 –184 –180.5 –173 –167 –162 –160 –160	0 33 99.5 99.7 99.83 99.94 99.97 100	40	300 cm Recommendation ITU-R BO.1443 Annex 1

[1] Under this section, reference patterns in Recommendation ITU-R BO.1443 shall used only for the calculation of interference from non-GSO FSS systems into GSO BSS systems.

2 For BSS antenna diameters of 180 cm, 240 cm and 300 cm, in addition to the aggregate limit shown in Table **COM5/6-1D**, the following aggregate 100% of the time epfd$_\downarrow$ limit also applies:

100% of the time epfd$_\downarrow$ dB(W/(m^2 · 40 kHz))	**Latitude (North or South) (°)**
–160	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160 + 3.4\ (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 < \lvert \text{Latitude} \rvert \leq 63.75$
–165.3	$63.75 < \lvert \text{Latitude} \rvert$

3 For each reference antenna diameter, the limit consists of the complete curve on a plot which is linear in decibels for the epfd$_\downarrow$ levels and logarithmic for the time percentages, with straight lines joining the data points.

For BSS antenna of diameter 240 cm, in addition to the above aggregate 100% of the time epfd$_\downarrow$ limit, a –167 dB(W/(m^2 · 40 kHz)) aggregate 100% of the time operational epfd$_\downarrow$ limit also applies to receive antennas located in Region 2, west of 140° W, north of 60° N, pointing toward GSO BSS satellites at 91° W, 101° W, 110° W, 119° W and 148° W with elevation angles greater than 5°. [This limit is implemented during a transition period of 15 years.]

ADD

RESOLUTION [COM5/13] (WRC-2000)

Use of high altitude platform stations providing IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2

The World Radiocommunication Conference 2000 (Istanbul, 2000),

considering

a) that the bands 1 885-2 025 MHz and 2 110-2 200 MHz are identified in No. **S5.388** as intended for use on a worldwide basis for IMT-2000, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000;

b) that a high altitude platform station (HAPS) is defined in No. **S1.66A** as "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";

c) that HAPS may offer a new means of providing IMT-2000 services with minimal network infrastructure as they are capable of providing service to a large footprint together with a dense coverage;

d) that the use of HAPS as base stations within the terrestrial component of IMT-2000 is optional for administrations, and that such use should not have any priority over other terrestrial IMT-2000 use;

e) that, in accordance with No. **S5.388** and Resolution **212 (Rev.WRC-97)**, administrations may use the bands identified for IMT-2000, including the bands referred to in this resolution, for stations of other primary services to which they are allocated;

f) that these bands are allocated to the fixed and mobile services on a co-primary basis;

g) that ITU-R has studied sharing and coordination between HAPS and other stations within IMT-2000, has considered compatibility of HAPS within IMT-2000 with some services having allocations in the adjacent bands, and has established Recommendation ITU-R M.1456;

h) that ITU-R did not address sharing and coordination between HAPS and some existing systems, particularly PCS (personal communications service), MMDS (multichannel multipoint distribution service) and systems in the fixed service, which are currently operating in some countries in the bands 1 885-2 025 MHz and 2 110-2 200 MHz;

i) that, in accordance with No. **S5.BBB**, HAPS may be used as base stations within the terrestrial component of IMT-2000 in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 MHz in Region 2; the use by

IMT-2000 applications using HAPS as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations,

recognizing

that the values in *resolves* 1 may not be appropriate for the protection of some stations operating in these bands in the fixed and mobile services,

resolves

1 that:

a) for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, a HAPS operating as a base station to provide IMT-2000 shall not exceed a provisional co-channel power flux-density (pfd) of –121.5 dB (W/(m^2 · MHz)) at the Earth's surface outside an administration's borders unless agreed otherwise by the administration of the affected neighbouring country;

b) a HAPS operating as a base station to provide IMT-2000, in order to protect fixed stations from interference, shall not exceed the following provisional values of out-of-band pfd at the Earth's surface in the bands 2 025-2 110 MHz:

– –165 dB(W/(m^2 · MHz)) for angles of arrival (θ) less than 5° above the horizontal plane;

– –165 + 1.75 (θ – 5) dB (W/(m^2 · MHz)) for angles of arrival between 5° and 25° above the horizontal plane; and

– –130 dB(W/(m^2 · MHz)) for angles of arrival between 25° and 90° above the horizontal plane;

2 that, as of the end of WRC-03, such a HAPS shall operate only in accordance with such limits as are confirmed or, if appropriate, revised by WRC-03, irrespective of its date of bringing into use;

3 that administrations wishing to implement HAPS within a terrestrial IMT-2000 system shall comply with the following:

a) for the purpose of protecting certain stations operating within IMT-2000 in neighbouring countries from co-channel interference, administrations using HAPS as base stations within IMT-2000 shall use antennas that comply with the following antenna pattern:

$G(\psi) = G_m - 3(\psi/\psi_b)^2$	dBi	for	$0° \le \psi \le \psi_1$
$G(\psi) = G_m + L_N$	dBi	for	$\psi_1 < \psi \le \psi_2$
$G(\psi) = X - 60\log(\psi)$	dBi	for	$\psi_2 < \psi \le \psi_3$
$G(\psi) = L_F$	dBi	for	$\psi_3 < \psi \le 90°$

where:

$G(\psi)$: gain at the angle ψ from the main beam direction (dBi)

G_m: maximum gain in the main lobe (dBi)

ψ_b: one-half of the 3 dB beamwidth in the plane considered (3 dB below G_m) (degrees)

L_N: near side-lobe level in dB relative to the peak gain required by the system design, and has a maximum value of –25 dB

L_F: far side-lobe level, G_m – 73 dBi

$$\psi_1 = \psi_b \sqrt{-L_N / 3} \quad \text{degrees}$$

$$\psi_2 = 3.745\ \psi_b \quad \text{degrees}$$

$$X = G_m + L_N + 60\log(\psi_2) \quad \text{dBi}$$

$$\psi_3 = 10^{(X - L_F)/60} \quad \text{degrees}$$

The 3 dB beamwidth ($2\psi_b$) is again estimated by:

$$(\psi_b)^2 = 7442/(10^{0.1Gm}) \quad \text{degrees}^2$$

where G_m is the peak aperture gain (dBi);

b) for the purpose of protecting mobile earth stations within the satellite component of IMT-2000 from interference, a HAPS operating as a base station to provide IMT-2000, shall not exceed an out-of-band pfd of –165 dB (W/(m^2 · 4 kHz)) at the Earth's surface in the bands 2 160-2 200 MHz in Region 2 and 2 170-2 200 MHz in Regions 1 and 3;

4 that administrations wishing to implement HAPS within a terrestrial IMT-2000 system shall, prior to their bringing into use, take into account in their bilateral coordination with affected neighbouring administrations the operation and growth of existing and planned systems in the fixed and mobile services having allocations on a primary basis;

5 that, for the purpose of protecting fixed service stations operating in neighbouring countries from co-channel interference, administrations wishing to implement HAPS within a terrestrial IMT-2000 system shall, pending the review by WRC-03 of the studies mentioned below, take full account of the relevant ITU-R Recommendations relating to protection values for fixed stations (see Recommendation ITU-R F.758),

invites ITU-R

to complete, as a matter of urgency, additional regulatory, operational and technical studies on sharing criteria for HAPS with other systems in the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz in Regions 1 and 3 and 1 885-1 980 MHz and 2 110-2 160 in Region 2, and in adjacent bands to allow revision of the values in *resolves* 1 and to develop appropriate regulatory and technical provisions to allow the coordination mentioned in *resolves* 4 and to report on the results of these studies in time for consideration by WRC-03.

ADD

RESOLUTION [COM5/17] (WRC-2000)

Possible identification of spectrum for non-GSO FSS (Earth-to-space) gateway type operations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted epfd↑ limits that apply to non-GSO FSS in the Earth-to-space direction in portions of the 10.7-30 GHz band, including the 17.3-17.8 GHz band in Regions 1 and 3;

b) that this conference has decided that, due to incompatibilities in the 17.3-17.8 GHz band between non-GSO FSS (Earth-to-space) and existing and planned operations (including broadcasting-satellite and radiolocation services), non-GSO FSS (Earth-to-space) operations are not allowed in Region 2 in this band;

c) that, in the 10-30 GHz band, the amount of spectrum identified for use by non-GSO FSS Earth-to-space transmission is limited compared to the amount of spectrum for space-to-Earth transmission;

d) that non-GSO FSS systems may need additional spectrum in the Earth-to-space direction for very low density gateway type operations that could be constrained by a minimum antenna diameter,

resolves to invite ITU-R

to study the necessity and suitability of frequency bands for non-GSO FSS (Earth-to-space) gateway operations outside those bands allocated to non-GSO FSS subject to No. **S9.11A**, on the basis of the compatibility between this type of non-GSO FSS operation and existing and planned services in these bands,

instructs the Director of the Radiocommunication Bureau

to report the results of these studies to a future competent WRC.

ADD

RESOLUTION [COM5/24] (WRC-2000)

Additional frequency bands identified for IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that IMT-2000 is the ITU vision of global mobile access and is scheduled to start service around the year 2000, subject to market and other considerations;

b) that IMT-2000 is an advanced mobile communication applications concept intended to provide telecommunication services on a worldwide scale regardless of location, network or terminal used;

c) that IMT-2000 will provide access to a wide range of telecommunication services supported by fixed telecommunication networks (e.g. PSTN/ISDN), and to other services which are specific to mobile users;

d) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations, including Recommendation ITU-R M.1457, which contains the detailed specifications of the radio interfaces of IMT-2000;

e) that the evolution of IMT-2000 is being studied within ITU-R;

f) that the review of IMT-2000 spectrum requirements at this conference has concentrated on the bands below 3 GHz;

g) that at WARC-92, 230 MHz of spectrum was identified for IMT-2000 in the bands 1 885-2 025 MHz and 2 110-2 200 MHz, including the bands 1 980-2 010 MHz and 2 170-2 200 MHz for the satellite component of IMT-2000, in No. **S5.388** and under the provisions of Resolution **212 (Rev.WRC-97)**;

h) that since WARC-92 there has been a tremendous growth in mobile communications including an increasing demand for wideband multimedia capability;

i) that ITU-R studies forecasted that of the order of 160 MHz of spectrum, in addition to that already identified for IMT-2000 in No. **S5.388** and in addition to the spectrum used for first- and second-generation mobile systems in all three ITU Regions, will be needed in order to meet the projected requirements of IMT-2000 in those areas where the traffic is the highest by 2010;

j) that this conference has identified additional frequency bands in No. **S5.AAA** for IMT-2000 in order to meet the additional spectrum requirement projected by ITU-R;

k) that the bands identified for IMT-2000 are currently used by either first- or second-generation mobile systems or applications of other radiocommunication services;

l) that Recommendation ITU-R M.1308 addresses the evolution of existing mobile communication systems to IMT-2000;

m) that harmonized worldwide bands for IMT-2000 are desirable in order to achieve global roaming and the benefits of economies of scale;

n) that the bands 1 710-1 885 MHz and 2 500-2 690 MHz are allocated to a variety of services in accordance with the relevant provisions of the Radio Regulations;

o) that, for technical reasons, the existing applications in the bands identified for IMT-2000 require spectrum below 3 GHz;

p) that technological advancement and market demand will promote innovation and accelerate the delivery of advanced communication applications to consumers;

q) that changes in technology may lead to the further development of communication applications, including IMT-2000,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services having allocations in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met;

c) that Recommendation ITU-R M.819 describes the objectives to be met by IMT-2000 in order to meet the needs of developing countries,

noting

a) Resolutions **[COM5/25] (WRC-2000)** and **[COM5/26] (WRC-2000)**, which also relate to IMT-2000;

b) that the sharing implications between services sharing the bands identified for IMT-2000 in No. **S5.AAA** will need further study in ITU-R;

c) that studies regarding the availability of the bands 1 710-1 885 MHz and 2 500-2 690 MHz for IMT-2000 are being conducted in many countries, the results of which could have implications for the use of those bands in those countries;

d) that, due to differing requirements, not all administrations may need all of the IMT-2000 bands identified at this conference, or, due to the usage by and investment in existing services, may not be able to implement IMT-2000 in all of those bands;

e) that the spectrum for IMT-2000 identified by this conference may not completely satisfy the expected requirements of some administrations;

f) that currently operating second-generation mobile communication systems may evolve to IMT-2000 in their existing bands;

g) that services such as fixed, mobile (second-generation systems), space operations, space research and aeronautical mobile are in operation or planned in the band 1 710-1 885 MHz, or in portions of that band;

h) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite and fixed (including multipoint distribution/communication systems) are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;

i) that the identification of several bands for IMT-2000 allows administrations to choose the best band or parts of bands for their circumstances;

j) that ITU-R has identified additional work to address further developments in IMT-2000 and beyond;

k) that the IMT-2000 radio interfaces as defined in Recommendation ITU-R M.1457 are expected to evolve within the framework of ITU-R beyond those initially specified, to provide enhanced services and services beyond those envisaged in the initial implementation;

l) that the identification of a band for IMT-2000 does not establish priority in the Radio Regulations and does not preclude the use of the band for any application of the services to which they are allocated;

m) that the provisions of Nos. **S5.388**, **S5.AAA** and **S5.XXX** do not prevent administrations from having the choice to implement other technologies in the frequency bands identified for IMT-2000, based on national requirements,

recognizing

a) that some administrations are planning to use the band 2 300-2 400 MHz for IMT-2000;

b) that for some administrations the only way of implementing IMT-2000 would be spectrum refarming, requiring significant financial investment;

c) that spectrum for IMT-2000 is identified in Nos. **S5.388**, **S5.AAA** and **S5.XXX**, but this identification does not preclude the use for IMT-2000 of other bands allocated to the mobile service,

resolves

1 to invite administrations implementing IMT-2000 or planning to implement IMT-2000 to make available, based on market demand and other national considerations, additional bands or portions of the bands above 1 GHz identified in No. **S5.AAA** for the terrestrial component of IMT-2000; due consideration should be given to the benefits of harmonized utilization of the spectrum for the terrestrial component of IMT-2000, taking into account the use and planned use of these bands by all services to which these bands are allocated;

2 to acknowledge that the differences in the texts of Nos. **S5.388** and **S5.AAA** do not confer differences in regulatory status,

invites ITU-R

1 to study the implications of sharing of IMT-2000 with other applications and services in the bands 1 710-1 885 MHz and 2 500-2 690 MHz and the implementation, sharing and frequency arrangements of IMT-2000 in the bands 1 710-1 885 MHz and 2 500-2 690 MHz in accordance with Annex 1;

2 to develop harmonized frequency arrangements for operation of the terrestrial component of IMT-2000 in the spectrum mentioned in this resolution, aiming to achieve compatibility with existing frequency arrangements used by the first- and second-generation systems;

3 to continue its studies on further enhancements of IMT-2000, including the provision of Internet Protocol (IP)-based applications that may require unbalanced radio resources between the mobile and base stations;

4 to provide guidance to ensure that IMT-2000 can meet the telecommunication needs of the developing countries and rural areas in the context of the studies referred to above;

5 to include these frequency arrangements and the results of these studies in one or more ITU-R Recommendations,

invites ITU-T

1 to complete its studies of signalling and communication protocols for IMT-2000;

2 to develop a common worldwide intersystem numbering plan and associated network capabilities that will facilitate worldwide roaming,

further invites ITU-R and ITU-T

to commence these studies forthwith,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies and to report the results of the studies before the next competent conference, or within three years, whichever is the earlier,

requests administrations and Sector Members

to submit the necessary contributions and to participate actively in the ITU-R studies.

ANNEX 1 TO RESOLUTION [COM5/24] (WRC-2000)

Request for studies by ITU-R

In response to Resolution [**COM5/24] (WRC-2000)**, studies that address the following should be conducted:

1 sharing implications and possibilities for all services having allocations in the identified frequency bands;

2 harmonized frequency arrangements for the implementation of IMT-2000 in the bands mentioned in this resolution that take into account the services currently using the bands or planning to use the bands and the required compatible frequency arrangements of second-generation systems using these bands, taking into account the need to facilitate the evolution of current mobile systems to IMT-2000;

3 means to facilitate global roaming across different regional band usage within the bands identified for IMT-2000;

4 spectrum demand predictions related to traffic density and timing;

5 planning tools for adaptation of mobile radiocommunication technologies, including IMT-2000, for the needs of developing countries;

6 maintaining a database of national studies and decisions on selection of spectrum for IMT-2000;

7 study of the provision of a fixed wireless access interface using IMT-2000 technologies.

ADD

RESOLUTION [COM5/25] (WRC-2000)

Frequency bands for the terrestrial component of IMT-2000 below 1 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that parts of the band 806-960 MHz are extensively used in the three Regions by first- and second-generation mobile systems;

b) that some administrations are planning to use part of the band 698-806 MHz for IMT-2000;

c) that, in some countries, the band 698-806 MHz is allocated to the mobile service on a primary basis;

d) that first- and second-generation mobile systems in the three Regions operate using various frequency arrangements;

e) that where cost considerations warrant the installation of fewer base stations, such as in sparsely populated areas, bands below 1 GHz are generally suitable for implementing mobile systems including IMT-2000;

f) Recommendation ITU-R M.819 which describes the objectives to be met by IMT-2000 to meet the needs of developing countries,

recognizing

that the evolution of first- and second-generation cellular-based mobile systems to IMT-2000 can be facilitated if they are permitted to use their current frequency bands,

emphasizing

a) that flexibility must be afforded to administrations:

– to determine, at a national level, how much spectrum to make available for IMT-2000 from within the identified bands;

– to develop their own transition plans, if necessary, tailored to meet their specific deployment of existing systems;

– to have the ability for the identified bands to be used by all services having allocations in those bands;

– to determine the timing of availability and use of the bands identified for IMT-2000, in order to meet particular market demand and other national considerations;

b) that the particular needs of developing countries must be met,

resolves

to request administrations which are implementing, or planning to implement IMT-2000, to consider the use of bands below 1 GHz and the possibility of evolution of first- and second-generation mobile systems to IMT-2000, in the frequency band identified in No. **S5.XXX**, based on market demand and other national considerations,

invites ITU-R

to study compatibility between mobile systems with different technical characteristics and provide guidance on any impact on spectrum arrangements.

ADD

RESOLUTION [COM5/26] (WRC-2000)

Use of additional frequency bands for the satellite component of IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the bands 1 980-2 010 MHz and 2 170-2 200 MHz are identified for use by the satellite component of International Mobile Telecommunications-2000 (IMT-2000) through No. **S5.388** and Resolution **212 (Rev.WRC-97)**;

b) Resolutions **212 (Rev.WRC-97)**, **[COM5/24] (WRC-2000)** and **[COM5/25] (WRC-2000)** on the implementation of the terrestrial and satellite components of IMT-2000;

c) that the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz are allocated on a co-primary basis to the mobile-satellite service and other services in accordance with the Radio Regulations;

d) that distress, urgency and safety communications of the Global Maritime Distress and Safety System and the aeronautical mobile-satellite (R) service have priority over all other mobile-satellite service communications in accordance with Nos. **S5.353A** and **S5.357A**,

recognizing

a) that services such as broadcasting-satellite, broadcasting-satellite (sound), mobile-satellite, fixed (including point-to-multipoint distribution/communication systems) and mobile are in operation or planned in the band 2 500-2 690 MHz, or in portions of that band;

b) that other services such as the mobile service and radiodetermination-satellite service are in operation or planned, in accordance with the Table of Frequency Allocations, in the bands 1 525-1 559/1 626.5-1 660.5 MHz and 1 610-1 626.5/2 483.5-2 500 MHz, or in portions of those bands, and that those bands, or portions thereof, are intensively used in some countries by applications other than the IMT-2000 satellite component, and the sharing studies within ITU-R are not finished;

c) that studies of potential sharing and coordination between the satellite component of IMT-2000 and the terrestrial component of IMT-2000, mobile-satellite service applications and other high-density applications in other services such as point-to-multipoint communication/distribution systems in the bands 2 500-2 520 MHz and 2 670-2 690 MHz bands are not finished;

d) that the bands 2 520-2 535 MHz and 2 655-2 670 MHz are allocated to the mobile-satellite, except aeronautical mobile-satellite, service for operation limited to within national boundaries pursuant to Nos. **S5.403** and **S5.420**;

e) Resolution ITU-R 47 on studies under way on satellite radio transmission technologies for IMT-2000,

resolves

1 that, in addition to the frequency bands indicated in *considering a)* and *resolves* 2, the frequency bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz and 2 483.5-2 500 MHz may be used by administrations wishing to implement the satellite component of IMT-2000, subject to the regulatory provisions related to the mobile-satellite service in these frequency bands;

2 that the bands 2 500-2 520 MHz and 2 670-2 690 MHz as identified for IMT-2000 in No. **S5.AAA** and allocated to the mobile-satellite service may be used by administrations wishing to implement the satellite component of IMT-2000; however, depending on market developments, it may be possible in the longer term for bands 2 500-2 520 MHz and 2 670-2 690 MHz to be used by the terrestrial component of IMT-2000;

3 that this identification of frequency bands for the satellite component of IMT-2000 does not preclude the use of these bands by any applications of the services to which they are allocated and does not establish priority in the Radio Regulations,

invites ITU-R

1 to study the sharing and coordination issues in the above bands related to use of the mobile-satellite service allocations for the satellite component of IMT-2000 and the use of this spectrum by the other allocated services, including the radiodetermination-satellite service;

2 to report the results of these studies to a future world radiocommunication conference,

instructs the Director of the Radiocommunication Bureau

to facilitate to the greatest extent possible the completion of these studies.

ADD

RESOLUTION [COM5/27] (WRC-2000)

Development of the technical basis for coordination of radio astronomy stations with transmitting high-density fixed systems in the fixed service, in the band 42.5-43.5 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has decided that the band 42.5-43.5 GHz, which is allocated to the fixed service, should become available for high-density applications;

b) that the 42.5-43.5 GHz band is also allocated to the radio astronomy service on a primary basis worldwide, and is used intensively for both continuum and spectral line observations, at a limited number of sites;

c) that radio astronomy observatories operating in the band are generally located far from urban population centres, employ very high-gain antennas and very low-noise amplifiers to receive extremely weak cosmic radio emissions over which astronomers have no control;

d) that high-density fixed system (HDFS) stations are expected to be deployed in large numbers over areas of large geographical extent in urban population centres;

e) that studies are being initiated to characterize short-term anomalous propagation from transmitting stations dispersed over a large geographical area to a single receiving earth station (area-to-point propagation);

f) that no studies are yet available on the coordination distance that may be required to protect a radio astronomy station from HDFS transmissions associated with a single urban population centre, but that, based on preliminary studies made at lower frequencies, a provisional coordination distance of 250 km may be appropriate,

resolves to invite ITU-R

to conduct studies on the coordination distance between radio astronomy stations operating in the 42.5-43.5 GHz band and HDFS stations with a view to developing ITU-R Recommendations,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R.

ADD

RESOLUTION [COM5/28] (WRC-2000)

Power flux-density limits in the bands 37.5-42.5 GHz for the fixed-satellite service, broadcasting-satellite service and mobile-satellite service

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has established power flux-density limits in accordance with the provisions of Nos. **S21.16.10** and **S21.16.FSS** for the fixed-satellite service (FSS) (space-to-Earth) in the bands 37.5-40.0 GHz and 40.5-42.5 GHz, and the mobile-satellite service (MSS) (space-to-Earth) in the band 39.5-40 GHz;

b) that, in the band 37.5-42.5 GHz, Recommendation ITU-R SF.1484 recommends power flux-density limits for non-GSO FSS systems;

c) that, in the bands 37.5-40 GHz and 40.5-42.5 GHz, the power flux-density limits adopted by this conference for GSO FSS systems are based on ITU-R studies;

d) that this conference has harmonized the allocation to FSS in the band 40.5-42.5 GHz across all the Regions;

e) that there exists an allocation to BSS on a co-primary basis in the band 40.5-42.5 GHz;

f) that there are only provisional power flux-density limits for BSS in the range 40.5-42.5 GHz;

g) that, although sharing is feasible between FSS earth stations and terrestrial stations provided that 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;

h) that the band 40-40.5 GHz has not been identified as being available for high-density applications in the fixed service,

noting

a) that Recommendation ITU-R SF.1484 indicates that some fixed service systems employing small net fade margins and which operate at elevation angles greater than 10° in the band 37.5-40 GHz may not be fully protected from interference from FSS systems without imposing undue constraints on FSS systems;

b) that the fixed service parameters for sharing studies are given in Recommendation ITU-R F.758;

c) that new studies taking account of high-density fixed service deployments with new characteristics (as documented in Recommendation ITU-R F.1498) in some countries have been presented and discussed at this conference;

d) that the new studies submitted to this conference, in which requirements are identified for the protection of high-density fixed service systems vis-à-vis GSO FSS and non-GSO FSS systems, but on which consensus has not been reached, indicate clear-sky pfd protection requirements that are about 13.5 dB more stringent at elevation angles above 25° than the table entries in Table **S21-4** for the band 37.5-40 GHz;

e) that No. **S5.NGSO** may provide additional protection to the fixed service,

recognizing

a) that some downlink fade compensation techniques, such as adaptive power control, could reduce the operational power flux-density levels of satellite networks under normal operating conditions while enhancing the ability of FSS networks to overcome rain fading;

b) that there is a need for further study to determine the percentage of time during which fade conditions will require downlink fade compensation techniques;

c) that, within the range 39.5-42 GHz, some administrations plan to deploy FSS systems using ubiquitous very small aperture terminals,

recognizing further

a) that the use of downlink fade compensation techniques by satellite systems may affect the performance of fixed service and FSS links operating in unfaded conditions in the same frequency band;

b) that the use of downlink fade compensation techniques affects the design of FSS links,

resolves

1 that the limits in Table **S21-4** for the bands 37.5-40 GHz and 40.5-42.5 GHz, as revised by this conference, shall be applied for verification purposes by the Radiocommunication Bureau and by administrations as of 2 June 2000 in accordance with the provisions of Nos. **S21.16.10** and **S21.16.FSS**;

2 that, taking into account *recognizing a)*, in the interim period before WRC-03, before an administration brings into use in Region 2 a frequency assignment for a GSO FSS network in the 37.5-40 GHz band, it shall seek the agreement of any administration in Region 2 on whose territory the power flux-density produced exceeds the values in Table **S21-4** minus 12 dB,

urges administrations

1 to meet the requirements of No. **S5.NGSO**;

2 when considering regulatory provisions in relation to the band 40-40.5 GHz, to take into account that there were a number of proposals to WRC-2000 to identify the band 40-40.5 GHz for high-density applications in the FSS,

invites ITU-R

1 taking into account the *resolves*, to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the bands 37.5-40 GHz and 42-42.5 GHz from FSS and MSS space-to-Earth transmissions;

2 taking into account the *resolves,* to conduct as a matter of urgency and in time for WRC-03, studies to determine whether the power flux-density limits included in Table **S21-4** adequately protect the fixed service in the band 40.5-42 GHz from FSS space-to-Earth transmissions, taking into account the requirements of the FSS and *recognizing c)*;

3 to study technical and operational characteristics and power flux-density values for the BSS in the range 40.5-42.5 GHz;

4 in conducting studies under *invites ITU-R* 1, 2 and 3 above, to take into account the need to ensure a proper balance in terms of the impact on both the fixed service and space services sharing the same band;

5 to conduct, as a matter of urgency and taking into account the *considering* paragraphs above, studies on mitigation techniques to improve sharing conditions between the space services referred to under *considering* above and fixed service systems, taking account of the impact on both the systems of these space services and the fixed service systems;

6 to undertake, as a matter of urgency, studies on the appropriate criteria and techniques for addressing interference from transmitters of the fixed service into earth station receivers in high-density applications in the FSS having allocations in the bands 39.5-40 GHz and 40.5-42 GHz and intended for operation in the same geographic area;

7 in the bands 37.5-40 GHz and 42-42.5 GHz, to study the nominal clear-sky power flux-density levels, and the percentage of time during which they may be exceeded to overcome fading conditions between the satellite and one or more geographically separated earth stations, in order to protect the fixed service while permitting operation of FSS earth stations using, for example, coordinated large antennas, taking into account the balance of constraints on both FSS systems and the fixed service;

8 to report on the results of these studies in time for WRC-03,

recommends

that WRC-03 take appropriate action based on the results of these studies.

ADD

RESOLUTION [COM5/29] (WRC-2000)

Sharing studies for, and possible additional allocations to, the mobile-satellite service (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has considered proposals for an allocation to the mobile-satellite service (MSS) (space-to-Earth) in Regions 1 and 3 in the frequency band 1 518-1 525 MHz;

b) that ITU-R has established that, so as to meet projected MSS requirements in the frequency range 1-3 GHz, spectrum of the order of two times 123 MHz will be required by 2005 and of the order of two times 145 MHz will be required by 2010;

c) that the frequency band 1 492-1 525 MHz is allocated to the MSS (space-to-Earth) in Region 2 on a primary basis, except in the United States;

d) that the frequency band 1 518-1 525 MHz is allocated to the fixed service on a primary basis in all three Regions, to the mobile service on a primary basis in Regions 2 and 3, and to the mobile, except aeronautical mobile, service on a primary basis in Region 1;

e) that in a number of countries in No. **S5.342**, the band 1 429-1 535 MHz is allocated to the aeronautical mobile service on a primary basis exclusively for the purposes of aeronautical telemetry within their national territories under the provisions of No. **S5.342**;

f) that, in Region 2, the use of the band 1 435-1 535 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service under the provisions of No. **S5.343**;

g) that, as an alternative allocation in the United States, the band 1 452-1 525 MHz is allocated to the fixed and mobile services on a primary basis (see also No. **S5.343**) under the provisions of No. **S5.344**;

h) that there has been further development of point-to-multipoint systems in the fixed service since the time of ITU-R studies that formed the basis for the power flux-density (pfd) values for use as coordination thresholds for the protection of fixed service systems in the band 1 492-1 525 MHz that are contained in Appendix **S5**;

i) that there is a need to review the pfd values in Appendix **S5** in order to ensure that they are adequate to protect these new point-to-multipoint systems operating in the fixed service;

j) that the proposed allocation to the MSS (space-to-Earth) is intended for satellite downlink operations, which, due to their potentially widespread emissions upon the Earth from either geostationary or non-geostationary systems, could have an impact on the terrestrial mobile service, including aeronautical mobile and aeronautical mobile telemetry, in all three Regions;

k) in response to Resolution **220 (WRC-97)**, ITU-R studies concluded that sharing between the MSS and the radionavigation-satellite service was not feasible in the band 1 559-1 610 MHz,

recognizing

a) that there remains an unsatisfied need for additional downlink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.5 GHz allocations;

b) that Recommendation ITU-R F.1338, for an adjacent frequency band, includes an allowance for consideration of pfd values other than those specified therein for use as coordination thresholds for the fixed service;

c) that Recommendation ITU-R M.1459 contains criteria for the protection of aeronautical mobile telemetry with respect to geostationary satellites in the MSS;

d) that additional information on the characteristics of systems in both the MSS and aeronautical mobile telemetry would facilitate studies on sharing between these services,

noting

that Resolution **[COM5/30] (WRC-2000)** addresses sharing studies for the possible additional allocations to the MSS (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz,

resolves to invite ITU-R

1 to study, as a matter of urgency, sharing between the MSS and aeronautical mobile telemetry in all the Regions in the band 1 518-1 525 MHz, taking into account, *inter alia*, Recommendation ITU-R M.1459;

2 to review, as a matter of urgency, the pfd levels used as coordination thresholds for MSS (space-to-Earth) with respect to the protection of point-to-multipoint fixed-service systems in the band 1 518-1 525 MHz in Regions 1 and 3, taking into account the work already done in Recommendations ITU-R M.1141 and ITU-R M.1142 and the characteristics of fixed-service systems contained in Recommendations ITU-R F.755-2 and ITU-R F.758-1, and the sharing methodologies contained in Recommendations ITU-R F.758-1, ITU-R F.1107 and ITU-R F.1108;

3 in the event that the studies of the specific frequency bands referred to in this resolution lead to an unsatisfactory conclusion, to carry out sharing studies in order to recommend alternative MSS (space-to-Earth) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to recommend that WRC-03 consider making new allocations to the MSS (space-to-Earth), on a global basis, preferably in the vicinity of the existing allocation around 1.5 GHz,

urges administrations

to participate actively in these studies, with the involvement of terrestrial and satellite interests.

ADD

RESOLUTION [COM5/30] (WRC-2000)

Sharing studies for, and possible additional allocations to, the mobile-satellite service (Earth-to-space) in the 1-3 GHz range, including consideration of the band 1 683-1 690 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that ITU-R has established that, so as to meet projected mobile-satellite service (MSS) requirements in the frequency range 1-3 GHz, spectrum of the order of two times 123 MHz will be required by 2005 and of the order of two times 145 MHz will be required by 2010;

b) that, at this conference, proposals have been made for worldwide allocation of the band 1 683-1 690 MHz to the MSS (Earth-to-space);

c) that the frequency band 1 675-1 710 MHz is allocated to the MSS (Earth-to-space) in Region 2 on a co-primary basis;

d) that the band 1 683-1 690 MHz is mainly used by the meteorological-satellite (MetSat) and meteorological aids (MetAids) services;

e) that, while there are only a limited number of main MetSat earth stations operating in this band in all three Regions, there are a large number of MetSat earth stations operating in Regions 2 and 3, and the locations of many of these stations are unknown;

f) that use of these stations in Regions 2 and 3 by government, commercial and private users for public safety and enhancement of national economies is on the increase;

g) that sharing between MetSat and MSS in the band 1 675-1 690 MHz is feasible if appropriate separation distances are maintained by means of coordination under No. **S9.11A**;

h) that sharing between MetSat and MSS may not be feasible in those countries where a large number of MetSat stations are deployed;

i) that Recommendation ITU-R SA.1158-2 indicates that additional studies are required in order to determine the criteria for coordination between MSS and the MetSat service for GVAR/S-VISSR stations operated in the band 1 683-1 690 MHz in Regions 2 and 3;

j) that sharing of the band 1 690-1 710 MHz between MSS and MetSat is not feasible;

k) that co-channel sharing between MSS and MetAids is not feasible;

l) that co-frequency sharing between MetAids and MetSat services is not feasible;

m) that WMO has identified future spectrum requirements for MetAids operations as 1 675-1 683 MHz in the band 1 675-1 700 MHz, but some administrations will continue to require spectrum in the range 1 683-1 690 MHz for MetAids operations;

n) that MSS operation should not constrain current and future development of the MetSat service, as specified in No. **S5.377**;

o) that new coordination parameters for MetSat earth stations have been adopted at this conference which will require a review of assumptions made in earlier ITU-R studies,

recognizing

that there remains an unsatisfied need for additional uplink MSS spectrum on a global basis, preferably in the vicinity of the existing 1.6 GHz allocations,

noting

a) that no further study is required on sharing between the services identified under *considering* above and MSS in the bands 1 675-1 683 MHz and 1 690-1 710 MHz;

b) that Resolution **[COM5/29] (WRC-2000)** addresses sharing studies for possible additional allocations to MSS (space-to-Earth) in the 1-3 GHz range, including consideration of the band 1 518-1 525 MHz,

resolves to invite ITU-R

1 to complete, as a matter of urgency and in time for WRC-03, the technical and operational studies on the feasibility of sharing between MSS and MetSat, by determining appropriate separation distances between mobile earth stations and MetSat stations, including GVAR/S-VISSR stations, in the band 1 683-1 690 MHz, as stated in Recommendation ITU-R SA.1158-2;

2 to assess, with the participation of WMO, the current and future spectrum requirements of the MetAids service, taking into account improved characteristics, and of the MetSat service in the band 1 683-1 690 MHz, taking into account future developments;

3 in the event that the studies of the specific frequency band referred to in this resolution lead to an unsatisfactory conclusion, to carry out sharing studies in order to recommend alternative MSS (Earth-to-space) frequency bands in the 1-3 GHz range, but excluding the band 1 559-1 610 MHz, for consideration at WRC-03;

4 to bring the results of these studies to the attention of WRC-03,

further resolves

to recommend that WRC-03 consider making new allocations to the MSS (Earth-to-space), on a global basis, preferably in the vicinity of the existing allocation around 1.6 GHz,

urges

administrations and interested parties such as WMO to participate actively in these studies by submitting contributions,

instructs the Secretary-General

to bring this resolution to the attention of WMO.

ARTICLE S5

Frequency allocations

MOD

470-890 MHz

<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>470-790
BROADCASTING

S5.149 S5.291A S5.294 S5.296
S5.300 S5.302 S5.304 S5.306
S5.311 S5.312</td><td>470-512
BROADCASTING
Fixed
Mobile
S5.292 S5.293</td><td>470-585
FIXED
MOBILE
BROADCASTING

S5.291 S5.298</td></tr>
<tr><td rowspan="3">790-862
FIXED
BROADCASTING
S5.312 S5.314 S5.315 S5.316
S5.319 S5.321</td><td>512-608
BROADCASTING
S5.297</td><td rowspan="2">585-610
FIXED
MOBILE
BROADCASTING
RADIONAVIGATION
S5.149 S5.305 S5.306 S5.307</td></tr>
<tr><td>608-614
RADIO ASTRONOMY
Mobile-satellite except aeronautical mobile-satellite (Earth-to-space)</td></tr>
<tr><td rowspan="2">614-806
BROADCASTING
Fixed
Mobile

S5.293 S5.309 S5.311</td><td rowspan="3">610-890
FIXED
MOBILE S5.XXX
BROADCASTING

S5.149 S5.305 S5.306 S5.307
S5.311 S5.320</td></tr>
<tr><td rowspan="2">862-890
FIXED
MOBILE except aeronautical mobile S5.XXX
BROADCASTING S5.322

S5.319 S5.323</td><td>806-890
FIXED
MOBILE S5.XXX
BROADCASTING

S5.317 S5.318</td></tr>
</table>

MOD

890-1 350 MHz

<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="3">890-942
FIXED
MOBILE except aeronautical mobile S5.XXX
BROADCASTING S5.322
Radiolocation

S5.323</td><td>890-902
FIXED
MOBILE except aeronautical mobile S5.XXX
Radiolocation
S5.318 S5.325</td><td rowspan="3">890-942
FIXED
MOBILE S5.XXX
BROADCASTING
Radiolocation

S5.327</td></tr>
<tr><td>902-928
FIXED
Amateur
Mobile except aeronautical mobile S5.CCC
Radiolocation
S5.150 S5.325 S5.326</td></tr>
<tr><td>928-942
FIXED
MOBILE except aeronautical mobile S5.XXX
Radiolocation
S5.325</td></tr>
<tr><td>942-960
FIXED
MOBILE except aeronautical mobile S5.XXX
BROADCASTING S5.322
S5.323</td><td>942-960
FIXED
MOBILE S5.XXX</td><td>942-960
FIXED
MOBILE S5.XXX
BROADCASTING

S5.320</td></tr>
</table>

ADD

S5.CCC *Different category of service:* in Cuba, the allocation of the band 902-915 MHz to the land mobile service is on a primary basis.

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 525-1 530 SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) S5.SSS Earth exploration-satellite Mobile except aeronautical mobile S5.349 S5.341 S5.342 S5.350 S5.351 S5.352A S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	**1 525-1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) S5.SSS Earth exploration-satellite Mobile S5.349 S5.341 S5.351 S5.352A S5.354
1 530-1 535 SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A S5.SSS Earth exploration-satellite Fixed Mobile except aeronautical mobile S5.341 S5.342 S5.351 S5.354	**1 530-1 535** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) S5.353A S5.SSS Earth exploration-satellite Fixed Mobile S5.343 S5.341 S5.351 S5.354	
1 535-1 559	MOBILE-SATELLITE (space-to-Earth) S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.356 S5.357 S5.357A S5.359 S5.362A	

MOD

1 610-1 660 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 610-1 610.6 MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	**1 610-1 610.6** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 610.6-1 613.8 MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION S5.149 S5.341 S5.355 S5.359 S5.363 S5.364 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) S5.149 S5.341 S5.364 S5.366 S5.367 S5.368 S5.370 S5.372	**1 610.6-1 613.8** MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY AERONAUTICAL RADIONAVIGATION Radiodetermination-satellite (Earth-to-space) S5.149 S5.341 S5.355 S5.359 S5.364 S5.366 S5.367 S5.368 S5.369 S5.372
1 613.8-1 626.5 MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) S5.341 S5.355 S5.359 S5.363 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.371 S5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) Mobile-satellite (space-to-Earth) S5.341 S5.364 S5.365 S5.366 S5.367 S5.368 S5.370 S5.372	**1 613.8-1 626.5** MOBILE-SATELLITE (Earth-to-space) S5.SSS AERONAUTICAL RADIONAVIGATION Mobile-satellite (space-to-Earth) Radiodetermination-satellite (Earth-to-space) S5.341 S5.355 S5.359 S5.364 S5.365 S5.366 S5.367 S5.368 S5.369 S5.372
1 626.5-1 660	MOBILE-SATELLITE (Earth-to-space) S5.SSS S5.341 S5.351 S5.353A S5.354 S5.355 S5.357A S5.359 S5.362A S5.374 S5.375 S5.376	

MOD

1 660-1 710 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 660-1 660.5	MOBILE-SATELLITE (Earth-to-space) S5.SSS RADIO ASTRONOMY S5.149 S5.341 S5.351 S5.354 S5.362A S5.376A	

MOD

1 710-2 170 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 710-1 930	FIXED MOBILE S5.380 S5.AAA S5.BBB S5.149 S5.341 S5.385 S5.386 S5.387 S5.388	
1 930-1 970 FIXED MOBILE S5.BBB S5.388	**1 930-1 970** FIXED MOBILE S5.BBB Mobile-satellite (Earth-to-space) S5.388	**1 930-1 970** FIXED MOBILE S5.BBB S5.388
1 970-1 980	FIXED MOBILE S5.BBB S5.388	
1 980-2 010	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.388 S5.389A S5.389B S5.389F	
2 010-2 025 FIXED MOBILE S5.BBB S5.388	**2 010-2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.388 S5.389C S5.389D S5.389E S5.390	**2 010-2 025** FIXED MOBILE S5.BBB S5.388
2 025-2 110	SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (Earth-to-space) (space-to-space) S5.392	
2 110-2 120	FIXED MOBILE S5.BBB SPACE RESEARCH (deep space) (Earth-to-space) S5.388	
2 120-2 160 FIXED MOBILE S5.BBB S5.388	**2 120-2 160** FIXED MOBILE S5.BBB Mobile-satellite (space-to-Earth) S5.388	**2 120-2 160** FIXED MOBILE S5.BBB S5.388
2 160-2 170 FIXED MOBILE S5.BBB S5.388 S5.392A	**2 160-2 170** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.388 S5.389C S5.389D S5.389E S5.390	**2 160-2 170** FIXED MOBILE S5.BBB S5.388

MOD

2 170-2 520 MHz

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	
2 200-2 290	SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) FIXED MOBILE S5.391 SPACE RESEARCH (space-to-Earth) (space-to-space) S5.392	
2 290-2 300	FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
2 300-2 450 FIXED MOBILE Amateur Radiolocation S5.150 S5.282 S5.395	**2 300-2 450** FIXED MOBILE RADIOLOCATION Amateur S5.150 S5.282 S5.393 S5.394 S5.396	
2 450-2 483.5 FIXED MOBILE Radiolocation S5.150 S5.397	**2 450-2 483.5** FIXED MOBILE RADIOLOCATION S5.150 S5.394	
2 483.5-2 500 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.SSS Radiolocation S5.150 S5.371 S5.397 S5.398 S5.399 S5.400 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.SSS RADIOLOCATION RADIODETERMINATION-SATELLITE (space-to-Earth) S5.398 S5.150 S5.402	**2 483.5-2 500** FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) S5.SSS RADIOLOCATION Radiodetermination-satellite (space-to-Earth) S5.398 S5.150 S5.400 S5.402
2 500-2 520 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA MOBILE-SATELLITE (space-to-Earth) S5.403 S5.SSS 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 S5.AAA MOBILE-SATELLITE (space-to-Earth) S5.403 S5.SSS S5.404 S5.407 S5.414 S5.415A	

MOD

2 520-2 700 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
2 520-2 655 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403 S5.405 S5.408 S5.412 S5.417 S5.418	**2 520-2 655** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.403	**2 520-2 535** FIXED S5.409 S5.411 FIXED-SATELLITE (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.403 S5.415A
		2 535-2 655 FIXED S5.409 S5.411 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 S5.339 S5.418
2 655-2 670 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.412 S5.417 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420	**2 655-2 670** FIXED S5.409 S5.411 FIXED-SATELLITE (Earth-to-space) S5.415 MOBILE except aeronautical mobile S5.AAA BROADCASTING-SATELLITE S5.413 S5.416 Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.420
2 670-2 690 FIXED S5.409 S5.410 S5.411 MOBILE except aeronautical mobile S5.AAA MOBILE-SATELLITE (Earth-to-space) S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 S5.AAA MOBILE-SATELLITE (Earth-to-space) S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) 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 S5.AAA MOBILE-SATELLITE (Earth-to-space) S5.SSS Earth exploration-satellite (passive) Radio astronomy Space research (passive) S5.149 S5.419 S5.420 S5.420A

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 they are allocated. The bands should be made available for IMT-2000 in accordance with Resolution **212 (Rev.WRC-97)**. (See also Resolution **[COM5/24] (WRC-2000)**.)

ADD

S5.XXX Administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) may use those parts of the band 806-960 MHz which are allocated to the mobile service on a primary basis and are used or planned to be used for mobile systems (see Resolution **[COM5/25] (WRC-2000)**). This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.AAA The bands, or portions of the bands, 1 710-1 885 MHz and 2 500-2 690 MHz, are identified for use by administrations wishing to implement International Mobile Telecommunications-2000 (IMT-2000) in accordance with Resolution **[COM5/24] (WRC-2000)**. This identification does not preclude the use of these bands by any application of the services to which they are allocated and does not establish priority in the Radio Regulations.

ADD

S5.SSS For the use of the bands 1 525-1 544 MHz, 1 545-1 559 MHz, 1 610-1 626.5 MHz, 1 626.5-1 645.5 MHz, 1 646.5-1 660.5 MHz, 1 980-2 010 MHz, 2 170-2 200 MHz, 2 483.5-2 500 MHz, 2 500-2 520 MHz and 2 670-2 690 MHz by the mobile-satellite service, see Resolutions **212 (Rev.WRC-97)** and **[COM5/26] (WRC-2000)**.

ADD

S5.BBB In Regions 1 and 3, the bands 1 885-1 980 MHz, 2 010-2 025 MHz and 2 110-2 170 MHz and, in Region 2, the bands 1 885-1 980 and 2 110-2 160 MHz may be used by high altitude platform stations as base stations to provide International Mobile Telecommunications-2000 (IMT-2000), in accordance with Resolution **[COM5/13] (WRC-2000)**. The use by IMT-2000 applications using high altitude platform stations as base stations does not preclude the use of these bands by any station in the services to which they are allocated and does not establish priority in the Radio Regulations.

ARTICLE S5

Frequency allocations

MOD

34.2-40.5 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
37-37.5	FIXED MOBILE SPACE RESEARCH (space-to-Earth) S5.547	
37.5-38	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) Earth exploration-satellite (space-to-Earth) S5.547 S5.NGSO	
38-39.5	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth exploration-satellite (space-to-Earth) S5.547 S5.NGSO	
39.5-40	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth exploration-satellite (space-to-Earth) S5.547 S5.NGSO	
40-40.5	EARTH EXPLORATION-SATELLITE (Earth-to-space) FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) Earth exploration-satellite (space-to-Earth)	

MOD

S5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 40.5-43.5 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 Resolutions **[COM5/11] (WRC-2000)** and **[COM5/27] (WRC-2000)**). Administrations should take this into account when considering regulatory provisions in relation to these bands. Because of the potential deployment of high-density applications in the fixed-satellite service in the bands 39.5-40 GHz and 40.5-42 GHz, administrations should further take into account potential constraints to high-density applications in the fixed service, as appropriate (see Resolution **[COM5/28] (WRC-2000)**).

ADD

S5.NGSO In the bands 37.5-40 GHz and 42-42.5 GHz, non-GSO fixed-satellite service systems should employ power control or other methods of downlink fade compensation of the order of 10 dB, such that the satellite transmissions are at power levels required to meet the desired link performance while reducing the level of interference to the fixed service. The use of downlink fade compensation methods are under study by ITU-R (see Resolution **[COM5/28] (WRC-2000)**).

40.5-55.78 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
40.5-41 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547	**40.5-41** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile Mobile-satellite (space-to-Earth) S5.547	**40.5-41** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547
41-42 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547 S5.RAS	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547 S5.RAS	**41-42** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.551F S5.547 S5.RAS
42-42.5 FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.RAS S5.547 S5.NGSO	**42-42.5** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.547 S5.NGSO S5.RAS	**42-42.5** FIXED FIXED-SATELLITE (space-to-Earth) BROADCASTING BROADCASTING-SATELLITE Mobile S5.551F S5.547 S5.NGSO S5.RAS
42.5-43.5	FIXED FIXED-SATELLITE (Earth-to-space) S5.552 MOBILE except aeronautical mobile RADIO ASTRONOMY S5.149 S5.547	

SUP

S5.551B

SUP

S5.551C

SUP

S5.551D

SUP

S5.551E

ADD

S5.RAS In order to protect the radio astronomy service in the band 42.5-43.5 GHz, the aggregate power flux-density in the 42.5-43.5 GHz band produced by all the space stations in any non-GSO FSS (space-to-Earth) or BSS (space-to-Earth) system operating in the 41.5-42.5 GHz band shall not exceed –167 dB(W/m^2) in any 1 MHz band at the site of a radio astronomy station for more that 2% of the time. The power flux-density in the band 42.5-43.5 GHz produced by any GSO FSS (space-to-Earth) or BSS (space-to-Earth) station operating in the band 42.0-42.5 GHz shall not exceed –167 dB(W/m^2) in any 1 MHz band at the site of a radio astronomy station. These limits are provisional and will be reviewed in accordance with Resolution **128 (Rev.WRC-2000)**.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 490-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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 5	408	**ARTICLE S9** – S9.11A – S9.12 – S9.12A – S9.13 – S9.14 – S9.15 – S9.16 – S9.18 – S9.21 – S9.35 – S9.35.1 **APPENDIX S5** – Table S5-1 (Nos S9.11, S9.12, S9.12A, S9.13) **RESOLUTION [COM5/9] (WRC-2000)**
COM 5	445	**ARTICLE S9** – Sub-Section II A – S9.7A – S9.7B – S9.7A.1 – S9.7B.1 – S9.7A.2 – S9.7B.2

BLUE PAGES

COM 4	453	**ARTICLE S9** – Sub-Section II C – S9.53A
GT PLEN-1	466	**ARTICLE S9** – A.S9.3 – Sub-Section II A – S9.8 – S9.9 – S9.8.1 – S9.9.1 – S9.17 – S9.17.1 – S9.17A – S9.19 **ARTICLE S11** – A.S11.1 **APPENDIX S5** – §1g) – Footnote 4 – Table S5-1 (Nos S9.8, S9.9, S9.17, S9.17A, S9.19) **RESOLUTION 49 (Rev.WRC-2000)**
COM 4	467	**ARTICLE S11** – S11.44 – S11.44.1 **ARTICLE S13** – S13.13 – S13.14 – S13.14A – S13.15 – S13.16A – S13.16B – S13.17 – S13.18 – S13.19

Annex: 26 pages

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5]

Section II – Procedure for effecting coordination[8, 9]

Sub-Section IIA – Requirement and request for coordination

MOD

S9.11A *e)* for a station for which the requirement to coordinate is included either in a footnote to the Table of Frequency Allocations referring to this provision or in a resolution referring to this provision, the provisions of Nos. **S9.12** to **S9.16** are applicable;

MOD

S9.12 *f*) for a station in a satellite network using a non-geostationary-satellite orbit, for which the requirement to coordinate is included either in a footnote to the Table of Frequency Allocations referring to this provision or to No. **S9.11A**, or in a resolution referring to this provision or 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;

ADD

S9.12A *g)* for a station in a satellite network using a non-geostationary-satellite orbit, for which the requirement to coordinate is included either in a footnote to the Table of Frequency Allocations referring to this provision or to No. **S9.11A**, or in a resolution referring to this provision or 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;

MOD

S9.13 *h*) for a station in a satellite network using the geostationary-satellite orbit, for which the requirement to coordinate is included either in a footnote to the Table of Frequency Allocations referring to this provision or to No. **S9.11A**, or in a resolution referring to this provision or 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;

MOD

S9.14 *i*) for a space station of a satellite network for which the requirement to coordinate is included either in a footnote to the Table of Frequency Allocations referring to No. **S9.11A** or in a resolution referring to No. **S9.11A**, in respect of stations of terrestrial services where the threshold value is exceeded;

MOD

S9.15 *j*) for either a specific earth station or typical earth station of a non-geostationary satellite network for which the requirement to coordinate is included either in a footnote to the Table of Frequency Allocations referring to No. **S9.11A** or in a resolution referring to No. **S9.11A**, 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;

MOD

S9.16 *k*) for a transmitting station of a terrestrial service for which the requirement to coordinate is included either in a footnote to the Table of Frequency Allocations referring to No. **S9.11A** or in a resolution referring to No. **S9.11A** and which is located within the coordination area of an earth station in a non-geostationary-satellite network;

(MOD)

S9.18 *n)* 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)

S9.21 *p)* for any station of a service for which the requirement to seek the agreement of other administrations is included in a footnote to the Table of Frequency Allocations referring to this provision.

MOD

S9.35 *a)* examine that information with respect to its conformity with No. **S11.31**[13*bis*];

ADD

13*bis* **S9.35.1** The Bureau shall include the detailed results of its examination under No. **S11.31** in compliance with the limits in Tables **S22-1** to **S22-3** in the publication under No. **S9.38**.

MOD

APPENDIX S5

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article S9

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
No. **S9.11** GSO/terrestrial	A space station in the BSS in any band shared on an equal primary basis with terrestrial services and where the BSS 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 (Region 3) 17.7-17.8 GHz (Region 2) 21.4-22 GHz (Region 1 and 3) 40.5-42.5 GHz 74-76 GHz	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
No. **S9.12** Non-GSO/ non-GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote or a resolution refers to No. **S9.11A** or to No. **S9.12**, 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 modifications by Working Group 4A]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.12A** Non-GSO/ GSO	A station in a satellite network using a non-geostationary-satellite orbit in the frequency bands for which a footnote or a resolution refers to No. **S9.11A** or to No. **S9.12A**, 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 modifications by Working Group 4A]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	
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 or a resolution refers to No. **S9.11A** or to No. **S9.13**, 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 modifications by Working Group 4A]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	

ADD

RESOLUTION [COM 5/9] (WRC-2000)

Transitional measures for coordination between certain specific GSO FSS receive earth stations and non-GSO FSS transmit space stations in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz, and 19.7-20.2 GHz where epfd↓ limits apply

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 adopted, in Article **S22**, provisional equivalent power flux-density (epfd) limits to be met by non-GSO FSS systems in order to protect GSO FSS and GSO BSS networks in parts of the frequency range 10.7-30 GHz;

b) that this conference has revised these limits to ensure that they provide adequate protection to GSO systems without causing undue constraints to any of the systems and services sharing these frequency bands;

c) that additional protection above that provided by the revised epfd↓ limits in *considering b)* is required for certain GSO FSS networks with specific receive earth stations having all of the following characteristics:

i) earth station antenna maximum isotropic gain greater than or equal to 64 dBi for the frequency band 10.7-12.75 GHz or 68 dBi for the frequency bands 17.8-18.6 GHz and 19.7-20.2 GHz;

ii) G/T of 44 dB/K or higher; and

iii) emission bandwidth of 250 MHz or more for the frequency bands below 12.75 GHz or 800 MHz or more for the frequency bands above 17.8 GHz;

d) that, as a consequence, this conference adopted an alternative regulatory procedure to protect the earth stations referred to in *considering c)*;

e) that this regulatory procedure, specified in Nos. **S9.7A** and **S9.7B** and associated provisions in Articles **S9** (Nos. **S9.7A**, **S9.7B**, **S9.7.A.1** and **S9.7.B.1**, and **S9.7.A.2** and **S9.7.B.2**), **S11** (Nos. **S11.32A** and **S11.32A.1**), and **S22** and Appendices **S4** and **S5**, defines the conditions for effecting coordination between a specific earth station referred to in *considering c)* in respect of a non-GSO FSS system, and between a non-GSO FSS system in respect of a specific earth station referred to in *considering c)*;

f) that there was no requirement to provide the specific locations of earth stations referred to in *considering c)* prior to WRC-2000, except in respect of coordination with terrestrial stations or earth stations operating in the opposite direction of transmission under Nos. **S9.17** and **S9.17A**;

g) that coordination of an earth station referred to in *considering c)* shall remain within the authority of the administration on whose territory the station is located;

h) that complete coordination information for GSO FSS networks with typical earth stations having all the characteristics specified in *considering c)* have been received by the Bureau before WRC-2000;

i) that complete notification or coordination information, as appropriate, for non-GSO FSS systems has been received by the Bureau prior to WRC-2000 and, in some cases, prior to WRC-97,

recognizing

that transitional measures are needed for the regulatory procedures referred to in *considering e)*,

resolves

1 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination and associated provisions referred to in *considering e)* shall be applied as from 3 June 2000;

2 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination under No. **S9.7A** shall be applied to specific earth stations for which complete coordination or notification information, as appropriate, is considered as having been received by the Bureau prior to 3 June 2000;

3 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination under No. **S9.7B** shall be applied to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau after 21 November 1997;

4 that, in the frequency bands 10.7-12.75 GHz, 17.8-18.6 GHz and 19.7-20.2 GHz, the requirement for coordination under No. **S9.7B** shall not apply to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has been received by the Bureau before 22 November 1997 but No. **S22.2** shall apply in respect of any specific earth stations for which complete coordination information is considered as having been received before 22 November 1997 if coordination under No. **S9.7A** has not been concluded;

5 that coordination information relating to a specific earth station received by the Bureau prior to 30 June 2000 shall be considered as complete information under No. **S9.7A** or No. **S9.7B** as from the date of receipt of complete coordination information of the associated GSO FSS satellite network under No. **S9.7**, provided that:

5.1 the maximum isotropic gain, lowest total receiving system noise temperature and necessary bandwidth of the specific earth station are the same as those of any typical earth station included in the GSO FSS network that has previously entered coordination;

5.2 the coordination or notification information, as appropriate, of the GSO FSS network containing the typical earth station referred to in *resolves* 5.1 was received by the Bureau prior to 8 May 2000;

6 that, in cases other than those covered in *resolves* 5, the date of receipt by the Bureau of the complete coordination information under Nos. **S9.7A** or **S9.7B** or the complete coordination or notification information, as appropriate, of the associated GSO network, whichever is later, shall be used;

7 that the administration on whose territory the specific earth station is located shall submit the coordination information contained in Annex 1 to this resolution,

instructs the Director of the Radiocommunication Bureau

1 to draw up appropriate forms of notice and instructions to assist administrations in providing the information in Annex 1 of this resolution immediately after this conference, taking into account the deadline established by *resolves 5*;

2 as of the end of WRC-2000, to review and, if appropriate, identify in accordance with No. **S9.27**, any administration with which coordination may need to be effected in accordance with Nos. **S9.7A** or **S9.7B** in cases covered by *resolves* 2 and 3.

ANNEX 1 TO RESOLUTION [COM 5/9] (WRC-2000)

Appendix S4 characteristics to be provided for specific receive GSO FSS earth stations

A.1.e.1	Type of earth station (i.e. specific)
A.1.e.2	Earth station name
A.1.e.3	Country and geographical coordinates of the antenna site
A.2.a	Date of bringing into use
A.3	Operating administration or agency
A.4.c	Identity of associated space station (i.e. name and nominal orbital longitude)
A.13	As appropriate, reference to the special section of the Bureau's IFIC
B.1	Associated satellite transmitting beam designation
B.5.a	Maximum isotropic gain
B.5.c	Earth station antenna reference radiation pattern
C.2.a	Assigned frequency
C.3.a	Assigned frequency band
C.4	Class of station and nature of service
C.5.b	Lowest total receiving system noise temperature
C.7.a	Class of emission and the necessary bandwidth

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5]

Sub-Section IIA – Requirement and request for coordination

ADD

S9.7A *a1)* [11*bis*, 11*ter*] for a specific earth station in a geostationary-satellite network in the fixed-satellite service in certain frequency bands, in respect of a non-geostationary-satellite system in the fixed-satellite service;

ADD

S9.7B *a2)* [11*bis*, 11*ter*] for a non-geostationary-satellite system in the fixed-satellite service in certain frequency bands, in respect of a specific earth station in a geostationary-satellite network in the fixed-satellite service;

ADD

_____

[11*bis*] **S9.7A.1** and **S9.7B.1** The coordination of a specific earth station under Nos. **S9.7A** or **S9.7B** shall remain within the authority of the administration on whose territory the station is located.

ADD

_____

[11*ter*] **S9.7A.2** and **S9.7B.2** Coordination information relating to a specific earth station received by the Bureau prior to 30 June 2000 is considered as complete information under Nos. **S9.7A** or **S9.7B** from the date of receipt of complete information for the associated satellite network under No. **S9.7**, provided that the maximum isotropic antenna gain, the lowest total receiving system noise temperature of the earth station and the necessary bandwidth of the emission received by the earth station are equal to those of any typical earth station included in the coordination request for the GSO FSS network.

ARTICLE S9

Procedure for effecting coordination with or obtaining agreement of other administrations[1, 2, 3, 4, 5]

Sub-Section IIC – Action upon a request for coordination

ADD

S9.53A Upon expiry of the deadline for comments in respect of a coordination request under Nos. **S9.11** to **S9.14** and **S9.21**, the Bureau shall, according to its records, publish a Special Section, indicating the list of administrations having submitted their disagreement or other comments within the regulatory deadline.

MOD

[3] **A.S9.3** 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), or new or modified assignments proposed for inclusion in the Regions 1 and 3 List of additional uses, 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 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);

c) proposed modifications to the Appendix **S30A** Plans for 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), or new or modified assignments proposed for inclusion in the Regions 1 and 3 List of additional uses, 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) 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).

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

Sub-Section IIA – Requirement and request for coordination

SUP

S9.8

SUP

S9.9

SUP

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[12] **S9.8.1** and **S9.9.1**

MOD

S9.17 *f)* for any specific earth station or typical mobile earth station in frequency bands above 100 MHz 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**;

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 coordination under No. **S9.19**;

MOD

S9.19 *i)* for any transmitting station of a terrestrial service or any transmitting earth station in the fixed-satellite service (Earth-to-space) in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to typical earth stations included in the service area of a space station in the broadcasting-satellite service;

ARTICLE S11

Notification and recording of frequency assignments[1, 2, 3]

MOD

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[1] **A.S11.1** See also Appendices **S30** and **S30A** as appropriate, 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 in the same Region or in another Region, so far as their relationship to the broadcasting-satellite service is concerned, 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);

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 in the same Region or in another Region, 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).

APPENDIX S5

Identification of administrations with which coordination is to be effected or agreement sought under the provisions of Article S9

MOD

1

g) 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.

MOD

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[4] The associated space network characteristics must have been communicated to the Bureau under No. **S9.30** or under § 4.1.3/4.2.6 of Appendix **S30** or § 4.1.3/4.2.6 of Appendix **S30A**.

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**
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	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 MHz, 2 483.5-2 500 MHz 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

TABLE S5-1 (*continued*)

Reference of Article S9	Case	Frequency bands (and Region) of the service for which coordination is sought	Threshold/condition	Calculation method	Remarks
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	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
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 coordination under No. **S9.19**	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 § 2 of Annex 1 of this Appendix ii) See Appendix **S7**	

TABLE S5-1 (*continued*)

Reference of Article S9	**Case**	**Frequency bands (and Region) of the service for which coordination is sought**	**Threshold/condition**	**Calculation method**	**Remarks**
No. **S9.19** Terrestrial/ GSO	A transmitting station of a terrestrial service or a transmitting earth station in the fixed-satellite service (Earth-to-space) in a frequency band shared on an equal primary basis with the broadcasting-satellite service, with respect to typical earth stations included in the service area of a space station in the broadcasting-satellite service	Bands listed in No. **S9.11** and the band 11.7-12.7 GHz	i) Necessary bandwidths overlap; and ii) the pfd of the interfering station at the edge of the BSS service area exceeds the permissible level	Check by using the assigned frequencies and bandwidths	See also Article 6 of Appendix **S30**

MOD

RESOLUTION 49 (Rev.WRC-2000)

Administrative due diligence applicable to some satellite radiocommunication services

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that Resolution 18 (Kyoto, 1994) of the Plenipotentiary Conference instructed the Director of the Radiocommunication Bureau to initiate a review of some important issues concerning international satellite network coordination and to 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 for identifying areas requiring further study;

c) that one of the recommendations in the Director's report to WRC-97 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 WRC-97, 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 sets out the basic principles for the use of the radio-frequency spectrum and the geostationary-satellite and other satellite orbits, taking into account the needs of developing countries,

considering further

g) that WRC-97 decided to reduce the regulatory time-frame for bringing a satellite network into use;

h) that this conference has considered the results of the implementation of the administrative due diligence procedures and prepared a report to 2002 Plenipotentiary Conference in response to Resolution 85 (Minneapolis, 1998),

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 under No. **S9.2B**, or for which the request for modifications of the Region 2 Plan under Article 4, § 4.2.1 *b)* of Appendices **S30** and **S30A** that involve the addition of new frequencies or orbit positions, or for which the request for modifications of the Region 2 Plan under Article 4, § 4.2.1 *a)* of Appendices **S30** and **S30A** that extend the service area to another country or countries in addition to the existing service area, or for which the request for additional uses in Regions 1 and 3 under § 4.1 of Article 4 of Appendices **S30** and **S30A**, or for which the submission of information of Annex 2 of Appendix **S30B** 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 **S30B**) has been received by the Bureau from 22 November 1997;

2 that for a satellite network or satellite system within the scope of § 1, 2 or 3 of Annex 1 to this resolution not yet recorded in the Master International Frequency Register (MIFR) by 22 November 1997, for which the advance publication information under No. **1042** of the Radio Regulations 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 notified period for bringing the satellite network into use, plus any extension period which shall not exceed three years pursuant to the application of No. **1550** of the Radio Regulations or the dates specified in the relevant provisions of Appendix **30** ([§ 4.3.5] [§ 4.1.3 and 4.2.6]), Appendix **30A** [(§ 4.2.5 and 4.2.6)] [(§ 4.1.3 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 § 1, 2 or 3 of Annex 1 to this resolution recorded in the MIFR by 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 2000, or before the notified date of bringing the satellite network into use (including any extension period), whichever date comes later;

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 International Frequency Information 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 **S30/30** and **S30A/30A** or for application of Section III of Article 6 of Appendix **S30B/30B** as covered by *resolves* 1 above submitted to the Bureau shall be cancelled. Any modifications of the Plans (Appendices **S30/30** and **S30A/30A**) shall lapse and any recording in the MIFR as well as recordings in the Appendix **S30B/30B** List shall be deleted by the Bureau after it has informed the concerned administration. The Bureau shall publish this information in the International Frequency Information Circular,

further resolves

that the procedures in this resolution are in addition to the provisions under Article **S9** or **S11** of the Radio Regulations or Appendices **S30/30**, **S30A/30A** or **S30B/30B**, as applicable, and, in particular, do not affect the requirement to coordinate under those provisions (Appendices **S30/30**, **S30A/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 WRC-03 and future competent 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 2002 Plenipotentiary Conference.

ANNEX 1 TO RESOLUTION 49 (Rev.WRC-2000)

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 Nos. **S9.7**, **S9.8**, **S9.9**, **S9.11**, **S9.12** and **S9.13**, Resolution **33 (Rev.WRC-97)**, and Resolution **46 (Rev.WRC-97)** shall be subject to these procedures.

2 Any request for modifications of the Region 2 Plan under Article 4, § 4.2.1 *b)* of Appendices **S30/30** and **S30A/30A** that involve the addition of new frequencies or orbit positions or for modifications of the Region 2 Plan under Article 4, § 4.2.1 *a)* of Appendices **S30/30** and **S30A/30A** that extend the service area to another country or countries in addition to the existing service area or request for additional uses in Regions 1 and 3 under § 4.1 of Article 4 of Appendices **S30** and **S30A** shall be subject to these procedures.

3 Any submission of information under Annex 2 of Appendix **S30B/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 **S30B/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 to be received before the end of the 5-year period established as a limit to bringing into use in No. **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 Region 2 Plan or additional uses in Regions 1 and 3 under Appendices **S30/30** and **S30A/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 **S30/30**, § 4.1.3 and 4.2.6, and with Appendix **S30A/30A**, § 4.1.3 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 **S30B/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 so as 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 International Frequency Information 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 International Frequency Information Circular.

With respect to the request for modification of the Region 2 Plan or for additional uses in Regions 1 and 3 under Appendices **S30/30** and **S30A/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 **S30B/30B** under § 3 above, the network shall also be deleted from the Appendix **S30B/30B** List, if applicable.

12 Before the Bureau extends the date of bringing into use under No. **S11.44**, 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 No. **S11.41** by that administration.

ANNEX 2 TO RESOLUTION 49 (Rev.WRC-2000)

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 Region 2 Plan or for additional uses in Regions 1 and 3 under Appendices **S30/30** and **S30A/30A**

e) Reference to the request for coordination (not applicable for Appendices **S30/30** and **S30A/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 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) 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 one satellite, the relevant information shall be submitted for each satellite.

ARTICLE S11

Notification and recording of frequency assignments[1, 2, 3]

MOD

S11.44 The notified date[16] 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 three months before the expiry of this period.

ADD

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[16] **S11.44.1** In the case of space station frequency assignments that are brought into use prior to the completion of the coordination process, and for which the Resolution **49 (WRC-97)** data have been submitted to the Bureau, the assignment shall continue to be taken into consideration for a maximum period of seven years from the date of receipt of the relevant information under No. **S9.1**. If the first notice for recording of the assignments in question under No. **S11.15** has not been received by the Bureau by the end of this seven-year period, the assignments shall no longer be taken into account by the Bureau and administrations. The Bureau shall inform the notifying administration of its pending actions three months in advance.

In the case of satellite networks for which relevant advance publication information has been received prior to 22 November 1997, the corresponding period will be nine years from the date of publication of this information.

ARTICLE S13

Instructions to the Bureau

Section III – Maintenance of the Rules of Procedure by the Bureau

(MOD)

S13.13 The Rules of Procedure shall include, inter alia, calculation methods and other data required for the application of these Regulations. These shall be based upon the decisions of world radiocommunication conferences and the Recommendations of the Radiocommunication Sector. Where requirements arise for new data for which there are no such decisions or Recommendations the Bureau shall develop such data in accordance with No. **S13.15**, and shall revise them when appropriate decisions or Recommendations are available.

MOD

S13.14 Any administration may request a review or a study of the Rules of Procedure or may submit proposals for either changes to the existing Rules of Procedure or new Rules of Procedure. Any such proposals for changes to existing Rules or Rules shall be submitted to the Bureau as soon as possible, so that the Bureau may make these proposals available to other administrations for comment before submitting the proposal to the Board.

ADD

S13.14A The Board may also request the Bureau to undertake studies with respect to the Rules of Procedure, and such reviews shall be treated in accordance with No. **S13.15**.

MOD

S13.15 The Bureau shall, where appropriate, prepare draft modifications, additions or deletions to the Rules of Procedure, which shall be made available for comment by administrations before being submitted to the Board. The Director of the Bureau shall submit to the Board the final drafts of all proposed changes to the Rules of Procedure. The same shall apply if as a consequence of the review of a finding or other action by the Board it is necessary to re-examine the Rules of Procedure.

ADD

S13.16A The Rules of Procedure approved by the Board shall be published and shall be open for comment by administrations. In case of continuing disagreement, the matter shall be submitted by the Director in his report, with the agreement of the administration concerned, to the next world radiocommunication conference. Pending resolution of the matter, the Board and the Bureau shall continue to use the particular Rule of Procedure in dispute but, following resolution of the matter by a decision of a world radiocommunication conference, the Board shall promptly review and revise as necessary the Rules of Procedure and the Bureau shall review all relevant findings.

ADD

S13.16B The Director of the Bureau shall also, where appropriate, request ITU-R study groups to study relevant technical matters.

Section IV – Board documents

MOD

S13.17 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 referred to 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.

MOD

S13.18 Within one week after a meeting of the Board, a summary of all decisions taken in that meeting shall be made available in electronic form. After each Board meeting the approved minutes of that meeting, shall normally be circulated at least one month before the start of the following meeting to administrations by means of a circular letter and these approved minutes shall also be made available in electronic form.

MOD

S13.19 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 shall be made available in electronic form as soon as possible.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 491-E
30 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Chairperson, GT PLEN-2

FINAL REPORT OF GT PLEN-2 TO THE PLENARY

1 GT PLEN-2 has considered the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector (Document 41) and recommends to the Plenary its adoption.

2 In developing the draft resolutions for the agenda for WRC-03 and the preliminary agenda for WRC-06, a great number of items have been identified that require work of a regulatory and procedural nature to be carried out in preparation for the following WRC, which justifies the activation of the Special Committee (see also Resolution ITU-R 38-2, Document 160, Annex 5). The Plenary is therefore invited to request the Director, Radiocommunication Bureau, to take the necessary measures to activate the Special Committee.

3 GT PLEN-2 has considered proposal IRN/126/46 for inclusion into the agenda for WRC-03. Since no agreement could be reached, GT PLEN-2 decided to draw the attention of the Plenary to this issue with the view that the Plenary may wish to consider this matter further.

4 GT PLEN-2 wishes to draw the attention of the Plenary to draft Resolution COM 4/6 on the use of the band 2 630-2 655 MHz in certain Region 3 countries by non-GSO satellite systems in the broadcasting-satellite service (sound), which may require an action by WRC-03. Since a final version of the draft was not available, GT PLEN-2 was not in a position to take any action concerning this issue. The Plenary may wish to consider this matter further.

E. GEORGE
Chairperson, GT PLEN-2
Box 134

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 492-E
31 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 6

SECOND SERIES OF TEXTS SUBMITTED BY GT PLEN-2 TO THE EDITORIAL COMMITTEE

GT PLEN-2 has completed its consideration of items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent conference and on possible agenda items for future conferences. As a result of these deliberations, it has unanimously adopted five draft Resolutions, given in Annex, that are submitted for your consideration with a view to its subsequent submission to the Plenary.

E. GEORGE
Chairperson, GT PLEN-2, Box 134

Annex: 1

ANNEX

ADD

RESOLUTION [GT PLEN-2/2] (WRC-2000)

Review of spectrum and regulatory requirements to facilitate worldwide harmonization of emerging terrestrial wireless interactive multimedia applications

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) the rapid technical evolution in several areas of telecommunications;

b) the importance of finding global solutions and worldwide spectrum for new terrestrial wireless interactive multimedia applications;

c) the need for terrestrial wireless interactive multimedia applications to individual end-users;

d) the convergence among some applications of the fixed, mobile and broadcasting services;

e) the need for worldwide allocations to such services also calling for higher spectrum efficiency;

f) the benefit, also for developing countries, when applying new, globally harmonized equipment and spectrum for the implementation of market driven universal services,

noting

a) the historically-based frequency segmentation, particularly the differences between Regions, but also the segmentation between services, of the Table of Frequency Allocations (Article **S5** of the Radio Regulations);

b) Recommendation **34 (WRC-95)**, which was derived from the recommendations of the Voluntary Group of Experts (VGE) to study alternative allocation methods, merging of services, etc. and which set the objectives of allocating frequency bands on a worldwide basis and to the most broadly defined services, wherever possible,

also noting

c) Resolution 9 of the World Telecommunication Development Conference (Valletta, 1998), calling for an active participation by the developing countries to review the global spectrum requirements for new technologies;

d) that ITU-R study groups are currently addressing the relevant issues, including *inter alia* the digitalization of broadcasting services and studies on spectrum requirements,

recognizing

a) the time-scales necessary to develop and agree on the technical, operational, spectrum and regulatory issues associated with the introduction of harmonized multimedia wireless applications;

b) that the service functionalities in fixed, mobile and broadcasting networks are increasingly converging;

c) that for international operation and economy of scale it is desirable to agree on the system technical, operational and spectrum-related parameters;

d) that spectrum consideration is a prerequisite for the technological and economical success of multimedia wireless applications,

resolves

that future WRCs include in their agendas an item to review spectrum and regulatory requirements to facilitate the harmonized implementation of emerging terrestrial wireless interactive multimedia systems to respond to the convergence of technologies and applications, in order to enable suitable and timely allocations or identification of spectrum,

requests ITU-R

1 to pursue its studies in order to assist in the development of common, worldwide allocations or identification of spectrum suitable for new terrestrial wireless interactive multimedia technologies and applications;

2 to review regulatory methods and appropriate means of worldwide spectrum identification in order to facilitate harmonization of emerging terrestrial wireless interactive multimedia systems to allow the instant implementation of universal personal services in a flexible way;

3 to review, if necessary, service definitions in the light of convergence of applications;

4 to report to a future competent conference,

invites administrations

to participate in these studies by submitting contributions to ITU-R and to bring proposals to future WRCs to meet the above.

ADD

RESOLUTION [GT PLEN-2/3] (WRC-2000)

Studies to consider the requirements of the future development of IMT-2000 and systems beyond IMT-2000 as defined by ITU-R

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that IMT-2000 is scheduled to start service around the year 2000, subject to market and other considerations;

b) that Question ITU-R 229/8 addresses the future development of IMT-2000 and systems beyond IMT-2000;

c) that the technical characteristics of IMT-2000 are specified in ITU-R and ITU-T Recommendations, including Recommendation ITU-R M.1457 which contains the detailed specifications of the radio interfaces of IMT-2000;

d) that the evolution of telecommunication technologies is rapid;

e) that adequate spectrum availability is a prerequisite for the technological and economic success of the future development of IMT-2000 and systems beyond IMT-2000;

f) that the demand for the support of multimedia applications such as high-speed data, IP-packet and video by mobile communication systems will continue to increase;

g) that the future development of IMT-2000 and systems beyond IMT-2000 is foreseen to address the need for higher data rates than those currently planned for IMT-2000;

h) that for global operation and economy of scale it is desirable to agree on common system technical, operational and spectrum-related parameters;

i) that it is therefore timely to study technical, spectrum and regulatory issues pertinent to the future development of IMT-2000 and systems beyond IMT-2000,

recognizing

a) the time-scales necessary to develop and agree on the technical, operational, spectrum and regulatory issues associated with the continuing enhancement of mobile services;

b) that the service functionalities in fixed and mobile networks are increasingly converging;

c) that future mobile systems will require the adoption of more spectrally efficient techniques;

d) the needs of developing countries for the implementation of advanced mobile communication technologies,

resolves

1 to invite ITU-R to continue the studies on the overall objectives, applications and technical and operational implementation, as necessary, for the future development of IMT-2000 and systems beyond IMT-2000;

2 to invite ITU-R to study the spectrum requirements and potential frequency ranges suitable for the future development of IMT-2000 and systems beyond IMT-2000, and in what time-frame would such spectrum be needed;

3 that the requirements of the future developments for IMT-2000 and systems beyond IMT-2000 be reviewed by WRC-06 taking into consideration the results of ITU-R studies presented to WRC-03,

to urge administrations

to participate actively in the studies by submitting contributions to ITU-R.

ADD

RESOLUTION GT PLEN-2/[5] (WRC-2000)

Global harmonization of spectrum for public protection and disaster relief

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) the growing telecommunications needs of public agencies and organizations dealing with law and order, disaster relief and emergency response;

b) that future advanced solutions used by such public protection agencies and organizations will need high data rates, video and multimedia;

c) that there is a need for interoperability and interworking between security and emergency networks, both nationally and for cross-border operations in emergency situations and disaster relief;

d) the importance of the needs of public protection agencies and organizations including those dealing with emergency situations and disaster relief for:

i) maintenance of law and order;

ii) emergency and disaster response;

iii) safety of life and property,

recognizing

a) the benefits of globally harmonized frequency bands for such applications;

b) the increased potential for cooperation by countries for the provision of effective and appropriate humanitarian assistance during disasters;

c) the needs of developing countries for low-cost solutions for public protection agencies and organizations;

d) that global harmonization of spectrum for such usage will lead to economies of scale and reduced costs of such solutions,

resolves to invite ITU-R

1 to study, as a matter of urgency, identification of frequency bands that could be used on a global/regional basis by administrations intending to implement future solutions for public protection agencies and organizations including those dealing with emergency situations and disaster relief;

2 to study, as a matter of urgency, regulatory provisions necessary for identifying globally/regionally harmonized frequency bands for such purposes;

3 to conduct studies for development of a resolution to identify the technical and operational basis of global cross-border circulation of the radiocommunications equipment in emergency situations and disaster relief,

instructs the Director of the Radiocommunication Bureau

to report on the results of these studies to WRC-03,

urges administrations

to participate actively in the aforementioned studies by submitting contributions to ITU-R,

and requests WRC-03

to consider identification of globally/regionally harmonized frequency bands for future advanced solutions to meet the needs of public protection agencies and organizations including those dealing with emergency situations and disaster relief systems and make regulatory provisions, as necessary.

SUP

RESOLUTION 722 (WRC-97)

Preliminary agenda for the 2001 World Radiocommunication Conference

ADD

RESOLUTION [GT PLEN-2/4] (WRC-2000)

Agenda for the 2003 World Radiocommunication Conference

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for a world radiocommunication conference should be established four to six years in advance and a final agenda shall be established by the Council two years before the conference;

b) Article 13 of the ITU Constitution regarding the competence and scheduling of world radiocommunication conferences and Article 7 of the Convention regarding their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

recognizing

a) that this conference has identified a number of urgent issues requiring further examination by WRC-03;

b) that in preparing this agenda, many proposals from administrations could not be included and have had to be deferred to future conference agendas,

resolves

to recommend to the Council that a world radiocommunication conference be held in [2003] 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-2000, and with due regard to the requirements of existing and future services in the bands under consideration, to consider and take appropriate action with respect to 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-2000)**;

1.2 to review and take action as required on No. **S5.134** and related Resolutions **517 (Rev.WRC-97), 537 (WRC-97)**, Recommendations **515 (Rev.WRC-97), 517 (Rev.WRC-2000), 519 (WARC-92)** and Appendix **S11**, in the light of the studies and actions set out therein, having particular regards to the advancement of new modulation techniques, including digital techniques, capable of providing an optimum balance between sound quality, bandwidth and circuit reliability in the use of the HF bands allocated to the broadcasting service;

1.3 to consider identification of globally/regionally harmonized bands, to the extent practicable, to implement future advanced solutions to meet the needs of public protection agencies including those dealing with emergency situations, disaster relief and to make regulatory provisions, as necessary, taking into account Resolution **[GT PLEN-2/5] (WRC-2000)**;

1.4 to consider the results of studies related to Resolution **114 (WRC-95)**, dealing with the use of the band 5 091-5 150 MHz by the fixed-satellite service (Earth-to-space) (limited to feeder links of the non-geostationary mobile-satellite service), and review the allocations to the aeronautical radionavigation service and the fixed-satellite service in the frequency band 5 091-5 150 MHz;

1.5 to consider, in accordance with Resolution **[GT PLEN-2/1] (WRC-2000)**, regulatory provisions and spectrum requirements for new and additional allocations to mobile, fixed, Earth exploration-satellite and space research services, as well as to review, with a view to upgrading, of the status of the radiolocation service, in the frequency range 5 150-5 725 MHz taking into account the results of ITU-R studies;

1.6 to consider regulatory measures to protect feeder links (Earth-to-space) for the mobile-satellite service which operate in the band 5 150-5 250 MHz, taking into account the latest ITU-R Recommendations (e.g. Recommendations ITU-R S.1426, S.1427 and M.1454);

1.7 issues concerning the amateur and amateur-satellite services:

1.7.1 to consider the possible revision of Article **S25**;

1.7.2 to review the provisions of Article **S19** concerning the formation of call signs in the amateur services in order to provide flexibility for administrations;

1.7.3 to review the terms and definitions of Article **S1** to the extent required as a consequence of changes made in Article **S25**;

1.8 issues related to unwanted emissions:

1.8.1 to consider the results of studies regarding the boundary between spurious and out-of-band emissions with a view to include the boundary in Appendix **S3**;

1.8.2 to consider the results of studies and to propose any regulatory measure regarding the protection of passive services from unwanted emissions, in particular from space services transmissions, in response to *recommends* 5 and 6 of Recommendation **66 (Rev.WRC-2000)**;

1.9 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 and introduction of the Global Maritime Distress and Safety System (GMDSS);

1.10 to consider the results of studies, and take necessary actions relating to:

1.10.1 the exhaustion of the maritime mobile service identity numbering resource (Resolution **344 (WRC-97)**);

1.10.2 shore-to-ship distress communication priorities (Resolution **348 (WRC-97)**);

1.11 to consider possible extension of the allocation to the mobile-satellite service (Earth-to-space) on a secondary basis in the band 14-14.5 GHz to permit the aeronautical mobile-satellite service as stipulated in Resolution **216 (Rev.WRC-2000)**;

1.12 to consider allocations and regulatory issues related to the space science services in accordance with Resolution **723 (Rev.WRC-2000)** and to review all EESS and SRS allocations between 35 and 38 GHz taking into account Resolution **[COM5/1] (WRC-2000)**;

1.13 to consider regulatory provisions and possible identification of existing frequency allocations for services which may be used by high altitude platform stations, taking into account No. **S5.5RRR** [Document 478 (B.9/3)] of the Radio Regulations and the results of the ITU-R studies conducted in accordance with Resolutions **122 (Rev.WRC-2000)** and **[COM5/14] (WRC-2000)**;

1.14 to consider measures to address harmful interference in the bands allocated to the maritime mobile and aeronautical mobile (R) services, taking into account Resolutions **207 (Rev.WRC-2000)** and **[COM5/12] (WRC-2000)** and to review the frequency and channel arrangements in the maritime MF and HF bands concerning the use of new digital technology and also taking into account Resolution **347 (WRC-97)**;

1.15 to review the results of studies concerning the RNSS in accordance with Resolutions **[COM5/16] (WRC-2000)**, **[COM5/19] (WRC-2000)** and **[COM5/20] (WRC-2000)**;

1.16 to consider allocations on a worldwide basis for feeder links in bands around 1.4 GHz to the non-GSO MSS with service links operating below 1 GHz, taking into account the results of ITU-R studies conducted in response to Resolution **127 (Rev.WRC-2000)** provided that due recognition is given to the passive services taking into account No. **S5.340**;

1.17 to consider upgrading the allocation to the radiolocation service in the frequency range 2 900-3 100 MHz to primary;

1.18 to consider a primary allocation to the fixed service in the band 17.3-17.7 GHz for Region 1 taking into account the primary allocations to various services in all Regions;

1.19 to consider regulatory provisions to avoid misapplication of non-GSO FSS single-entry limits in Article **S22** based on the results of ITU-R studies carried out in accordance with Resolution **[COM5/2] (WRC-2000)**;

1.20 to consider additional allocations on a worldwide basis for the non-GSO MSS with service links operating below 1 GHz in accordance with Resolution **214 (Rev.WRC-2000)**;

1.21 to consider, with the view to facilitating global harmonization, technical and regulatory requirements of terrestrial wireless interactive multimedia applications, in accordance with Resolution **[GT PLEN-2/2] (WRC-2000)**;

1.22 to consider progress of ITU-R studies concerning future development of IMT-2000 and systems beyond IMT-2000 in accordance with Resolution **[GT PLEN-2/3] (WRC-2000)**;

1.23 to consider realignment of the allocations to the amateur, amateur-satellite and broadcasting services around 7 MHz on a worldwide basis, taking into account Recommendation **718 (WARC-92)**;

1.24 to review the usage of the band 13.75-14 GHz, in accordance with Resolution **[COM5/10] (WRC-2000)**, with a view to addressing sharing conditions;

1.25 to consider regulatory provisions and possible identification of spectrum above [17.8 GHz] [19.7 GHz] for high-density systems in the fixed-satellite service;

1.26 to consider the provisions under which earth stations located on board vessels could operate in fixed-satellite service networks, taking into account the ITU-R studies in response to Resolution **[COM4/3] (WRC-2000)**;

1.27 to review the ITU-R studies requested in Resolutions **[GT PLEN-1/1] (WRC-2000)** and **[GT PLEN-1/3 (WRC-2000)]** and modify as appropriate the regulatory relevant procedures and associated sharing criteria contained in Appendices **S30** and **S30A** and in the associated provisions;

1.28 to permit the use of the band 108-117.975 MHz for transmitting radionavigation satellite differential correction signals by international aviation standard ground-based systems;

1.29 to consider the results of studies related to Resolutions **[COM5/3] (WRC-2000)** and **[COM5/23] (WRC-2000)** dealing with sharing between non-GSO and GSO systems;

1.30 to consider possible changes to the procedures for the advance publication, coordination and notification of satellite networks in response to Resolution **86 (Minneapolis, 1998)**, "Coordination and notification procedures for satellite networks";

1.31 to consider the additional allocations to MSS in the 1-3 GHz band in accordance with Resolutions **[COM5/29] (WRC-2000)** and **[COM5/30] (WRC-2000)**;

1.32 to consider technical and regulatory provisions concerning the band 37.5-43.5 GHz in accordance with Resolutions **128 (Rev.WRC-2000)** and **[COM5/28] (WRC-2000)**;

1.33 to review and revise technical, operational and regulatory provisions, including provisional limits in relation with the operation of HAPS within IMT-2000 in the bands mentioned in No. **S5.BBB** [Document 462(Add.1) (B.8(Add.1)/8)] in response to Resolution **[COM5/13] (WRC-2000)**;

2 to examine the revised ITU-R Recommendations incorporated by reference in the Radio Regulations which have been communicated by the [2003] Radiocommunication Assembly, in accordance with Resolution **28 (Rev.WRC-2000)**; 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-2000)**;

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 **95 (Rev.WRC-2000)**, 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;

6 to identify those items requiring urgent actions by the radiocommunication study groups in preparation for the next world radiocommunication conference;

7 in accordance with Article 7 of the Convention:

7.1 to consider and approve the Report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-2000;

7.2 to recommend to the Council items for inclusion in the agenda for the next WRC, and to give its views on the preliminary agenda for the subsequent 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-03:

8.1 to examine 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;

8.2 to consider the regulatory and technical provisions for satellite networks using highly elliptical orbits;

8.3 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 **727 (Rev.WRC-2000)**;

8.4 to examine the spectrum requirements in the FSS bands below 17 GHz for telemetry, tracking and telecommand of FSS networks operating with service links in the frequency bands above 17 GHz,

invites the Council

to finalize the agenda and arrange for the convening of WRC-03 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-03,

instructs the Secretary-General

to communicate this resolution to concerned international and regional organizations.

ADD

RESOLUTION [GT PLEN-2/6] (WRC-2000)

Preliminary agenda for the [2006] World Radiocommunication Conference

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, in accordance with No. 118 of the ITU Convention, the general scope of the agenda for WRC-[06] should be established four to six years in advance;

b) Article 13 of the Constitution regarding the competence and scheduling of world radiocommunication conferences and Article 7 of the ITU Convention regarding their agendas;

c) the relevant resolutions and recommendations of previous world administrative radio conferences (WARCs) and world radiocommunication conferences (WRCs),

resolves to give the view

that the following items should be included in the preliminary agenda for WRC-[06], to be held in [2006]:

1 to take appropriate action in respect of those urgent issues that were specifically requested by WRC-03;

2 on the basis of proposals from administrations and the report of the Conference Preparatory Meeting, and taking account of the results of WRC-03, 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 (Rev.WRC-2000)**;

2.2 to review the operational procedures of the Global Maritime Distress and Safety System (GMDSS) taking into account the experience since its introduction and the needs of all classes of shipping;

2.3 to review studies and consider allocations in the frequency bands above 275 GHz;

2.4 to consider a resolution specifying the technical bases for the global operation of stations in the land mobile and land mobile-satellite services between 30 MHz and 6 GHz;

2.5 to review the allocations for the HF services taking account of the impact of new modulation and adaptive control techniques and any recommendations by WRC-[03] on the adequacy of the frequency allocations for HF broadcasting and the fixed and mobile services, from about 4 MHz to 10 MHz, and on the future use and requirements of the aeronautical mobile (R) and maritime mobile services;

2.6 to consider possible changes in response to Resolution **86 (Minneapolis, 1998)**, "Coordination and notification procedures for satellite networks";

2.7 to consider potential for sharing around 4 300 MHz between radio altimeters and space-based passive earth sensors;

2.8 based on results of studies, consider allocations, if appropriate, to non-GSO MSS with service links below 1 GHz in the 470-862 MHz band in accordance with Resolution **728 (Rev.WRC-2000)**;

2.9 to consider the use of frequency adaptive systems in the MF/HF bands in accordance with Resolution **729 (WRC-97)**;

2.10 to consider allocation of the frequency band 14.5-14.8 GHz to the FSS (Earth-to-space) in Region 3 (expansion of FSS to include other than feeder links of the broadcasting-satellite service);

2.11 to review the possibility for additional allocations for the fixed service in the bands above 3 GHz;

2.12 to consider spectrum requirements for wideband aeronautical telemetry in the band between 3 GHz and 30 GHz;

2.13 to review No. **S5.332** in the frequency band 1 215-1 260 MHz and No. **S5.333** in the frequency band 1 260-1 300 MHz concerning the Earth exploration-satellite (active) service and other services;

2.14 to take into account ITU-R studies in accordance with Resolution **342 (WRC-2000)** and consider the use of new digital technology for the maritime mobile service in the band 156-174 MHz and consequential revision of Appendix **S18**;

2.15 to review with a view to identifying necessary spectrum for global harmonization of spectrum and regulatory issues related to terrestrial wireless interactive multimedia applications;

2.16 to review the requirements of the future development for IMT-2000 and systems beyond IMT-2000 taking into account Resolution **[GT PLEN-2/3] (WRC-2000)**;

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 to consider results of ITU-R studies on the feasibility of sharing in the band 2 700-2 900 MHz between the aeronautical radionavigation service and radars for meteorological purposes and the mobile service and take appropriate action on this subject;

3.2 to consider results of ITU-R studies in accordance with Resolution **[COM5/22] (WRC-2000)** to ensure spectrum availability and protection for AMS(R) and GMDSS and take appropriate action on this subject keeping generic allocation for the mobile-satellite service;

4 to examine the revised ITU-R recommendations incorporated by reference in the Radio Regulations which have been communicated by the 2006 Radiocommunication Assembly, in accordance with Resolution **28 (Rev.WRC-2000)**; 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-2000)**;

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 **95 (Rev.WRC-2000)**, to review the resolutions and recommendations of 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;

8 to identify those items requiring urgent action by the Radiocommunication study groups;

9 in accordance with Article 7 of the Convention:

9.1 to consider and approve the report of the Director of the Radiocommunication Bureau on the activities of the Radiocommunication Sector since WRC-03;

9.2 to recommend to the Council items for inclusion in the agenda for the [2009] 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-[06],

instructs the Secretary-General

to communicate this resolution to concerned international and regional organizations.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 1 to Document 493-E 31 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: DT/116 **COMMITTEE 6**

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

GT PLEN-1 has adopted, at its fourteenth and fifteenth (final) meetings, the attached additional text that is submitted for your consideration with a view to its subsequent submission to the Plenary.

R. ZEITOUN
Chairperson, GT PLEN-1
Box 27

REVISED TEXTS OF APPENDICES S30 AND S30A

ADD with reference to Table 2 of Article 10 of Appendix S30

NOTE - Section 5 of Annex 1 was merged with Section 4 by WRC-2000. See also NOTE [XYZ] to Table 3 [the note below].

ADD with reference to Table 3 of Article 10 of Appendix S30

NOTE [XYZ] - The administrations listed in Table 3 were identified on the basis of the criteria adopted at the 1983 Conference [RARC Sat-R2], as shown in Table 2. WRC-2000 revised the criteria applicable to determine affected administrations. Therefore, the Bureau, when receiving a notification of an assignment in the Region 2 Plan, shall determine which countries are affected based on the revised criteria adopted at WRC-2000 which may lead to a different set of affected administration(s) than that currently contained in Table 3.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 493-E
30 May 2000
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ADD

RESOLUTION [GT PLEN-1/2] (WRC-2000)

Implementation of WRC-2000 broadcasting-satellite service Plans and associated broadcasting-satellite service feeder-link Plans of Appendices S30/S30A of the Radio Regulations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 has adopted a Plan for the broadcasting-satellite service (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 a 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, and has also revised the technical criteria and regulatory procedures of those Plans as contained in Appendix **S30** and Appendix **S30A**;

b) that this Conference decided that the provisions of the Radio Regulations, as revised by it, shall provisionally apply as from [1 January 2002];

c) that there is a need to apply a single set of technical criteria and regulatory provisions for processing of Article 4 submissions, so as to avoid problems due to parallel sets of technical criteria or regulatory provisions;

d) that it is necessary to ensure that the integrity of the Region 2 Plan and its associated provisions is ensured,

resolves

1 that the Regions 1 and 3 Plan, the List and their associated procedures together with the annexes thereto be entered into force as of 3 June 2000;

resolves further to instruct the Radiocommunication Bureau, as of 3 June 2000,

2 that for the notification of assignments under Article 5 of Appendices **S30**/**S30A** for Regions 1 and 3:

2.1 for assignments which are contained in the List: once notified with the same characteristics, they will be examined with the same criteria and calculation methods used when they completed the procedure of Article 4;

2.2 for those assignments contained in the Plan: the new criteria and calculation methods as adopted by WRC-2000 will be used;

3 that for the notification of assignments with the same characteristics under Article 5 of Appendices **S30**/**S30A** for Region 2 which have already completed the procedure of Article 4, the same criteria and calculation methods used when they completed the procedure of Article 4 will be used;

4 that for assignments of all three Regions whose notified characteristics are different from those used for coordination, the new criteria and calculation methods as adopted by WRC-2000 will be used.

APPENDIX S30

MOD

ANNEX 1

Limits for determining whether a service of an administration is affected by a proposed modification to the Region 2 Plans or proposed new or modified assignment in the Regions 1 and 3 List or when it is necessary under this Appendix to seek the agreement of any other administration[13]

(See Article 4)

1 [Limits to the change in the wanted-to-interfering signal ratio with respect to frequency assignments in conformity with the Regions 1 and 3 Plan

With respect to § 4.1.1a)~~4.3.1.1~~ or § 4.1.1b) of Article 4, an administration in Region 1 or 3 shall be considered as being affected if the effect of the proposed new or modified assignment in ~~modification to~~ the Regions 1 and 3 ~~Plan~~ List would result in the wanted-to-interfering signal ratio at any point within the service area associated with any of its frequency assignments in the Regions 1 and 3~~at~~ Plan or Regions 1 and 3 List falling below either 30 dB or the value resulting from the frequency assignments in the Plan at the date of entry into force of the Final Acts[14], whichever is the lower.][To be revised based on the deliberations of GT PLEN-1 concerning Document DT/110, if the current concept is not changed, possible text for this section may be found in the attachment prepared by the Chairperson of ad hoc 1 to GT PLEN-1.]

NOTE - In performing the calculation, the effect at the receiver input of all the co-channel and adjacent-channel signals is expressed in terms of one equivalent co-channel interfering signal. This value is usually expressed in decibels.

2 Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 Plan

With respect to § 4.2.3c)~~4.3.3.1~~ of Article 4, an administration in Region 2 shall be considered as being affected if the overall equivalent protection margin[15] corresponding to a test point of its entry in the Region 2 Plan, including the cumulative effect of any previous modification to that Plan or

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[13] With respect to this Annex, except for section 2~~ and § 8 b)~~, the limits relate to the power flux-density which would be obtained assuming free-space propagation conditions.

~~With respect to § 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 § 2.2.4 of Annex 5.

[14] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.

[15] For the definition of the overall equivalent protection margin, see § 1.11 of Annex 5.

any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

– the Region 2 Plan as established by the 1983 Conference; *or*

– a modification of the assignment in accordance with this Appendix; *or*

– a new entry in the Region 2 Plan under Article 4; *or*

– any agreement reached in accordance with this Appendix.

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

With respect to § 4.1.1c)~~4.3.1.2~~ of Article 4, an administration in Region 2 shall be considered as being affected if the proposed ~~modification~~ new or modified assignment in~~to~~ the Regions 1 and 3 List~~Plan~~ would result in exceeding the power flux-densities given below, at any point in the service area affected.

With respect to § 4.2.3a)~~4.3.3.2~~ or 4.2.3f)~~4.3.3.6~~ of Article 4, 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.

-147 dB(W/m^2/27 MHz)	for $0° \leq \theta < 0.44°$;
$-138 + 25 \log \theta$ dB(W/m^2/27 MHz)	for $0.44° \leq \theta < 19.1°$;
-106 dB(W/m^2/27 MHz)	for $\theta \geq 19.1°$;

where θ is:

– the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 1 or 3 and the broadcasting-satellite space station affected in Region 2, *or*

– the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 2 and the broadcasting-satellite space station affected in Region 1 or 3.

4 Limits to the ~~change in the~~ power flux-density to protect the terrestrial services of other administrations ~~in Region 2~~[16, 17,18]

With respect to § 4.1.1d) of Article 4, an administration in Region 1, 2 or 3 shall be considered as being affected if the consequence of the proposed modified assignment in the Regions 1 and 3 List 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 or List as established by WRC-2000. The same administrations 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 below.

With respect to § 4.2.3d) of Article 4, an administration in Region 1, 2 or 3 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 (1985 Conference). 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 below.

With respect to § 4.1.1d) or § 4.2.3d)~~4.3.1.4~~ of Article 4, an administration in Region 1, 2 or 3 shall be considered as being affected if the proposed ~~modification~~ new assignment in~~to~~ the Regions 1 and 3 ~~Plan~~List, or if the proposed new frequency assignment in the Region 2 Plan, would result in exceeding a power flux-density, for any angle of arrival, at any point on its territories, of:

-148 dB(W/m^2/4 kHz) for $\theta \leq 5°$;

$-148 + 0.5 (\theta - 5)$ dB(W/m^2/4 kHz) for $5° < \theta \leq 25°$;

-138 dB(W/m^2/4 kHz) for $25° < \theta \leq 90°$;

where θ represents the angle of arrival.

~~–125 dB(W/m^2/4 kHz) when the broadcasting-satellite station uses circular polarization, *and*,~~

~~–128 dB(W/m^2/4 kHz) when the broadcasting-satellite station uses linear polarization.~~

5 ~~Limits to the change in the power flux-density to protect the terrestrial services of administrations in Regions 1 and 3~~[16] Not used

~~With respect to § 4.3.3.4 of Article 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 the following power flux-density limits being exceeded:~~

~~*a)* in the frequency band 12.2-12.7 GHz for all the territorie~~s of administrations in ~~Regions 1~~[17] ~~and 3 and for any arrival angle γ:~~

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[16] See § 3.18 of Annex 5.

[17] In the band 12.5-12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in Nos. **S5.494** and **S5.496**.

[18] See Resolution 34.

~~[16] See § 3.18 of Annex 5.~~

– 125 dB(W/m²/4 kHz) for broadcasting-satellite space stations using circular polarization;

– 128 dB(W/m²/4 kHz) for broadcasting-satellite space stations using linear polarization;

b) in the frequency band 12.2-12.5 GHz for territories of administrations in Region 3 and those in the western part of Region 1, west of longitude 30° E[18]:

– 132 dB(W/m²/5 MHz) for $0° \leq \gamma < 10°$;

– $132 + 4.2 (\gamma - 10)$ dB(W/m²/5 MHz) for $10° \leq \gamma < 15°$;

– 111 dB(W/m²/5 MHz) for $15° \leq \gamma < 90°$;

c) in the frequency band 12.2-12.7 GHz for territories of administrations in Region 1[17], east of longitude 30° E:

– 134 dB(W/m²/5 MHz) for $\gamma = 0°$;

– $134 + 4.6975 \gamma^2$ dB(W/m²/5 MHz) for $0° < \gamma \leq 0.8°$;

– $128.5 + 25 \log \gamma$ dB(W/m²/5 MHz) for $\gamma > 0.8°$;

d) in the frequency band 12.5-12.7 GHz for all the territories of administrations of Regions 1[17] and 3:

– 148 dB(W/m²/4 kHz) for $\gamma = 0°$;

– $148 + 4.6975 \gamma^2$ dB(W/m²/4 kHz) for $0° < \gamma \leq 0.8°$;

– $142.5 + 25 \log \gamma$ dB(W/m²/4 kHz) for $\gamma > 0.8°$;

where γ is the angle of arrival of the incident wave above the horizontal plane, in degrees.

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 or in the band 12.2-12.5 GHz in Region 3, 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

With respect to § 4.1.1e)4.3.1.5 of Article 4, an administration in Region 2 or Region 3 shall be considered as being affected if the proposed new or modified assignment inmodification to the Regions 1 and 3 ListPlan 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 or List as established by WRC-2000.at the time of entry into force of the Final Acts (1977 Conference, in force on 1 January 1979).

[17] In the band 12.5-12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in Nos. **S5.494** and **S5.496**.

[18] See Resolution 34.

With respect to § 4.2.3e)~~4.3.3.5 of Article 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 (1985 Conference).

With respect to § 4.1.1e) of Article 4, ~~However,~~ where a~~n~~ proposed new or modified assignment in the Regions 1 and 3 ~~Plan~~ List ~~or its subsequent modification~~ gives a power flux-density of less than –138 dB(W/m^2/27 MHz)~~*~~ anywhere in the territory of an administration of Region 2 or Region 3, that administration shall be considered as not being affected.~~;~~ With respect to § 4.2.3e) of Article 4, where ~~an assignment in the Region 2 Plan or its subsequent~~ a proposed modification to the Region 2 Plan gives a power flux-density of less than –160 dB(W/m^2/4 kHz)~~*~~ anywhere in the territory of an administration of Region 1 or 3, that administration shall be considered as not being affected.

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

With respect to § 4.2.3e)~~4.3.3.5~~ of Article 4, an administration of Region 1 shall be considered as being affected if the proposed modification to the Region 2 Plan would result in:

– the $\Delta T/T$ resulting from the proposed modification is greater than the $\Delta T/T$ resulting from the assignment in the Region 2 Plan as of the date of entry into force of the Final Acts (1985 Conference); *and*

– the $\Delta T/T$ resulting from the proposed modification exceeds 4%,

using the method of Appendix **S8** (Case II).

~~8 Limits to the change in the power flux-density to protect the terrestrial services of other administrations~~

~~*a) In Region 1 or 3:*~~

~~With respect to § 4.3.1.4 of Article 4, 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 (1977 Conference, in force on 1 January 1979). 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 § 5 *a)* and 5 *b)* of this Annex applied to the frequency range 11.7-12.5 GHz.~~

~~With respect to § 4.3.1.4 of Article 4, 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 § 5 *a)* and 5 *b)* of this Annex applied to the frequency range 11.7-12.5 GHz.~~

~~*~~ In place of these values, the values given in the Annex to Resolution **[GT PLEN1/1] (WRC-2000)** shall be applied by administrations and the Bureau until this section is revised by a subsequent Conference.

~~*b) In Region 2:*~~

~~With respect to § 4.3.3.4 of Article 4, 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 (1985 Conference). 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).~~

~~With respect to § 4.3.3.4 of Article 4, 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).~~

ANNEX 2

[Basic characteristics to be furnished in notices[19] relating to space stations in the broadcasting-satellite service[20]

The data elements contained in this Annex are included in APS4.]

ANNEX 4

MOD

Need for coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service where this service is not subject to a Plan: in Region 2 (11.7-12.2 GHz) with respect to the Regions 1 and 3 Plan, in Region 1 (12.5-12.7 GHz) and in Region 3 (12.2-12.7 GHz) with respect to the Region 2 Plan

(See Article 7)

With respect to § 7.1 and 7.2~~7.2.1~~ of Article 7, coordination of a space station in the fixed-satellite service of Region 2 is required when, under assumed free-space propagation conditions, the power flux-density on the territory of an administration in Region 1 or Region 3 exceeds the value derived from the expressions given below.

With respect to § 7.1 and 7.2~~7.2.1~~ of Article 7, coordination of a space station in the fixed-satellite service (space-to-Earth) in Region 1 or 3 or broadcasting-satellite service not subject to a Plan in Region 3 is required when, under assumed free-space propagation conditions, the power flux-density on the territory of an administration in Region 2 exceeds the value derived from the same expressions:

–147 dB(W/m^2/27 MHz)	for $0° \leq \theta < 0.44°$;
$-138 + 25 \log \theta$ dB(W/m^2/27 MHz)	for $0.44° \leq \theta < 19.1°$;
–106 dB(W/m^2/27 MHz)	for $\theta \geq 19.1°$;

where θ is:

– the difference in degrees between the longitude of the interfering fixed-satellite space station in Region 2 and the longitude of the affected broadcasting-satellite space station in Regions 1 and 3, *or*

– the difference in degrees between the longitude of the interfering fixed-satellite space station in Region 1 or 3 or the interfering broadcasting-satellite space station in Region 3 and the longitude of the affected broadcasting-satellite space station in Region 2.

ANNEX 5

MOD

Technical data used in establishing the provisions and associated Plans, the Regions 1 and 3 List and which should be used for their application[22]

MOD

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.

NOTE - Definitions in § 1.5~~6~~ to 1.11 are applicable to Region 2.

MOD

1.11 Overall equivalent protection margin[24]

The overall equivalent protection margin M is given in decibels by the expression:

$$M = -10 \log \left(\sum_{i=1}^{5} 10^{\left(-M_i/10\right)} \right)$$

where:

M_1: overall co-channel protection margin (dB) (as defined in § 1.8 of this Annex);

M_2, M_3: overall adjacent channel protection margins for the upper and lower adjacent channels, respectively (dB) (as defined in § 1.9 of this Annex);

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[22] In revising this Annex at WRC-97 and at WRC-2000, 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 Region 2 Plan~~s~~ and the Regions 1 and 3 List may differ from the technical data presented herein.

[24] For calculation of overall equivalent protection margin for Regions 1 and 3, as defined at WARC Orb-88, see alternative formula in § 1.12 to Annex 3 of Appendix **S30A**~~/30A~~.

M_4, M_5: overall second adjacent channel protection margins for the upper and lower second adjacent channels, respectively (dB) (as defined in § 1.10 of this Annex)[25].

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.

MOD

3.1.1 ~~In~~At WARC-77 and during revision of the Regions 1 and 3 BSS Plan at WRC-97, planning of the broadcasting-satellite service ~~is normally~~was 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 Fig. 5 (from Recommendation ITU-R F.405-1). The WRC-2000 Regions 1 and 3 BSS Plan and the List are generally based on digital modulation of sound and television signals.

MOD

3.4 Protection ratio between television signals

For developing the original 1977 broadcasting-satellite service Plan for Regions 1 and 3, the following protection ratios were used[27, 28]:

– 31 dB for co-channel signals;

– 15 dB for adjacent channel signals.

---

[25] M_4 and M_5 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~~.

[27] These protection ratio values ~~may be~~ were 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.

[28] 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.

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[28, 28*bis*,28*ter*]:

– 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 § 1.8 and 1.9 of this Annex:

– 23 dB for co-channel signals;

– 15 dB for adjacent channel signals.

Recommendation **521 (WRC-95)** 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[29].

WRC-2000 adopted for the protection of digital assignments from digital emissions the following protection ratio values to be applied for calculation of downlink equivalent protection margins of the WRC-2000 Regions 1 and 3 BSS Plan:

– 21 dB for co-channel signals;

– 16 dB for adjacent channel signals.

During planning at WRC-2000 these values were used for all assignments of the Regions 1 and 3 BSS Plan and the List except those for which WRC-2000 adopted different values used in the planning process*.

Revision of the Regions 1 and 3 Plan at WRC-97 ~~was~~and planning at WRC-2000 were generally based on a set of reference parameters such as the average e.i.r.p., the reference earth station receiving antenna, all test points placed within the –3 dB contour, a bandwidth of 27 MHz and the predetermined value of *C*/*N*. The Regions 1 and 3 Plan as established by WRC-2000 is generally based on the use of digital modulation.

Protection masks and associated calculation methods for interference into broadcast satellite systems involving digital emissions are given in Recommendation ITU-R BO.1293-1.

28*bis* These protection ratio values were 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 between 27 October 1997 and 12 May 2000.

28*ter* These protection ratio values were used for protection of digital and analogue assignments from analogue emissions.

29 The overall protection margin calculation method used is based on the first formula in § 1.12 of Annex 3 to Appendix S30A.

* For analogue assignments the protection ratios of WRC-97 were used (24 dB co-channel and 16 dB adjacent channel).

NOTE - The calculation method and the default values specified in Recommendation ITU-R BO.1293-1 will be updated by the relevant ITU-R study group in accordance with the technical parameters adopted by WRC-2000 for planning.

MOD

3.8 Necessary bandwidth

~~The necessary bandwidths considered are as follows for~~WARC-77 Regions 1 and 3 BSS Plan and the WRC-97 revision of the Regions 1 and 3 BSS Plan used the following:

– 625-line systems in Regions 1 and 3: 27 MHz;

– 525-line systems in Region 3: 27 MHz.

The planning at WRC-2000 was generally based on the use of 27 MHz necessary bandwidth.~~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.~~

In Region 2, the Plan is based on a channel bandwidth of 24 MHz[34], 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~~.

If different bandwidths and/or channel spacing 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.

MOD

3.9.2 For the planning of the broadcasting-satellite service, the guardbands chosen at the 1977 Conference to protect the services in adjacent frequency bands are shown in the table below.

Regions	**Guardband at the lower edge of the band (MHz)**	**Guardband at the upper edge of the band (MHz)**
1	14	11
2	12	12
3	14	11

For Regions 1 and 3 at WARC-77, the guardbands were derived on the assumption of the ~~for~~ analogue emissions ~~the guardbands assume~~and 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.~~

34 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.

MOD

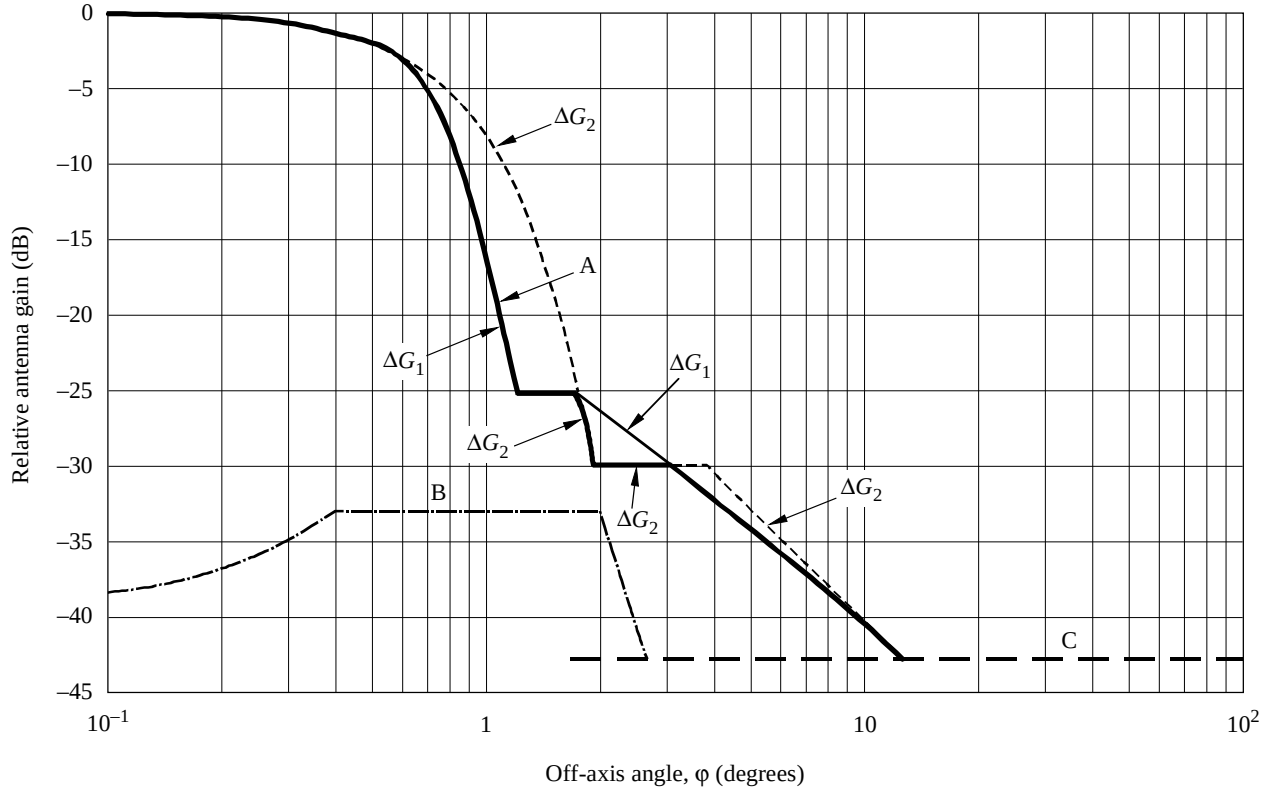
3.13.3 Transmitting antenna reference patterns

Add to the end of 3.13.3

The improved fast roll-off satellite transmitting antenna pattern described in ITU-R Recommendation BO.1445 (see Figure 13) has been used in the planning at WRC-2000.

FIGURE 13

Improved fast roll-off satellite transmitting antenna pattern for Regions 1 and 3



Regions 1 and 3 transmitting fast roll-off co-polar (Curve ΔG_1)
Improved fast roll-off co-polar (Curve A defined as ΔG below)
Regions 1 and 3 transmitting co-polar (Curve ΔG_2)
Improved fast roll-off cross-polar (Regions 1 and 3 transmitting cross-polar) (Curve B)
Curve C (minus the on-axis gain)

Note 1 – The diagram gives the example curves in case of a satellite antenna beamwidth of $\varphi_0 = 1.2°$ (circular).

1445-01

Curve A: co-polar relative gain $\Delta G = \min(\Delta G_1, \Delta G_2)$ (dB):

where:

$\Delta G_1 = -12\left(\varphi/\varphi_0\right)^2$ for $0 \le (\varphi/\varphi_0) \le 0.5$

$\Delta G_1 = -12\left(\dfrac{\dfrac{\varphi}{\varphi_0} - x}{\dfrac{B_{min}}{\varphi_0}}\right)^2$ for $0.5 < (\varphi/\varphi_0) \le \left(\dfrac{1.45}{\varphi_0} B_{min} + x\right)$

$\Delta G_1 = -25.3$ for $\left(\dfrac{1.45}{\varphi_0} B_{min} + x\right) < (\varphi/\varphi_0) \le 1.45$

$\Delta G_1 = -\left(22 + 20 \log\left(\varphi/\varphi_0\right)\right)$ for $(\varphi/\varphi_0) > 1.45$

$\Delta G_1 = -\left(G_{on-axis}\right)$ after intersection with Curve C

$\Delta G_2 = -12\left(\varphi/\varphi_0\right)^2$ for $0 \le \varphi \le 1.58\ \varphi_0$

$\Delta G_2 = -30$ for $1.58\ \varphi_0 < \varphi \le 3.16\ \varphi_0$

$\Delta G_2 = -\left(17.5 + 25 \log\left(\varphi/\varphi_0\right)\right)$ for $\varphi > 3.16\ \varphi_0$

$\Delta G_2 = -\left(G_{on-axis}\right)$ after intersection with Curve C

Curve B: cross-polar relative gain (dB):

$-\left(40 + 40 \log\left|\dfrac{\varphi}{\varphi_0} - 1\right|\right)$ for $0 \le \varphi \le 0.33\ \varphi_0$

-33 for $0.33\ \varphi_0 < \varphi \le 1.67\ \varphi_0$

$-\left(40 + 40 \log\left|\dfrac{\varphi}{\varphi_0} - 1\right|\right)$ for $\varphi > 1.67\ \varphi_0$

$-\left(G_{on-axis}\right)$ after intersection with 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 42.8 dBi)

where:

φ: off-axis angle (degrees)

φ_0: cross-sectional half-power beamwidth in the direction of interest (degrees)

B_{min}: 0.6° for Regions 1 and 3

$X = 0.5\left(1 - \dfrac{B_{min}}{\varphi_0}\right)$

ADD

3.13.4 Composite beam

A composite beam represents a single beam (i.e. “simulated shaped beam”) and is formed by combining two or more elliptical beams at a given orbital position. In general, composite beams were used at WRC-2000 for administrations which had more than one beam at a given orbital position in the WRC-97 Regions 1 and 3 BSS Plan.

ADD

3.19 Orbital separation limit for interference calculation

WRC-2000 has adopted the use of an orbital separation limit for interference calculation in the Regions 1 and 3. Beyond this limit no interference was taken into account.

At the initial values of the orbital separation limit were 15 degrees for co-polar and 9 degrees for cross-polar emissions. At a later stage the unique value of the orbital separation limit of 9 degrees was adopted by WRC-2000.

ANNEX 7

Orbital position limitations

A In applying the procedure of Article 4 for modifications to the appropriate Regional Plan, administrations should observe the following criteria:

1) No broadcasting satellite serving an area in Region 1 and using a frequency in the band 11.7-12.2 GHz shall occupy a nominal orbital position further west than 37° W or further east than 146° E.

2) No broadcasting satellite serving an area in Region 2 that involves an orbital position different from that contained in the Region 2 Plan shall occupy a nominal orbital position:

   a) further east than 54° W in the band 12.5-12.7 GHz; *or*

   b) further east than 44° W in the band 12.2-12.5 GHz; *or*

   c) further west than 175.2° W in the band 12.2-12.7 GHz.

   However, modifications necessary to resolve possible incompatibilities during the incorporation of the Regions 1 and 3 feeder-link Plan into the Radio Regulations shall be permitted.

3) The purpose of the following orbital position and e.i.r.p. limitations is to preserve access to the GSO by the Region 2 fixed-satellite service in the frequency band 11.7-12.2 GHz. Within the orbital arc of the GSO between 37° W and 10° E, the orbital position associated with any new or modified assignment in the Regions 1 and 3 Plan or the list of additional uses shall lie within one of the portions of the orbital arc listed in Table 1. The e.i.r.p. of such assignments shall not exceed 56 dBW except at the positions listed in Table 2.

~~3) Any new orbital position in the Regions 1 and 3 Plan in the range of the orbital arc between 37° W and 10° E associated with a new assignment, or resulting from a modification of an assignment in the Plan, shall be coincident with, or within 1° to the east of, a nominal orbital position in the Region 1 and 3 Plan at the date of entry into force of the Final Acts of the 1977 Conference (in force on 1 January 1979).~~

~~In the event of a modification to an assignment in the Regions 1 and 3 Plan, the use of a new nominal orbital position not coincident with any nominal orbital position in the Plan at the date of entry into force of the Final Acts of the 1977 Conference (in force on 1 January 1979) shall involve an 8 dB reduction in the e.i.r.p. compared to that appearing in the Regions 1 and 3 Plan for the assignment before modification.~~

TABLE 1

Allowable portions of the orbital arc between 37° W and 10° E for new or modified assignments in the Regions 1 and 3 Plan and List

Orbital position	37° W to 36° W	33.5° W to 32.5° W	30° W to 29° W	26° W to 24° W	20° W to 18° W	14° W to 12° W	8° W to 6° W	[3.8° W to 4.2° W]*	2° W to 0°	4° E to 6° E

TABLE 2

Nominal positions in the orbital arc between 37° W and 10° E at which the e.i.r.p. may exceed the limit of 56 dBW

Orbital position	37° W	33.5° W	30° W	25° W ± 0.2°	19° W ± 0.2°	13° W ± 0.2°	7° W ± 0.2°	[4° W ± 0.2°] *	1° W ± 0.2°	5° E ± 0.2°

* Modifications to the list which involve this orbital position(s) shall not exceed the pfd limit –138 dBW/m^2/27 MHz at any point in Region 2.

B The Region 2 Plan is based on the grouping of the space stations in nominal orbital positions of +0.2º and –0.2º from the centre of the cluster of satellites. Administrations may locate those satellites within a cluster at any orbital position within that cluster, provided they obtain the agreement of administrations having assignments to space stations in the same cluster. (See § 4.13.1 of Annex 3 to Appendix **S30A**.)

APPENDIX S30A

ANNEX 1

Limits for determining whether a service of an administration is considered to be affected by a proposed modification to ~~one of~~ the ~~r~~Regional ~~l~~ 2 Plans or a proposed new or modified assignment in the Regions 1 and 3 List or when it is necessary under this Appendix to seek the agreement of any other administration

1 Not used.~~Limits applicable to protect a frequency assignment in the band 17.7-18.1 GHz to an earth station in the fixed-satellite service (space-to-Earth) (see § 4.2.1.2 and 4.2.3.2 of Article 4)~~

~~An administration shall be considered as being affected if, upon application of the procedures of Section 3 of Annex 4, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.~~

~~For the purpose of this calculation, the feeder-link transmitting earth station parameters notified by the administration, which may differ from those given in Annex 3, are used.~~

2 Not used.~~Limits applicable to protect a terrestrial station in the bands 14.5-14.8 GHz and 17.7-18.1 GHz (see § 4.2.1.3 and 4.2.3.3 of Article 4)~~

~~An administration shall be considered as being affected if, upon application of the procedures of Appendix **S7**, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station[9] .~~

~~For the purpose of this calculation, the feeder-link transmitting earth station parameters notified by the administration, which may differ from those given in Annex 3, are used.~~

3 Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 Plan[10]

With respect to the modification to the Region 2 Plan and when it is necessary under this Appendix to seek the agreement of any other administration of Region 2, except in cases covered by Resolution **42** **(Rev.Orb-88)**, an administration shall be considered affected if the overall equivalent

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~~9 In Regions 1 and 3, for the application of the procedures of Appendix **S7**, the e.i.r.p. for the feeder-link earth station is the sum of the values specified in columns 13 and 14 of the Plan.~~

10 With respect to § 3 the limit specified relates to the overall equivalent protection margin calculated in accordance with § 1.12 of Annex 3 to this Appendix.

protection margin[11] corresponding to a test point of its entry in the Plan, including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

– the Plan as established by the 1983 Conference; *or*

– a modification of the assignment in accordance with this Appendix; *or*

– a new entry in the Plan under Article 4; *or*

– any agreement reached in accordance with this Appendix except for Resolution **42 (Rev.Orb-88)**.

[4 Limits to the change in the feeder-link equivalent protection margin with respect to frequency assignments in conformity with the Regions 1 and 3 Plan or List[12]

With respect to the proposed new or modified assignments in ~~modification to~~ the Regions 1 and 3 ~~Plan~~List and when it is necessary under this Appendix to seek the agreement of any other administration of Region 1 or 3, an administration shall be considered affected if the feeder-link equivalent protection margin[13] corresponding to a test point of its entry in the Plan or List, including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

– the Plan as established by the 1988 Conference; *or*

– a modification of the assignment in accordance with this Appendix; *or*

– a new entry in the Plan under Article 4; *or*

– any agreement reached in accordance with this Appendix.]

[To be revised based on the deliberations of GT PLEN-1 concerning Document DT/110, if the current concept is not changed, possible text for this section may be found in the attachment prepared by the Chairperson of ad hoc 1 to GT PLEN-1.]

5 Limits applicable to protect a frequency assignment in the bands 17.3-18.1 GHz (Regions 1 and 3) and 17.3-17.8 GHz (Region 2) to a receiving space station in the fixed-satellite service (Earth-to-space)

An administration in Region 1 or 3 shall be considered affected by a proposed modification in Region 2 or an administration in Region 2 shall be considered affected by a proposed new or modified assignment in the Regions 1 and 3 List~~vice versa~~ when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station would cause an increase in the noise temperature of the feeder-link space station which exceeds the threshold value of $\Delta T/T$

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11 For the definition of the overall equivalent protection margin, see § 1.11 of Annex 5 to Appendix **S30**.

12 With respect to § 4, the limit specified relates to the feeder-link equivalent protection margin calculated in accordance with § 1.7 of Annex 3.

13 For the definition of the equivalent protection margin, see § 1.7 of Annex 3.

corresponding to 3%, where $\Delta T/T$ is calculated in accordance with the method given in Appendix **S8**, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the total RF bandwidth of the feeder-link carriers (24 MHz for Region 2 and 27 MHz for Regions 1 and 3).

Interim systems of Region 2 in accordance with Resolution **42** **(Rev.Orb-88)** shall not be taken into consideration when applying this provision to proposed modifications to the Regions 1 and 3 Plan. However, this provision shall be applied to Region 2 interim systems with respect to the Regions 1 and 3 Plan.

6 Limits applicable to protect a frequency assignment in the band 17.8-18.1 GHz (Region 2) to a receiving feeder-link space station in the fixed-satellite service (Earth-to-space)

An administration in Region 2 shall be considered affected by a proposed new or modified assignment in the Regions 1 and 3 List when the power flux-density arriving at the Region 2 receiving space station of a broadcasting-satellite feeder-link station would cause an increase in the noise temperature of the receiving feeder-link space station which exceeds the threshold value of $\Delta T/T$ corresponding to 3%, where $\Delta T/T$ is calculated in accordance with the method given in Appendix **S8**, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the total RF bandwidth of the feeder-link carriers.

ANNEX 2

Basic characteristics to be furnished in notices[14] 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[15]

The data elements contained in this Annex are included in APS4.

ANNEX 3*

MOD

Technical data used in establishing the provisions and associated Plans and the Regions 1 and 3 List and which should be used for their application[19]

MOD

1.7 Feeder-link equivalent protection margin for Regions 1 and 3[20]

The feeder-link equivalent protection margin (M_u) is given by the formula:

$$M_u = -10 \log (10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10}) \quad \text{dB}$$

where:

M_1 is the value in dB of the protection margin for the same channel, i.e.:

$$M_1 = \left[\frac{\text{wanted power}}{\text{sum of the co-channel interfering powers}} \right] - \text{co-channel protection ratio}$$

M_2 and M_3 are the values in dB of the protection margin for the upper and lower adjacent channels, respectively, i.e.:

$$M_2 = \left[\frac{\text{wanted power}}{\text{sum of the upper adjacent channel interfering powers}} \right] - \text{adjacent channel protection ratio}$$

$$M_3 = \left[\frac{\text{wanted power}}{\text{sum of the lower adjacent channel interfering powers}} \right] - \text{adjacent channel protection ratio}$$

All powers are evaluated at the receiver input. All protection ratios are given in § 3.3.

---

19 In revising this Annex at WRC-97 and at WRC-2000, 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 Region 2 Plans and the Regions 1 and 3 List may differ from the technical data presented herein.

* *Note by the Secretariat*: Subsequent to WARC Orb-88, certain errors have been discovered in the technical information for fast roll-off antenna patterns as contained in Appendices **S30A** and **S30B**. This technical information as corrected by the ex-IFRB derives from other relevant Conference decisions and is given in the provisional ex-IFRB Rule of Procedure No. H38, published in ex-IFRB Circular-letter No. 790 of 12 July 1989. ~~Copies of the latter may be obtained directly from the Bureau.~~

20 This quantity is used in the alternative formula for the overall equivalent protection margin given in § 1.12. However, in certain cases (e.g. when the channel spacing and/or bandwidth are different from the values given in § 3.5 and 3.8 of Annex 5 to Appendix **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~~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~~.

MOD

1.12 Overall equivalent protection margin

The overall equivalent protection margin M is given in dB by the expression[22]:

$$M = -10 \log \left(\sum_{i=1}^{n} 10^{(-M_i/10)} \right)$$

where:

n is generally equal to 3 for Regions 1 and 3, n is equal to 5 for Region 2;

M1: overall co-channel protection margin (dB) (as defined in § 1.9);

M2, M3: overall adjacent channel protection margins for the upper and lower adjacent channels, respectively (dB) (as defined in § 1.10);

M4, M5: overall second adjacent channel protection margins for the upper and lower second adjacent channels, respectively (dB) as defined in § 1.11).[23]

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 the 1988 Conference (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.

$$M = -10 \log \left(10^{-(M_u + R_{cu})/10} + 10^{-(M_d + R_{cd})/10} \right) - R_{co}$$

where:

M_u: equivalent protection margin for the feeder link (as defined in § 1.7);

M_d: equivalent protection margin for the downlink (as defined in § 3.4, Annex 5 to Appendix **S30**;

R_{cu}: co-channel feeder-link protection ratio;

R_{cd}: co-channel downlink 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

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22 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.

23 M4 and M5 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 § 3.5 and 3.8 of Annex 5 to Appendix **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~~.

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 § 3.5 and 3.8, respectively, of Annex 5 to Appendix **S30**.

WRC-2000 generally applied the following protection ratio values for development WRC-2000 Regions 1 and 3 feeder-link Plan:

R_{cu} = 27 dB

R_{cd} = 21 dB

These values were used for all assignments in WRC-2000 planning except those, for which WRC-2000 adopted different values (see section 3.3). The planning at WRC-2000 was based on the use of the Equivalent Protection Margin criterion.

MOD

3.3 Protection ratios

For planning in Regions 1 and 3 at the 1988 Conference (WARC Orb-88), the following protection ratios were applied for the purpose of calculating the feeder-link equivalent protection margins[24] :

– 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 § 1.7.

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 which appear in the alternative formula for overall equivalent protection margin given in § 1.12 are specified in Recommendation ITU-R BO.1297, as follows[24*bis*,24*ter*]:

– co-channel protection ratio = 30 dB;

– adjacent channel protection ratio = 22 dB.

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24 These protection ratio values ~~may be~~were used for 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.

24*bis* These protection ratio values were used for 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 between 27 October 1997 and 12 May 2000.

24*ter* These protection ratio values were used for protection of digital and analogue assignments from analogue emissions.

However, it should be noted that the revision of the Regions 1 and 3 Plan by the WRC-97 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 § 1.11 of Annex 5 to Appendix **S30/~~30~~** and in § 1.12 using the following values of aggregate protection ratio:

– co-channel = 23 dB;

– adjacent channel = 15 dB.

Recommendation **521 (WRC-95)** also specified that for the revision of the Regions 1 and 3 Plan no overall co-channel single entry *C*/*I* ratio should be lower than 28 dB.

Nevertheless, for 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~~ and planning at WRC-2000 were 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 the –3 dB contour, a bandwidth of 27 MHz and the predetermined value of *C*/*N*. Regions 1 and 3 Plan as established by WRC-2000 is generally based on the use of digital modulation.

WRC-2000 adopted for the protection of digital assignments from digital emissions the following protection ratio values to be applied for calculation of feeder-link equivalent protection margins of the WRC-2000 Regions 1 and 3 BSS Plan;

– 27 dB for co-channel signals;

– 22 dB for adjacent channel signals.

During planning at WRC-2000 these values were used for all assignments of the Regions 1 and 3 feeder-link Plan and the List except those, for which WRC-2000 adopted different values to be used in the planning process*.

Protection masks and associated calculation methods for interference into broadcasting-satellite systems involving digital emissions are given in Recommendation ITU-R BO.1293-1.

NOTE - The calculation method and the default values specified in the Recommendation ITU-R BO.1293-1 will be updated by the relevant ITU-R study group in accordance with the technical parameters adopted by WRC-2000 for planning.

ADD

3.7.5 Composite beam

A composite beam represents a single beam (i.e. "simulated shaped beam") and is formed by combining two or more elliptical beams at a given orbital position. In general, composite beams were used at WRC-2000 for administrations which had more than one beam at a given orbital position in the WRC-97 Regions 1 and 3 BSS Plan.

* For analogue assignments the protection ratios of WRC-97 were used (30 dB co-channel, 22 dB adjacent channel).

[SUP

3.11 Power control

Reasons: WRC-2000 has decided to apply a single entry criterion instead of the Equivalent Protection Margin (EPM) criterion. Calculation of the Power Control value is based on the application of EPM. Taking into account that it is not possible to apply the current Power Control algorithm this paragraph should be suppressed.]

[SUP

3.13 Depolarization compensation

Reasons: The margin 0.5 dB is shared between the depolarization compensation the Power Control. Suppression of Power Control does not allow to determine the valid depolarisation compensation value.]

ADD

3.17 Orbital separation limit for interference calculation

WRC-2000 has adopted the use of an orbital separation limit for interference calculation in the Regions 1 and 3. Beyond this limit no interference was taken into account.

At the initial values of the orbital separation limit were 15 degrees for co-polar and 9 degrees for cross-polar emissions. At a later stage the unique value of the orbital separation limit of 9 degrees was adopted by WRC-2000.

ANNEX 4

Criteria for sharing between services

1 Threshold values for determining when coordination is required between transmitting space stations in the fixed-satellite service or the broadcasting-satellite service and a receiving space station in the feeder-link Plans in the frequency bands 17.3-18.1 GHz (Regions 1 and 3) and 17.3-17.8 GHz (Region 2)

With respect to § 7.1, Article 7 of this Appendix, coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service with a receiving space station in a broadcasting-satellite feeder link in the Regions 1 and 3 Plan or the Region 2 Plan is required~~, for inter-satellite geocentric angular separations of less than 3° or greater than 150°,~~ when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of $\Delta T_S/T_S$ corresponding to 4%. $\Delta T_S/T_S$ is calculated in accordance with Case II of the method given in Appendix **S8**.

~~The above provision does not apply when the geocentric angular separation between a transmitting space station in the fixed-satellite service or in the broadcasting-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 Earth's surface at the equatorial Earth limb.~~

2 ~~Not used.~~Threshold values for determining when coordination is required between transmitting feeder-link earth stations in the fixed-satellite service in Region 2 and a receiving space station in the Regions 1 and 3 feeder-link Plan or List in the frequency bands 17.8-18.1 GHz

With respect to § 7.1, Article 7 of this Appendix, coordination of a transmitting feeder-link earth station in the fixed-satellite service with a receiving space station in a broadcasting-satellite feeder link in the Regions 1 and 3 Plan or List is required, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of $\Delta T/T$ corresponding to 3%, where $\Delta T/T$ is calculated in accordance with the method given in Appendix **S8**, except that the maximum power densities per hertz averaged over the worst 1 MHz are replaced by power densities per hertz averaged over the total RF bandwidth of the feeder-link carriers.

SUP

~~3 Method for the determination of the coordination area around a feeder-link transmitting earth station of the Region 2 and Regions 1 and 3 Plans with respect to receiving earth stations in the fixed-satellite service in the frequency band 17.7-18.1 GHz~~

ATTACHMENT

Optional text for section 1 of Annex 1 to Appendix S30 and for section 4 of Annex 1 of Appendix S30A in case that the sharing criteria of the WRC-97 Regions 1 and 3 Plans are in principle maintained for BSS-BSS compatibility analysis.

APPENDIX S30

[1 Limits to the change in the wanted-to-interfering signal ratio with respect to frequency assignments in conformity with the Regions 1 and 3 Plan and the Regions 1 and 3 List

With respect to § 4.~~3.1.1~~1.1a) or § 4.1.1b) of Article 4, an administration in Region 1 or 3 shall be considered as being affected if the effect of the proposed ~~modification~~ new or modified assignment to the Regions 1 and 3 ~~Plan~~ List is that the equivalent down-link protection margin[13*bis*] corresponding to a test point of its entry in the Regions 1 and 3 Plan or List, including cumulative effect of any previous modification to List or any previous agreement, falls more than [0.45] dB below 0 dB or, if already negative, more than [0.45] dB below the value resulting from:

– the Regions 1 and 3 Plan and List as established by the WRC-2000; *or*

– a proposed new or modified assignment to the List in accordance with this Appendix; *or*

– a new entry in the Regions 1 and 3 List as the result of successful application of Article 4 procedures.

~~would result in the wanted-to-interfering signal ratio at any point within the service area associated with any of its frequency assignments in that Plan falling below either 30 dB or the value resulting from the frequency assignments in the Plan at the date of entry into force of the Final Acts[14], whichever is the lower.~~

NOTE - In performing the calculation, the effect at the receiver input of all the co-channel and adjacent-channel signals is expressed in terms of one equivalent co-channel interfering signal. This value is usually expressed in decibels.

For a proposed new or modified assignment to the List, in the interference analysis, for each test point, the antenna characteristics described in Figure 7*bis* of this Appendix shall apply. If the e.i.r.p. value of the wanted signal at a given test point is above or equal to [54.5] dBW, an antenna diameter of 0.6 m shall be used, otherwise the antenna diameter D of the receiving earth station shall be adjusted according to the following formula:

$$D = 0.6 \times 10^{(54.5 - \text{e.i.r.p.})/20}$$

but not exceeding [2.4] m.]

13*bis* For the definition of the equivalent protection margin, see §3.4 of Annex 5.

~~14 Final Acts of the 1977 Conference, which entered into force on 1 January 1979.~~

APPENDIX S30A

[4 Limits to the change in the feeder-link equivalent protection margin with respect to frequency assignments in conformity with the Regions 1 and 3 Plan[12] and the Regions 1 and 3 List

With respect to ~~the modification~~a proposed new or modified assignment to the Regions 1 and 3 ~~Plan~~ List and when it is necessary under this Appendix to seek the agreement of any other administration of Region 1 or 3, an administration shall be considered affected if the feeder-link equivalent protection margin[13] corresponding to a test point of its entry in the Plan and the List, including the cumulative effect of any previous modification to the ~~Plan~~ List or any previous agreement, falls more than [0.~~25~~45] dB below 0 dB, or, if already negative, more than [0.~~2~~45] dB below the value resulting from:

– the Regions 1 and 3 Plan and List as established by the ~~1988~~WRC-2000~~Conference~~; *or*

– a ~~modification~~ proposed new or modified ~~of the~~ assignment to the List in accordance with this Appendix; *or*

– a new entry in the ~~Plan~~ Regions 1 and List ~~under~~ as the result of the successful application of Article 4 procedures~~; *or*~~

~~– any agreement reached in accordance with this Appendix~~.

For a proposed new or modified assignment to the List, in the interference analysis, for each test point, the antenna characteristics described in the section 3.5 of Annex 3 to this Appendix shall apply.]

12 ~~With respect to § 4, the limit specified relates to the feeder-link equivalent protection margin calculated in accordance with § 1.7 of Annex 3.~~

13 For the definition of the equivalent protection margin, see § 1.7 of Annex 3.

Proposed modifications to No. S23.13 of the Radio Regulations

MOD

S23.13 § 4 In devising the characteristics of a space station in the broadcasting-satellite service [except sound broadcasting], all technical means available shall be used to reduce, to the maximum, the radiation over the territory of other countries unless an agreement has been previously reached with such countries.

ADD

S23.13A If the Bureau receives an indication of a written agreement under No. **S23.13**, it shall include reference to that agreement when the assignments to the system are recorded with reference to No. **S23.13** in the remarks column of the Master Register or included in the Regions 1 and 3 List.

ADD

S23.13B If within the four-month period following the publication of the Special Section for a BSS network submitted for coordination under **S9.7** or under No. [4.1.x or 4.2.x] of Appendix **S30**, an administration informs the Bureau that all technical means have not been used to reduce the radiation over its territory, the Bureau shall draw the attention of the responsible administration to the comments received. The Bureau shall request the two administrations to make every effort possible in order to resolve the issue. Either administration may request the Bureau to study the matter and submit its report to the administrations concerned. If no agreement can be reached, then the Bureau shall delete the territory of the objecting administration from the service area without adversely affecting the rest of the service area and inform the responsible administration.

ADD

S23.13C If after the four-month period mentioned above, an administration objects to remain in the service area, the Bureau shall delete the territory of the objecting administration from the service area of the BSS network concerned without adversely affecting the rest of the service area and inform the responsible administration.

Proposed text for the minutes of the conference

In adopting the provisions S23.13A, S23.13B and S23.13C, it is understood that these procedures are separate from the procedures of Article S9 and Article 4 of Appendix S30 and consequently they are not taken into account in the application of Article 5 of Appendix S30 and Article S11. It is also to be noted that in the case of the broadcasting-satellite service planned bands when any of the test points is in the territory of the objecting administration, the notifying administration shall have the opportunity to move test points or to add additional test points to ensure that the rest of the service area is not adversely affected.

MOD

RESOLUTION 73 (Rev.WRC-~~97~~2000)

Measures to solve the incompatibility between the broadcasting-satellite service in Region 1 and the fixed-satellite service in Region 3 in the frequency band 12.2-12.5 GHz

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that the band 12.2-12.5 GHz is allocated on a primary basis to the broadcasting-satellite service (BSS) in Region 1 and the fixed-satellite service (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** to the Radio Regulations 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*~~*c)* 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 of Appendix **30** procedure~~, or are still applying the current Article 4 of Appendix **30** modification procedure~~. Some of these assignments have already been brought into use;

~~*e*~~*d)* that some Region 3 FSS systems are currently operating, or are under coordination, applying relevant provisions of the Radio Regulations~~,~~;

e) that the WRC-97 Regions 1 and 3 Plan included frequency assignments which may not be compatible with Region 3 fixed-satellite service networks for which notification or coordination data as per Appendix **S3** or Appendix **S4** information had been received by the Bureau before 27 October 1997;

f) that WRC-97, in its Resolution 73, adopted measures to resolve such incompatibilities between the broadcasting-satellite service in Region 1 and the fixed-satellite service in Region 3 in the frequency band 12.2-12.5 GHz which included instructions to the Bureau to identify both the administrations whose assignments affect Region 1 BSS networks in the 12.2-12.5 GHz band, and also to identify those administrations whose assignments affect Region 3 FSS networks in the 12.2-12.5 GHz band;

g) that this Conference has adopted procedures in Appendix **S30** for coordination between the broadcasting-satellite service in Region 1 and the fixed-satellite service in Region 3 in the frequency band 12.2-12.5 GHz,

noting

that in response to Resolution **73 (WRC-97)** the Bureau has developed necessary software tools for analysing the incompatibility situations mentioned under *considering f)*,

resolves

~~1 that the Radiocommunication Bureau shall apply the criteria of Annex 4 to Appendix **S30/30** to identify:~~

~~– the BSS assignments in the 12.2-12.5 GHz frequency band, submitted under § 4.1 *a)* or 4.1 *b)* of Article 4 of Appendix **S30/30**, 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 § 7.2.1 of Article 7 of Appendix **S30/30**, 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 Bureau shall also identify the administrations whose assignments affect these BSS assignments in the 12.2-12.5 GHz frequency band;~~

~~2 that the Bureau shall apply the criteria of Annex 1 to Appendix **S30/30** 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 § 7.2.1 of Article 7 of Appendix **S30/30**, 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 § 4.1 *a)* or 4.1 *b)* 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 Bureau shall identify the administrations whose assignments affect the above-mentioned Region 3 FSS networks in the 12.2-12.5 GHz frequency band;~~

1 that, upon request, the Bureau shall provide the results of the analysis carried out in response to Resolution **73 (WRC-97)** regarding incompatibilities between the broadcasting-satellite service in Region 1 and the fixed-satellite service in Region 3 in the frequency band 12.2-12.5 GHz to the administrations concerned;

~~3~~2 that the administrations which have been identified by the Bureau 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 have to be taken into account.~~

3 ~~NOTE 2 – Any retroactive application of this Resolution~~that provision of this assistance shall in no way have any implications regarding the status of assignments in both the BSS and the FSS as identified by the Bureau.

RESOLUTION 533 (Rev.WRC-~~97~~2000)

Implementation of the decisions of ~~the~~ WRC-~~97~~2000 relating to processing of proposed networks submitted under Article 4 of Appendices S30 and S30A to the Radio Regulations

The World Radiocommunication Conference (~~Geneva, 1997~~Istanbul, 2000),

considering

a) ~~that WRC-97 has adopted values for various technical parameters relating to Appendices **S30** and **S30A**~~that WRC-2000 revised the Appendix **S30** (downlink) Regions 1 and 3 Plan which, through decisions of WRC-2000, has been structured into a WRC-2000 Regions 1 and 3 **APS30**/Plan and a WRC-2000 Regions 1 and 3 **APS30**/List[1];

b) ~~that these technical parameters were used for the establishment of the revised Plans for Regions 1 and 3,~~that similarly, WRC-2000 revised the 14.5-14.8 GHz and 17.3-18.1 GHz Appendix **S30A** Regions 1 and 3 (feeder-link) Plan and structured it into a R1/R3 feeder-link Plan and a R1/R3 feeder-link List;

c) that the R1/R3-downlink Plan and the initial R1/R3-downlink List (and the associated R1/R3-feeder-link Plan and initial R1/R3-feeder-link List) were analysed and were confirmed to be compatible with each other;

d) that compatibility between the R1/R3-downlink Plan (and the associated R1/R3-feeder-link Plan) and other services having primary allocations in the Plan bands in all three Regions and the Region 2 Plan must be ensured;

e) that WRC-2000 has adopted new sharing criteria and associated calculation methods which are included in, or referenced in, the Annexes to Appendices **S30/S30A**;

~~*c)*~~*f)* ~~that studies of compatibility between the revised Regions 1 and 3 broadcasting-satellite service (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 Plans and the Region 2 Plans, were performed during this Conference using data which had been received and published by the Radiocommunication Bureau at the time of this Conference under relevant provisions of the Radio Regulations~~existing systems* and Part B** systems included in the R1/R3 downlink and feeder-link Plans as established by WRC-2000 have already been determined to be compatible with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan;

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[1] Hereinafter within this Resolution the WRC-2000 Regions 1 and 3 Appendix **S30** Plan is indicated as the "R1/R3-downlink Plan" and the WRC-2000 Regions 1 and 3 List of additional uses associated with the Appendix **S30** Plan is indicated as the "R1/R3-downlink List". Similar terminology has also been followed in relation to Appendix **S30A**.

* Whenever the term "existing" is used in this document, it refers to the notified assignments that are in conformity with Appendices **S30** and **S30A**, which have been brought into use and for which the date of bringing into use has been confirmed to the Bureau before 1700 hours (Istanbul time) 12 May 2000.

** Whenever the term "Part B" is used in this document, it refers to the assignments for which the procedures of Article 4 of Appendices **S30** and **S30A** have been successfully completed and provided due diligence information (when required) before 1700 hours (Istanbul time) 12 May 2000, but have not been brought into use and/or the date of bringing into use has not been confirmed to the Bureau.

g) that during WRC-2000 the R1/R3-downlink Plan (and the associated R1/R3-feeder-link Plan) were not analysed to identify any incompatibility with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan;

h) that since assignments in the initial R1/R3-downlink List (and the associated R1/R3-feeder-link List) have completed coordination with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan using the compatibility criteria in force at the time of WRC-2000 there will be no additional compatibility requirements associated with entries in the initial R1/R3-downlink List or the R1/R3-feeder-link List;

i) that proposed additional assignments would only enter the evolving R1/R3-downlink List after they have satisfied all compatibility requirements with the R1/R3-downlink Plan, with the existing R1/R3-downlink List, with other Appendix **S30** Article 4 submissions with prior dates of receipt, and with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan;

j) that proposed additional assignments would only enter the evolving R1/R3-feeder-link List after they have satisfied all compatibility requirements with the R1/R3-feeder-link Plan, with the existing R1/R3-feeder-link List, with other Appendix **S30A** Article 4 submissions with prior dates of receipt, and with other services with primary allocations in the same band in all three Regions and with the Region 2 Plan,

recognizing

~~*a)* that the revised Regions 1 and 3 Plans 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 Plans, the orbital position of a number of administrations were changed;~~

~~*c)* that a large number of Appendices **S30** and **S30A** 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 Radiocommunication Bureau needs clear instructions from this Conference on how to deal with ~~these submissions and how to protect the Region 2 Plan and other services~~the large number of Appendices **S30** and **S30A** Article 4 submissions that have either been processed or are currently being processed which might affect: the Regions 1 and 3 downlink and feeder-link Plans and Lists; other Appendix **S30/S30A** Article 4 submissions with prior dates of receipt; other services having primary allocations in the Plan bands in all three Regions; and the Region 2 Plan,~~;~~

~~*e)* that the instructions to Bureau should take effect as of the close of this Conference (22 November 1997),~~

resolves

1 that following WRC-2000 the Bureau shall compute the reference situations of the R1/R3-downlink Plan and the R1/R3-downlink List and the R1/R3-feeder-link Plan and R1/R3-feeder-link List as of 3 June 2000 and publish this information in a Circular Letter;

~~1~~2 that as of ~~22 November 1997~~3 June 2000 the Bureau shall use the ~~values of technical parameters~~revised Appendices S30/S30A as adopted ~~for planning~~ at this Conference in its ~~subsequent~~ examination of submissions ~~for modification and notifications of assignments in the Regions 1 and 3 Plans received under Articles 4 and 5 of Appendices **S30** and **S30A**. In particular, the following technical parameters shall be applied~~received after the Conference:

– protection ratios used for the equivalent protection margin (EPM) analyses as defined in Recommendation ITU-R BO.1297 instead of the protection ratios applied at WARC SAT-77 and WARC Orb-88;

– new reference earth receiving antenna pattern (Recommendation ITU-R BO.1213) instead of earth reference receiving antenna pattern applied at WARC SAT-77;

– new reference feeder-link antenna patterns (Earth and space stations) in accordance with Recommendations ITU-R BO.1295 and ITU-R BO.1296 instead of the feeder-link (Earth and space stations) reference antenna patterns applied at WARC Orb-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 **S30**/**30** and **S30A**/**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*;

shall not be considered as new or additional assignments under § 4.1 *b)* of Article 4 of Appendices **S30** and **S30A**. Therefore, these assignments shall not be subject to the provisions of § 4.3.5 of Appendix **S30** and § 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 EPM criteria to establish a new reference situation for the revised Regions 1 and 3 broadcasting-satellite service and feeder-link Plans. In creating the new reference situation, the Bureau shall convert the merged overall EPM file into separate feeder-link and downlink EPM files by eliminating the redundant beams created for the purpose of overall EPM 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**;

43 that the Bureau shall review, in date of receipt order, all sSpecial sSections already published[*] in order to determine the requirement for coordination with the revised Regions 1 and 3 Plans 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 **53 (WRC-97)**)respect to the R1/R3-downlink Plan, the R1/R3-feeder-link Plan, and the R1/R3-downlink List and the R1/R3-feeder-link List and with other Article 4 submissions which have dates of receipt prior to the APS30/E, or APS30A/E, Special Section in question using the revised Appendices **S30/S30A** as adopted by this Conference;

– within four months from the date of the above-mentioned corrigenda publication, possibly affected administrations should provide comments to the Bureau and to the notifying administration shall indicate any still valid coordination agreements;

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* The orbital position at 31° W shall no longer be considered as an orbital position in the Plan.

[*] See also Resolution **53(Rev.WRC-2000)** and the Notes to Article 11 of Appendix **S30** and Article 9A of Appendix **S30A** with respect to assignments in the Region 2 Plan.

– the existing time period to bring the modifications 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 by the Bureau of the complete Annex 2 information pertaining to the request for modification but shall be extended by a period equal to the time between [3 June 2000] and the date of publication of the relevant corrigenda to the Special Section;

5 that in examining the requirement for coordination of other services in all three Regions with the revised Regions 1 and 3 Plans 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 relevant special sections of the series, e.g. 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 Plans.

– 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 Plans;

64 that as of the end of the Conference the Bureau shall process the pendingall not yet published requests for modifications under Article 4 modifications with respect to the revised reference situation described in *resolves* 3, as followswhich were received prior to [3 June 2000]:

– 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,revised Appendices **S30/S30A** as adopted at this Conference, identify for each pendingnot yet published request for 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 shall indicate any still valid coordination agreements;

– in those cases where the degradation of the equivalent protection margins caused by the proposed modification is no worse under the new situation arising from the revision of the Plans than under the original situation, any agreements previously obtained under the Article 4 procedures of Appendices **S30**/**30** or **S30A**/**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 but shall be extended by a period

equal to the time between [3 June 2000] and the date of publication of the last relevant corrigenda to the Special Sections described in *resolves* 3;

– ~~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.~~

[5 that in examining the requirement for coordination of other services in all three Regions with the WRC-2000 Regions 1 and 3 Plans and Lists in the cases described in *resolves* 3, the following methodology shall be applied in accordance with Resolution **53 (Rev.WRC-2000)** and Article 11 of Appendix **S30** and Article 9A of Appendix **S30A**:

– protection from fixed-satellite service assignments already published. The Bureau shall review all relevant Special Sections of the series, e.g. APS30/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 IFIC. The administrations responsible for the fixed-satellite service assignments shall then initiate coordination with the affected assignments in the WRC-2000 Plans and Lists;

– protection from terrestrial assignments already in process. The Bureau shall determine the requirement for coordination and publish the request in its IFIC. The administration responsible for the terrestrial assignments shall then initiate coordination with the affected assignments in the WRC-2000 Plans and Lists.]

NOTE - Finalization of *resolves* 5 is dependent on the decisions of GT PLEN-1 concerning decisions about how inter-service sharing issues should be treated.

Proposed amendments to Notes included in Article 11 of Appendix S30 and Article 9A of Appendix S30A

Modifications to Notes included in Article 11 of Appendix S30

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~~12 May 2000; 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~~12 May 2000 for recording in the Master Register and which subsequently receive a favourable finding based on the Plan as it existed on ~~27 October 1997~~12 May 2000; or

c) assignments in the fixed-satellite service which:

- are recorded in the Master Register prior to 12 May 2000 with a favourable finding; or
- ~~those which~~ have been coordinated under the provisions of **S9.7** (or No. **1060**) or § [7.2.1] of Appendix **S30** prior to 12 May 2000; or
- ~~those that~~ are in process of coordination under the provisions of ~~No. **1060**~~**S9.7** (or No. **1060**) or § [7.2.1] of Appendix **S30** prior to ~~27 October 1997.~~31 July 2000 for which complete Appendix **S4** data (or Appendix **3** data, as appropriate) has been received by the Bureau under the relevant provisions of Article **S9** (or Article **11**, as appropriate):
  - filings received by the Bureau prior to 12 May 2000, 1700 hours (Istanbul time) shall be taken into account in the pertinent compatibility analysis to be carried out by the Bureau after WRC-2000 by applying the pfd criteria shown in Table 1; or
  - filings received by the Bureau after 12 May 2000, 1700 hours (Istanbul time), but before 31 July 2000, shall be taken into account by applying the sharing criteria of –138 dB(W/m^2/27 MHz) or the pfd criteria shown in Table 1, whichever is higher.

~~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 administrations ~~indicated in Table 3~~ which are in conformity with the Region 2 Plan on ~~27 October 1997~~12 May 2000.

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 No. **S5.487**/**838** and No. **S5.43**/**435** do not apply.~~

~~8 Pending clarification of bringing into service of the satellite network.~~

[Two options for text related to Notes 7 *a)* and *b)* are given below. It is noted that for both options] FSS systems filed after [the Conference]/[31 July 2000] shall coordinate with Regions 1 and 3 Plan assignments.

[Also, FSS networks for which complete Appendix S4 data (or Appendix 3 data, as appropriate) has been received by the Bureau under the relevant provisions of Article S9 (or Article 11, as appropriate) after 27 October 1997 shall coordinate with any BSS assignment of the WRC-97 Plan** included in the WRC-2000 Plan without change, or with only change of modulation from analogue to digital, or with the change of normal roll-off antenna pattern to a fast roll-off antenna pattern.]

Option 1:

a) are recorded in the Master Register with a favourable finding prior to [12 May 2000] [to which No. **S5.487** and No. **S5.43** do not apply;]

b) [are for the fixed-satellite service and have provided complete Appendix **S4** data (or Appendix **3** data, as appropriate) under the relevant provisions of Article **S9** (or No. **1060**, as appropriate), and the Bureau has published the associated Special Section AR11/C, prior to 12 May 2000.]

Option 2:

a) are recorded in the Master Register with a favourable finding prior to [12 May 2000] [to which No. **S5.487** and No. **S5.43** do not apply;]

b) are for the fixed-satellite service and have provided complete Appendix **S4** data (or Appendix **3** data, as appropriate) under the relevant provisions of Article **S9** (or No. **1060**, as appropriate) (or under the provisions of No. **1060** or § [7.2.1] of Appendix **S30** prior to 31 July 2000);*

c) are for terrestrial services, and which were received prior to 12 May 2000 for recording in the Master Register, and which subsequently receive a favourable finding based on the Plan as it existed on 12 May 2000.

** Some of these assignments derive from the WARC-77 Plan.

* Noting that such networks are subject to the provisions of Resolution 49.

TABLE 1

Symbol	Criteria
a	§ 3 of Annex 1*
b	[§ 4~~, 5 *a)* and 5 *b)*~~] of Annex 1*
c	~~§ 6 of Annex 1~~ For Regions 1 and 3 BSS → Region 2 FSS: –160 dB(W/m^2/27 MHz) 0 ≤ θ < 0.054° (–137.46 + 17.74 log θ) dB(W/m^2/27 MHz) 0.054° ≤ θ < 3.67° (–141.56 + 25 log θ) dB(W/m^2/27 MHz) 3.67° ≤ θ < 11.54° (–115 dB(W/m^2/27 MHz) 11.54° ≤ 0 For Region 1 BSS → Region 3 FSS: –160 dB(W/m^2/27 MHz) 0 ≤ θ < 0.054° (–137.46 + 17.74 log θ) dB(W/m^2/27 MHz) 0.054° ≤ θ < 3.67° [(–141.56 + 25 log θ) dB(W/m^2/27 MHz) 3.67° ≤ θ < 24.12° (see NOTE 1) (–107 dB(W/m^2/27 MHz) 24.12° ≤ θ (see NOTE 1)]

* These paragraphs and this Annex are contained in the Radio Regulations in force at the ~~time~~end of WRC-~~97~~2000.

NOTE 1 - For the purpose of analysing the WRC-2000 Plan. The values in these lines are to be revisited once the output of the WRC-2000 planning process is known to the Conference.

where θ corresponds to the minimum geocentric angular separation taking into account the pertinent station-keeping accuracy of the interfering BSS and the interfered with FSS space stations.

NOTE - In cases where assignments from the WRC-97 Plan without Remarks were included in the WRC-2000 Regions 1 and 3 downlink Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna characteristics, the coordination status afforded by the WRC-97 Plans shall be preserved.

In cases where assignments from the WRC-97 Plans with Remarks were included in the WRC-2000 Regions 1 and 3 downlink Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna pattern, the compatibility will be reassessed using the revised criteria and methodology of WRC-2000 and either the Remarks of the WRC-97 Plan assignment will be maintained or reduced on the basis of the results of this analysis.

In other cases the methodology described in Notes 5 to 7 shall be applied.

Modifications to Notes included in Article 9A of Appendix S30A

3 Before an administration notifies to the Bureau or brings into use this frequency assignment to a transmitting feeder-link earth station in the band 17.7-18.1 GHz, it shall [effect] coordination of this assignment, using the method described in ~~Annex 4~~Appendix **S7**, 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~~[3 June 2000] with a favourable finding; or

[*b)* for which a notice is received by the Bureau prior to ~~27 October 1997~~[3 June 2000] for recording in the Master Register, but not yet processed, and which subsequently receives a favourable finding based on the Plan as it existed on ~~27 October 1997~~[3 June 2000].]

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~~or 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 **S7**, 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~~[3 June 2000] with a favourable finding; or

b) for which a notice is received by the Bureau prior to ~~27 October 1997~~[3 June 2000] for recording in the Master Register, but not yet processed, and which subsequently receives a favourable finding based on the WRC-2000 Regions 1 and 3 feeder-link Plan as it existed on ~~27 October 1997~~[3 June 2000].

5 This assignment shall be brought into use only when the limits given in § 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~~12 May 2000.

~~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 administrations ~~indicated in Table 1B~~ which are in conformity with the Region 2 Plan on ~~27 October 1997~~12 May 2000.

7 [This assignment shall not claim protection from the assignments of the administrations ~~indicated in Table 1B~~ which are recorded in the Master Register with a favourable finding prior to ~~27 October 1997~~[12 May 2000]]. ~~[to which No. **S5.487/838** and No. **S5.43/435** do not apply]~~.

The methodology and criteria for this analysis shall be those contained in section 1 of Annex 4 to Appendix **S30A** modified to take into consideration the system noise temperature of the received space station to be 600 K and to apply a $\Delta T/T$ criterion of 6%.

NOTE - In cases where assignments from the WRC-97 Plan without Remarks were included in the WRC-2000 Regions 1 and 3 feeder-link Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna characteristics, the coordination status afforded by the WRC-97 Plans shall be preserved. In other cases the methodology described in Notes 3 to 7 shall be applied.

In cases where assignments from the WRC-97 Plans with Remarks were included in the WRC-2000 Regions 1 and 3 downlink Plan without change, or with conversion of modulation from analogue to digital, or a change from normal roll-off to fast roll-off antenna pattern, the compatibility will be reassessed using the revised criteria and methodology of WRC-2000 and either the Remarks of the WRC-97 Plan assignment will be maintained or reduced on the basis of the results of this analysis.

In other cases the methodology described in Notes 3 to 7 shall be applied.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 494-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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**
GT PLEN-1	474	**ARTICLE S5** – S5.487 – S5.492 **APPENDIX S30** – Arts. 1, 2, 3, 4, 6 & 7 **APPENDIX S30A** – Arts. 1, 2, 3, 4, 6 & 7 **RESOLUTION 53 (WRC-97)** **RESOLUTION 518 (Orb-88)** **RESOLUTION 519 (Orb-88)** **RESOLUTION 524 (WARC-92)** **RESOLUTION 531 (WRC-97)** **RESOLUTION 534 (WRC-97)** **RESOLUTION [GT PLEN-1/3] (WRC-2000)**

Annex: 31 pages

ARTICLE S5

Frequency allocations

MOD

S5.487 In the band 11.7-12.5 GHz in Regions 1 and 3, the fixed, fixed-satellite, mobile, except aeronautical mobile, and broadcasting services, in accordance with their respective allocations, shall not cause harmful interference to, or claim protection from, broadcasting-satellite stations operating in accordance with the provisions of the Regions 1 and 3 Plan in Appendix **S30**.

MOD

S5.492 Assignments to stations of the broadcasting-satellite service which are in conformity with the appropriate regional Plan or included in the Regions 1 and 3 List 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 the Plan or the List, as appropriate.

MOD

APPENDIX S30*

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)

MOD

ARTICLE 1

General definitions

1 For the purposes of this Appendix, the following terms shall have the meanings defined below:

1.1 *1977 Conference:* World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in the Frequency Bands 11.7-12.2 GHz (in Regions 2 and 3) and 11.7-12.5 GHz (in Region 1), called in short World Broadcasting-Satellite Administrative Radio Conference (Geneva, 1977).

1.2 *1983 Conference:* Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz and Associated Feeder Links in the Frequency Band 17.3-17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC Sat-R2) (Geneva, 1983).

1.3 *1985 Conference:* First Session of the Word Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1985), called in short WARC Orb-85.

1.3A *1997 Conference:* World Radiocommunication Conference (Geneva, 1997), called in short WRC-97.

1.3B *2000 Conference:* World Radiocommunication Conference (Istanbul, 2000), called in short WRC-2000.

1.4 *Regions 1 and 3 Plan:* 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 contained in this Appendix.

ADD

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* 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.

1.5 *Region 2 Plan:* The Plan for the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz in Region 2 contained in this Appendix, together with any modifications resulting from the successful application of the procedures of Article 4 of this Appendix.

1.6 *Frequency assignment in conformity with the Plan:*

– Any frequency assignment which appears in the Regions 1 and 3 Plan; *or*

– Any frequency assignment which appears in the Region 2 Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

1.7 *Additional use in Regions 1 and 3:* For the application of the provisions of this Appendix, additional uses in Regions 1 and 3 are:

a) use of assignments with characteristics different from those appearing in the Regions 1 and 3 Plan and which are capable of causing more interference than the corresponding entries in the Plan;

b) use of assignments in addition to those appearing in the Plan.

1.8 *Regions 1 and 3 List of additional uses (hereafter called in short "the List"):* The list of assignments for additional uses in Regions 1 and 3 as established by WRC-2000, as updated following the successful application of the procedure of § 4.1 of Article 4 of this Appendix.

ARTICLE 2

Frequency bands

ADD

2.2 The use of the guardbands of the Plans in this Appendix, as defined in § 3.9 of Annex 5 to this Appendix, to provide space operations functions in accordance with No. **S1.23** in support of the operation of GSO BSS networks, shall be coordinated with the assignments subject to these Plans using the provisions of Article 7 of this Appendix. Coordination among assignments intended to provide these functions and services not subject to a Plan shall be effected using the provisions of No. **S9.7** and the associated provisions of Articles **S9** and **S11**. Coordination of modifications to the Region 2 Plan or assignments to be included in the Regions 1 and 3 List with assignments intended to provide these functions shall be effected using § 4.1.1 *e)*, 4.2.3 *e)* or 4.2.3 *f)* as appropriate, of Article 4 of this Appendix.

ARTICLE 3

Execution of the provisions and associated Plans

MOD

3.1 The Member States 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

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[1] Such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with No. **S5.492**.

3.2 The Member States shall not change the characteristics specified in the Region 1 and Region 3 Plans 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.

ADD

3.3 The Plan for Regions 1 and 3 is based on national coverage from the geostationary-satellite orbit. The associated procedures contained in this Appendix are intended to promote long-term flexibility of the Plan and to avoid monopolization of the planned bands and orbit by a country or a group of countries.

MOD

ARTICLE 4

Procedures for modifications to the Region 2 Plan or for additional uses in Regions 1 and 3[2*bis*]

[2*bis*] The provisions of Resolution **49 (WRC-2000)** apply.

4.1 Provisions applicable to Regions 1 and 3

4.1.1 An administration proposing to include a new or modified assignment in the List shall seek the agreement of those administrations whose services are considered to be affected, i.e. administrations[3]:

a) of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service which is included in the Regions 1 and 3 Plan with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

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[3] [The provisions of Resolution 53 (Rev.WRC-2000) apply.]

b) of Regions 1 and 3 having a frequency assignment included in the List or for which complete Appendix **S4** information has been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

c) of Region 2 having a frequency assignment to a space station in the broadcasting-satellite service which is in conformity with the Region 2 Plan, or in respect of which proposed modifications to that Plan have been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

d) having no frequency assignment in the broadcasting-satellite service with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed assignment, 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 proposed assignment exceeds the prescribed limit as a result of the proposed assignment; *or*

e) 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 International Frequency Register (Master Register) or for which complete coordination information has been received by the Bureau for coordination under No. **S9.7**, or under § 7.1 of this Appendix.

4.1.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

4.1.3 An administration intending to include a new or modified assignment in the List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix **S4**. An assignment in the List shall lapse if it is not brought into use by that date.[4a]

4.1.4 If the information received by the Bureau under § 4.1.3 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

4.1.5 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected. The Bureau shall publish, in a special section of its International Frequency Information Circular (IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, FSS networks and BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the assignment.

[4a The provisions of Resolution 533 (Rev.WRC-2000) apply.]

4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the special section of the IFIC drawing their attention to the information it contains, and shall send them the results of its calculations.

4.1.7 An administration which considers that it should have been identified in the publication referred to under § 4.1.5 above shall, within four months of the date of publication of its relevant IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.1.5.

4.1.8 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

4.1.9 Comments from administrations on the information published pursuant to § 4.1.5 should be sent either directly to the administration proposing the modification or through the Bureau. In any event, the Bureau shall be informed that comments have been made.

4.1.10 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of its IFIC referred to in § 4.1.5 shall be deemed to have agreed to the proposed assignment. This time-limit may be extended:

– for an administration that has requested additional information under § 4.1.8, by up to three months; or

– for an administration that has requested the assistance of the Bureau under § 4.1.21, by up to three months following the date at which the Bureau communicated the result of its action.

4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.1.12 If no comments have been received on the expiry of the periods specified in § 4.1.10, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.1.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.1.14 Where the proposed assignment involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.1.15 The Bureau shall publish in a special section of its IFIC the information received under § 4.1.12, together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall be included in the List.

4.1.16 In case of disagreement on the part of an administration whose agreement has been sought, the requesting administration should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.1.17 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by either one of these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.1.18 If, in spite of the application of §§ 4.1.16 and 4.1.17, there is still continuing disagreement and the notifying administration insists that the proposed assignment be included in the List, the Bureau shall enter the assignment provisionally in the List with an indication of those administrations whose assignments were the basis of the disagreement; however, the entry shall be changed from provisional to definitive recording in the List only if the Bureau is informed that the new assignment in the List has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made.

4.1.19 Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. **S11.44** (for non-planned services), or in § 4.1 (for assignments in the List or having initiated the procedure under § 4.1), as appropriate, then the status of the assignment in the List shall be reviewed accordingly.

4.1.20 Should harmful interference be caused by an assignment included in the List under § 4.1.18 to any recorded assignment in the Master Register which was the basis of the disagreement, the administration using the frequency assignment included in the List under § 4.1.18 shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

4.1.21 An administration may, at any stage in the procedure described, or before applying it, request the assistance of the Bureau.

4.1.22 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Bureau.

4.1.23 When a frequency assignment included in the List is no longer required, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a special section of its IFIC and delete the assignment from the List.

4.1.24 No assignment in the List shall have a period of operation exceeding 15 years, counted from the date of bringing into use, or 2 June 2000, whichever is later. Upon request by the responsible administration received by the Bureau at the latest three years before the expiry of this period, this period may be extended by up to 15 years, on condition that all the characteristics of the assignment remain unchanged.

4.1.25 Where an administration already having included in the List two assignments (not including those systems notified on behalf of a group of named administrations and included in the List by WRC-2000), in the same channel and covering the same service area, proposes to include in the List a new assignment in the same channel over this same service area, it shall apply the following in respect of another administration which has no assignment in the List in the same channel and which proposes to include in the List a new assignment:

a) if the agreement of the former administration is required following the application of § 4.1 by the latter administration, in order to protect the new assignment proposed by the former administration from interference caused by the assignment proposed by the latter administration, both administrations shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

b) in case of continuing disagreement, and if the former administration has not communicated to the Bureau the information specified in Annex 2 to Resolution **49 (WRC-2000)**, this administration shall be deemed to have given its agreement to inclusion in the List of the assignment of the latter administration.

4.1.26 This procedure may be applied by the administration of a new ITU Member State in order to include new assignments in the List. Upon completion of the procedure, the next world radiocommunication conference may be requested to consider, among the assignments included in the List after the successful completion of this procedure, the inclusion in the Plan of up to 10 channels (for Region 1) and up to 12 channels (for Region 3), over the national territory of the new Member State.

4.1.27 When an administration has successfully applied this procedure and received all the agreements* required to include in the List assignments over its national territory, at an orbital location and/or in channels different from those appearing in the Plan for its country, it may request the next world radiocommunication conference to consider the inclusion in the Plan of up to 10 (for Region 1) and up to 12 (for Region 3) of these assignments, in replacement of its assignments appearing in the Plan.

4.1.28 The List, as updated, shall be published periodically by the Bureau.

4.1.29 New or modified assignments in the List shall be limited to digital modulation.

4.2 Provisions applicable to Region 2

4.2.1 When an administration intends to make a modification[5a] to the Region 2 Plan, i.e.:

a) to modify the characteristics of any of its frequency assignments to a space station in the broadcasting-satellite service which are shown in the Region 2 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 Region 2 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,

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* In such a case, § 4.1.18 does not apply.

[5a] For assignments using analogue modulation, the intention not to employ energy dispersal in accordance with § 3.18 of Annex 5 shall be treated as a modification and thus subject to the appropriate provisions of this Article.

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).

4.2.2 The term “frequency assignment in conformity with the Plan” used in this and the following Articles is defined in Article 1.

4.2.3 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 Plan, or the inclusion of a new frequency assignment in that Plan, shall seek the agreement of those administrations:

a) of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service which is in conformity with the Regions 1 and 3 Plan with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

b) of Regions 1 and 3 having a frequency assignment included in the List or for which complete Appendix **S4** information has been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

c) of Region 2 having a frequency assignment in the Region 2 Plan to a space station in the broadcasting-satellite service in the same or adjacent channel which is in conformity with that Plan, or in respect of which proposed modifications to that Plan have been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article; *or*

d) 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*

e) 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 for which complete coordination information has been received by the Bureau for coordination under No. **S9.7** or under § 7.1 of this Appendix; *or*

f) 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 a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, and:

i) which is recorded in the Master Register; *or*

ii) for which complete coordination information has been received by the Bureau for coordination under No. **S9.7**[7a] or under § 7.1 of this Appendix;

[7a] Or under Resolution **33 (Rev.WRC-97)** for assignments for which the API or the request for coordination has been received by the Bureau prior to 1 January 1999.

g) whose services are considered to be affected.

4.2.4 Not used.

4.2.5 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

4.2.6 An administration intending to make a modification to the Region 2 Plan shall send to the Bureau, not earlier than eight years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in Appendix **S4**. Modifications to that Plan involving additions under § 4.2.1 *b)* shall lapse if the assignment is not brought into use by that date.

4.2.7 If the information received by the Bureau under § 4.2.6 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

4.2.8 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected within the meaning of § 4.2.3. The Bureau shall publish, in a special section of its IFIC, the complete information received under § 4.2.6, together with the names of the affected administrations, FSS networks and BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the Region 2 Plan.

4.2.9 The Bureau shall send a telegram/fax to the administrations listed in the special section of its IFIC drawing their attention to the information it contains and shall send them the results of its calculations.

4.2.10 An administration which considers that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Bureau to include its name in the list. The Bureau shall study this request on the basis of Annex 1 and shall send a copy of the request, with an appropriate recommendation, to the administration proposing the modification to the Region 2 Plan.

4.2.11 Any modification to a frequency assignment which is in conformity with the Region 2 Plan or any inclusion in that Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 shall be subject to the agreement of all administrations whose services are considered to be affected.

4.2.12 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

4.2.13 Comments from administrations on the information published pursuant to § 4.2.8 should be sent either directly to the administration proposing the modification or through the Bureau. In any event, the Bureau shall be informed that comments have been made.

4.2.14 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the IFIC referred to in § 4.2.8 shall be deemed to have agreed to the proposed assignment. This time-limit may be extended by up to three months for an administration that has requested additional information under § 4.2.12 or for an administration that has requested the assistance of the Bureau under § 4.2.22. In the latter case, the Bureau shall inform the administrations concerned of this request.

4.2.15 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.2.16 If no comments have been received on the expiry of the periods specified in § 4.2.14, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 of this Appendix, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.2.17 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.2.18 When the proposed modification to the Region 2 Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.2.19 The Bureau shall publish in a special section of its IFIC the information received under § 4.2.16 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the Region 2 Plan and will be considered as a frequency assignment in conformity with the Plan.

4.2.20 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement on the part of an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.2.21 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.2.22 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau.

4.2.23 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Bureau.

4.2.24 Cancellation of frequency assignments

When a frequency assignment in conformity with Region 2 Plan is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a special section of its IFIC and delete the assignment from the Region 2 Plan.

4.2.25 Master copy of the Region 2 Plan

4.2.25.1 The Bureau shall maintain an up-to-date master copy of the Region 2 Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure set out in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference and those derived from all modifications to the Plan as a result of the successful completion of the modification procedure set out in this Article.

4.2.25.2 An up-to-date version of the Region 2 Plan shall be published by the Secretary-General when justified by the circumstances.

MOD

ARTICLE 6

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to terrestrial stations or to earth stations in the fixed-satellite service (Earth-to-space) affecting frequency assignments to broadcasting-satellite stations in the 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)[5]

6.1 The provisions of No. **S9.19** and the associated provisions under Articles **S9** and **S11** are applicable in respect of frequency assignments to broadcasting-satellite stations in the 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:

a) to transmitting terrestrial stations in the band 11.7-12.7 GHz in all Regions;

b) to transmitting earth stations in the fixed-satellite service in the band 12.5-12.7 GHz (in Region 1).

6.2 In applying the procedures referred to in § 6.1, the provisions of Appendix **S5** are replaced by the following:

6.2.1 These procedures are to be applied in respect of administrations whose territory is included within the service area associated with:

a) assignments in conformity with the appropriate Regional Plan in Appendix **S30**;

b) assignments included in the Regions 1 and 3 List;

c) assignments for which the procedure of Article 4 of this Appendix has been initiated, as from the date of receipt of the complete Appendix **S4** information under §§ 4.1 or 4.2.

6.2.2 The criteria to be applied are those given in Annex 3 to this Appendix.

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[5] These procedures do not replace the procedures prescribed for terrestrial stations in Articles **S9** and **S11**.

MOD

ARTICLE 7

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in the 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), and to stations in the broadcasting-satellite service in the band 12.5-12.7 GHz (in Region 3) when frequency assignments to broadcasting-satellite stations in the 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 are involved[8]

7.1 The provisions of **S9.7**[9] and the associated provisions under Articles **S9** and **S11** are applicable in respect of frequency assignments to broadcasting-satellite stations in the 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:

a) to transmitting space stations in the fixed-satellite service in the 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); and

b) to transmitting space stations in the broadcasting-satellite service in the band 12.5-12.7 GHz (in Region 3).

7.2 In applying the procedures referred to in § 7.1, the provisions of Appendix **S5** are replaced by the following:

7.2.1 The frequency assignments to be taken into account are:

a) the assignments in conformity with the appropriate Regional Plan in Appendix **S30**;

b) the assignments included in the Regions 1 and 3 List;

c) the assignments for which the procedure of Article 4 of this Appendix has been initiated, as from the date of receipt of the complete Appendix **S4** information under § 4.1 or 4.2.

7.2.2 The criteria to be applied are those given in Annex 4 to this Appendix.

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[8] These provisions do not replace the procedures prescribed in Articles **S9** and **S11** when stations other than those in the planned broadcasting-satellite service are involved.

[9] The provisions of Resolution **33 (Rev.WRC-97)** are applicable to space stations in the BSS for which the API or the request for coordination has been received by the Bureau prior to 1 January 1999.

APPENDIX S30A

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

MOD

ARTICLE 1

General definitions

1.1 *Regions 1 and 3 feeder link Plan:* The Plan for the feeder-links in the frequency bands 14.5-14.8 GHz[2] and 17.3-18.1 GHz for the broadcasting-satellite service in Regions 1 and 3 contained in this Appendix, hereinafter referred to as the Regions 1 and 3 Plan.

1.2 *Region 2 feeder link Plan:* The Plan for the feeder-links in the frequency band 17.3-17.8 GHz for the broadcasting-satellite service in Region 2 contained in this Appendix, together with any modifications resulting from the successful application of the procedure of Article 4 of this Appendix, hereinafter referred to as the Region 2 Plan.

1.3 *Frequency assignment in conformity with the Plans:*

– Any frequency assignment for a receiving space station or transmitting earth station which appears in the Regions 1 and 3 Plan; *or*

– Any frequency assignment for a receiving space station or transmitting earth station which appears in the Region 2 Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

1.4 *1983 Conference:* Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz and Associated Feeder-links in the Frequency Band 17.3-17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC Sat-R2) (Geneva, 1983).

1.5 *1985 Conference:* 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), called in short WARC Orb-85.

1.6 *1988 Conference:* Second Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (Geneva, 1988), called in short WARC Orb-88.

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[2] This use of the band 14.5-14.8 GHz is reserved for countries outside Europe.

1.7A *1997 Conference:* World Radiocommunication Conference (Geneva, 1997), called in short WRC-97.

1.7B *2000 Conference:* World Radiocommunication Conference (Istanbul, 2000), called in short WRC-2000.

1.8 *Additional use in Regions 1 and 3*: For the application of the provisions of this Appendix, additional uses in Regions 1 and 3 are:

a) use of assignments with characteristics different from those appearing in the Regions 1 and 3 Plan and which are capable of causing more interference than the corresponding entries in the Plan;

b) use of assignments in addition to those appearing in the Plan.

1.9 *Regions 1 and 3 List of additional uses (hereafter called in short "the List")*: The list of assignments for additional uses in Regions 1 and 3 as established by WRC-2000, as updated following the successful application of the procedure of § 4.1 of Article 4 of this Appendix.

ARTICLE 2

Frequency bands

ADD

2.2 The use of the guardbands of the Plans in this Appendix, as defined in § 3.1 and 4.1 of Annex 3 to this Appendix, to provide space operations functions in accordance with No. **S1.23** in support of the operation of GSO BSS networks, shall be coordinated with the assignments subject to these Plans using the provisions of Article 7 of this Appendix. Coordination among assignments intended to provide these functions and services not subject to a Plan shall be effected using the provisions of No. **S9.7** and the associated provisions of Articles **S9** and **S11**. Coordination of modifications to the Region 2 Plan or assignments to be included in the Regions 1 and 3 List, with assignments intended to provide these functions shall be effected using § 4.1.1 *d)* of Article 4 of this Appendix.

MOD

ARTICLE 3

Execution of the provisions and associated Plans

3.1 The Member States 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.

3.2 The Member States shall not change the characteristics specified in the Region 1 and Region 3 Plans 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.

3.3 The procedures for the use of interim systems in Region 2 for feeder-links in the fixed-satellite service for the bands covered by this Appendix are given in Resolution **42 (Rev.Orb-88)**.

3.4 The Plan for Regions 1 and 3 is based on national coverage from the geostationary-satellite orbit. The associated procedures contained in this Appendix are intended to promote long-term flexibility of the Plan and to avoid monopolization of the planned bands and orbit by a country or a group of countries.

MOD

ARTICLE 4

Procedures for modifications to the Region 2 Plans or for additional uses in Regions 1 and 3

4.1 Provisions applicable to Regions 1 and 3

4.1.1 An administration proposing to include a new or modified assignment in the List shall seek the agreement of those administrations whose services are considered to be affected, i.e. administrations[1a,2a]:

a) of Regions 1 and 3 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service, in the same channel or an adjacent channel, which is included in the Regions 1 and 3 Plan; *or*

b) of Regions 1 and 3 having a feeder-link frequency assignment included in the List or for which complete Appendix **S4** information has been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

[1a] [The provisions of Resolution **53 (Rev.WRC-2000)** apply.]

[2a] Agreement with administrations having a frequency assignment in the bands 14.5-14.8 GHz or 17.7-18.1 GHz to a terrestrial station, or having a frequency assignment in the band 17.7-18.1 GHz to an earth station in the fixed-satellite service (space-to-Earth), or having a frequency assignment in the band 17.3-17.8 GHz in the broadcasting-satellite service shall be sought under No. **S9.17**, No. **S9.17A** or No. **S9.19**, respectively.

c) of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-satellite service which is in conformity with the Region 2 Plan, or in respect of which proposed modifications to that Plan have already been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

d) of Region 2 having a feeder-link frequency assignment in the band 17.8-18.1 GHz in the fixed-satellite service (Earth-to-space) to a space station in the broadcasting-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**, or under § 7.1 of this Appendix, with a necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment.

4.1.2 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

4.1.3 An administration intending to include a new or modified assignment in the List shall send to the Bureau, not earlier than eight years but preferably not later than two years before the date on which the assignment is to be brought into use, the relevant information listed in Appendix **S4**. An assignment in the List shall lapse if it is not brought into use by that date.[4a]

4.1.4 If the information received by the Bureau under § 4.1.3 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

4.1.5 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected. The Bureau shall publish, in a special section of its International Frequency Information Circular (IFIC), the complete information received under § 4.1.3, together with the names of the affected administrations, FSS networks and BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the assignment.

4.1.6 The Bureau shall send a telegram/fax to the administrations listed in the special section of its IFIC drawing their attention to the information it contains, and shall send them the results of its calculations.

4.1.7 An administration which considers that it should have been identified in the publication referred to under § 4.1.5 above shall, within four months of the date of publication of its relevant IFIC, and giving the technical reasons for so doing, request the Bureau to include its name in the publication. The Bureau shall study this information on the basis of Annex 1 and shall inform both administrations of its conclusions. Should the Bureau agree to the administration's request, it shall publish an addendum to the publication under § 4.1.5.

4.1.8 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

[4a The provisions of Resolution **533 (Rev.WRC-2000)** apply.]

4.1.9 Comments from administrations on the information published pursuant to § 4.1.5 should be sent either directly to the administration proposing the modification or through the Bureau. In any event, the Bureau shall be informed that comments have been made.

4.1.10 An administration that has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of its IFIC referred to in § 4.1.5 shall be deemed to have agreed to the proposed assignment. This time-limit may be extended:

– for an administration that has requested additional information under § 4.1.8, by up to three months, *or*

– for an administration that has requested the assistance of the Bureau under § 4.1.21, by up to three months following the date at which the Bureau communicated the result of its action.

4.1.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.1 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.1.12 If no comments have been received on the expiry of the periods specified in § 4.1.10, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the new or modified assignment may continue with the appropriate procedure in Article 5 and shall inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.1.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.1.14 Where the proposed assignment involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.1.15 The Bureau shall publish in a special section of its IFIC the information received under § 4.1.12, together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall be included in the List.

4.1.16 In case of disagreement on the part of an administration whose agreement has been sought, the requesting administration should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.1.17 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by either one of these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.1.18 If, in spite of the application of § 4.1.16 and 4.1.17, there is still continuing disagreement and the notifying administration insists that the proposed assignment be included in the List, the Bureau shall enter the assignment provisionally in the List with an indication of those administrations whose assignments were the basis of the disagreement; however, the entry shall be changed from provisional to definitive recording in the List only if the Bureau is informed that the new assignment in the List has been in use, together with the assignment which was the basis for the disagreement, for at least four months without any complaint of harmful interference being made.

4.1.19 Should the assignments that were the basis of the disagreement not be brought into use within the period specified in No. **S11.44** (for non-planned services), or in § 4.1 (for assignments in the List or having initiated the procedure under § 4.1), as appropriate, then the status of the assignment in the List shall be reviewed accordingly.

4.1.20 Should harmful interference be caused by an assignment included in the List under § 4.1.18 to any recorded assignment in the Master Register which was the basis of the disagreement, the administration using the frequency assignment included in the List under § 4.1.18 shall, upon receipt of advice thereof, immediately eliminate this harmful interference.

4.1.21 An administration may, at any stage in the procedure described, or before applying it, request the assistance of the Bureau.

4.1.22 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Bureau.

4.1.23 When a frequency assignment included in the List is no longer required, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a special section of its IFIC and delete the assignment from the List.

4.1.24 No assignment in the List shall have a period of operation exceeding 15 years, counted from the date of bringing into use, or 2 June 2000, whichever is later. Upon request by the responsible administration received by the Bureau at the latest three years before the expiry of this period, this period may be extended by up to 15 years, on condition that all the characteristics of the assignment remain unchanged.

4.1.25 Where an administration already having included in the List two assignments (not including those systems notified on behalf of a group of named administrations and included in the List by WRC-2000) in the same channel and covering the same service area, proposes to include in the List a new assignment in the same channel over this same service area, it shall apply the following in respect of another administration which has no assignment in the List in the same channel and which proposes to include in the List a new assignment:

a) if the agreement of the former administration is required following the application of § 4.1 by the latter administration, in order to protect the new assignment proposed by the former administration from interference caused by the assignment proposed by the latter administration, both administrations shall make every possible effort to resolve the difficulties by means of mutually acceptable adjustments to their networks;

b) in case of continuing disagreement, and if the former administration has not communicated to the Bureau the information specified in Annex 2 to Resolution **49 (WRC-2000)**, this administration shall be deemed to have given its agreement to inclusion in the List of the assignment of the latter administration.

4.1.26 This procedure may be applied by the administration of a new ITU Member State in order to include new assignments in the List. Upon completion of the procedure, the next world radiocommunication conference may be requested to consider, among the assignments included in the List after the successful completion of this procedure, the inclusion in the Plan of up to 10 channels (for Region 1) and up to 12 channels (for Region 3), over the national territory of the new Member State.

4.1.27 When an administration has successfully applied this procedure and received all the agreements* required to include in the List assignments over its national territory, at an orbital location and/or in channels different from those appearing in the Plan for its country, it may request the next world radiocommunication conference to consider the inclusion in the Plan of up to 10 (for Region 1) and up to 12 (for Region 3) of these assignments, in replacement of its assignments appearing in the Plan.

4.1.28 The List, as updated, shall be published periodically by the Bureau.

4.1.29 New or modified assignments in the List shall be limited to digital modulation.

4.2 Provisions applicable to Region 2

4.2.1 When an administration intends to make a modification to the Region 2 Plan, i.e.:

a) to modify the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the Region 2 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 Region 2 Plan a new frequency assignment in the fixed-satellite service; *or*

c) to cancel a frequency assignment in the fixed-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 and Resolution **42 (Rev.Orb-88)**).

4.2.2 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 Plan, or the inclusion of a new frequency assignment in that Plan, shall seek the agreement of those administrations[3*bis*,3*ter*]:

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* In such a case, § 4.1.18 does not apply.

3*bis* Agreement with administrations having a frequency assignment in the bands 17.7-17.8 GHz to a terrestrial station or to an earth station in the fixed-satellite service (space-to-Earth) shall be sought under No. **S9.17** or No. **S9.17A,** respectively.

3*ter* Agreement with administrations having a frequency assignment in the band 17.3-17.8 GHz to an earth station in the broadcasting-satellite service shall be sought under No. **S9.19**.

a) having an assignment for feeder-links in the fixed-satellite service (Earth-to-space) which is in conformity with the Regions 1 and 3 Plan with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

b) of Regions 1 and 3 having a feeder-link frequency assignment included in the List or for which complete Appendix **S4** information has been received by the Bureau in accordance with the provisions of § 4.1.3 of this Article, and any portion of which falls within the necessary bandwidth of the proposed assignment; *or*

c) of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the Plan have been received by the Bureau in accordance with the provisions of § 4.2.6 of this Article;

d) which are considered affected.

4.2.3 Not used.

4.2.4 The services of an administration are considered to be affected when the limits shown in Annex 1 are exceeded.

4.2.5 The agreement referred to in § 4.2.2 is not required when an administration proposes to bring into use, with characteristics appearing in the Plan, a fixed feeder-link earth station in the band 17.3-17.8 GHz or a transportable feeder-link earth station in the band 17.3-17.7 GHz. Administrations may communicate to the Bureau the characteristics of such earth stations for inclusion in the Plan.

4.2.6 An administration intending to make a modification to the Region 2 Plan shall send to the Bureau, not earlier than eight years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in Appendix **S4**. Modifications to that Plan involving additions under § 4.2.1 *b)* shall lapse if the assignment is not brought into use by that date.

4.2.7 If the information received by the Bureau under § 4.2.6 is found to be incomplete, the Bureau shall immediately seek from the administration concerned any clarification required and information not provided.

4.2.8 The Bureau shall determine, on the basis of Annex 1, the administrations whose frequency assignments are considered to be affected within the meaning of § 4.2.2. The Bureau shall publish, in a special section of its IFIC, the complete information received under § 4.2.6, together with the names of the affected administrations, FSS and BSS networks and feeder-link BSS assignments, as appropriate. The Bureau shall immediately send the results of its calculations to the administration proposing the modification to the Region 2 Plan.

4.2.9 The Bureau shall send a telegram/fax to the administrations listed in the special section of its IFIC drawing their attention to the information it contains and shall send them the results of its calculations.

4.2.10 An administration which considers that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Bureau to include its name in the list. The Bureau shall study this request on the basis of Annex 1 and shall send a copy of the request, with an appropriate recommendation, to the administration proposing the modification to the Region 2 Plan.

4.2.11 Any modification to a frequency assignment which is in conformity with the Region 2 Plan or any inclusion in that Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 shall be subject to the agreement of all affected administrations.

4.2.12 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Bureau of such requests.

4.2.13 Comments from administrations on the information published pursuant to § 4.2.8 should be sent either directly to the administration proposing the modification or through the Bureau. In any event, the Bureau shall be informed that comments have been made.

4.2.14 An administration which has not notified its comments either to the administration seeking agreement or to the Bureau within a period of four months following the date of the IFIC referred to in § 4.2.8 shall be deemed to have agreed to the proposed modification. This time-limit may be extended by up to three months for an administration which has requested additional information under § 4.2.12 or for an administration which has requested the assistance of the Bureau under § 4.2.22. In the latter case, the Bureau shall inform the administrations concerned of this request.

4.2.15 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of § 4.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.2.16 If no comments have been received on the expiry of the periods specified in § 4.2.14, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 of this Appendix, and shall so inform the Bureau, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.2.17 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.2.18 When the proposed modification to the Region 2 Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.2.19 The Bureau shall publish in a special section of its IFIC the information received under § 4.2.16 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the Region 2 Plan and will be considered as a frequency assignment in conformity with the Plan.

4.2.20 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement on the part of an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.2.21 If no agreement is reached between the administrations concerned, the Bureau shall carry out any study that may be requested by these administrations; the Bureau shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.2.22 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Bureau.

4.2.23 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Bureau.

4.2.24 Cancellation of frequency assignments

When a frequency assignment in conformity with the Region 2 Plan is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Bureau. The Bureau shall publish this information in a special section of its IFIC and delete the assignment from the Region 2 Plan.

4.2.25 Master copy of the Region 2 Plan

4.2.25.1 The Bureau shall maintain an up-to-date master copy of the Region 2 Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure set out in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference and those derived from all modifications to the Plan as a result of the successful completion of the modification procedure set out in this Article.

4.2.25.2 An up-to-date version of the Region 2 Plan shall be published by the Secretary-General when justified by the circumstances.

MOD

ARTICLE 6

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to receiving terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the band 17.7-17.8 GHz, when frequency assignments to feeder-link transmitting earth stations for the broadcasting-satellite service in conformity with the Regions 1 and 3 Plan or the Region 2 Plan are involved

6.1 Administrations planning to implement assignments for terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the band 17.7-17.8 GHz should evaluate the level of interference assessed on the basis of coordination contours calculated in accordance with Appendix **S7**[5], which might be caused by a feeder-link earth station located on the territory of another administration and included in the service area of an assignment to a BSS feeder-link space station which is in conformity with the appropriate Regional Plan. Should the administration planning terrestrial stations find that interference may be caused by such a feeder-link earth station, it may request the administration responsible for the feeder-link earth station to indicate the geographical coordinates, the antenna characteristics and the horizon elevation angle around its existing and planned feeder-link earth stations.

6.2 In the case of Region 2, when the entry in the Plan contains information on specific earth stations, this shall be used in the interference calculations referred to in § 6.1 above. Where such information is not contained in the Region 2 Plan, an administration which receives a request under § 6.1 shall, within a period of three months, communicate the details of the feeder-link earth stations to the administration planning the terrestrial station, and to the Bureau in order to update the Plan.

6.3 In the case of Regions 1 and 3, an administration which receives a request under § 6.1 shall, within a period of four months, communicate the details of the feeder-link stations to the administration planning the terrestrial station, and to the Bureau for information.

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[5] In the case of Regions 1 and 3, the feeder-link earth-station power to be taken into account is obtained by adding the values specified in columns [13 and 14] of the Plan.

6.4 If, at the end of a period of four months, the administration responsible for the terrestrial station does not receive a reply, it may request the assistance of the Bureau.

6.5 If the administration responsible for the feeder-link earth station does not communicate to the Bureau, within a period of four months, the information requested under § 6.1, this administration shall only implement its feeder-link earth station provided it does not cause harmful interference to the terrestrial station under consideration.

6.6 If, as a result of the application of this Article, an agreement is reached with the administration responsible for the feeder-link earth station or no comments have been received, the administration responsible for the terrestrial station may notify this station under Article **S11** for recording in the Master Register. A remark shall be included indicating either that an agreement has been reached or that no comments have been received.

MOD

ARTICLE 7

Coordination, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service (space-to-Earth) in Regions 1, 2 and 3 in the band 17.7-18.1 GHz, to stations in the fixed-satellite service (Earth-to-space) in Region 2 in the band 17.8-18.1 GHz and to stations in the broadcasting-satellite service in Region 2 in the band 17.3-17.8 GHz when frequency assignments to feeder-links for broadcasting-satellite stations in the 17.3-18.1 GHz band in Regions 1 and 3 or in the band 17.3-17.8 GHz in Region 2 are involved

Section I – Coordination of transmitting space or earth stations in the fixed-satellite service or transmitting space stations in the broadcasting-satellite service with assignments to BSS feeder links

7.1 The provisions of No. **S9.7**[5*bis*] and the associated provisions under Articles **S9** and **S11** are applicable to transmitting space stations in the fixed-satellite service in the band 17.7-18.1 GHz, to transmitting earth stations in the fixed-satellite service in Region 2 in the band 17.8-18.1 GHz and to transmitting space stations in the broadcasting-satellite service in Region 2 in the band 17.3-17.8 GHz.

5*bis* The provisions of Resolution **33 (Rev.WRC-97)** are applicable to space stations in the BSS for which the API or the request for coordination has been received by the Bureau prior to 1 January 1999.

7.2 In applying the procedures referred to in § 7.1, the provisions of Appendix **S5** are replaced by the following:

7.2.1 The frequency assignments to be taken into account are:

a) the assignments in conformity with the appropriate Regional Plan in Appendix **S30A**;

b) the assignments included in the Regions 1 and 3 List;

c) the assignments for which the procedure of Article 4 of this Appendix has been initiated as from the date of receipt of the complete Appendix **S4** information under § 4.1 or 4.2.

7.2.2 The criteria to be applied are those given in Annex 4 to this Appendix.

Section II – Coordination with assignments in conformity with the appropriate Regional Plan in Appendix S30A

7.3 Administrations planning to implement assignments for receiving earth stations in all Regions in the band 17.7-18.1 GHz in the fixed-satellite service (space-to-Earth) or in the band 17.3-17.8 GHz in the broadcasting-satellite service should evaluate the level of interference, assessed on the basis of coordination contours calculated in accordance with Appendix **S7**, which might be caused by a feeder-link earth station located on the territory of another administration and included in the service area of an assignment to a BSS feeder-link space station which is in conformity with the appropriate Regional Plan. Should the administration planning receiving earth stations find that interference may be caused by such a feeder-link earth station, it may request the administration responsible for the feeder-link earth station to indicate the geographical coordinates, the antenna characteristics and the elevation angle of the horizon around its existing and planned feeder-link earth stations.

7.4 In the case of Region 2, when the entry in the Plan contains information on specific earth stations this shall be used in the interference calculations mentioned in § 7.2 above. Where such information is not contained in the Plan an administration which receives a request under § 7.2 shall, within a period of four months, communicate the details of the feeder-link earth stations to the administration planning the receiving earth station, and to the Bureau in order to update the Plan.

7.5 In the case of Regions 1 and 3, an administration which receives a request under § 7.2 shall, within a period of four months, communicate the details of the feeder-link earth stations to the administration planning the receiving earth station, and to the Bureau for information.

7.6 If, at the end of the period of four months, the administration responsible for the fixed-satellite or broadcasting-satellite receiving earth station(s) does not receive a reply, it may request the assistance of the Bureau.

7.7 If the administration responsible for the feeder-link earth stations does not communicate to the Bureau, within a period of four months, the information requested under § 7.2, this administration shall only implement its feeder-link earth station provided it does not cause harmful interference to the fixed-satellite or broadcasting-satellite earth station(s) under consideration.

7.8 If, as a result of the application of this Article, an agreement is reached with the administration responsible for the feeder-link earth station or no comments have been received, and where the station is recorded in the Master Register in accordance with Article **S11**, the Bureau shall enter a remark indicating either that an agreement has been reached or that no comments have been received.

Section III – Coordination with assignments in the Regions 1 and 3 List, or for which the procedure of Article 4 of Appendix S30A has been initiated

7.9 The provisions of No. **S9.17A** and the associated provisions under Articles **S9** and **S11** and Appendix **S5** are applicable to FSS and BSS receiving earth stations, in respect of frequency assignments to transmitting BSS feeder-link earth stations, in the fixed-satellite service in the bands 17.3-18.1 GHz in Regions 1 and 3 and 17.3-17.8 GHz in Region 2 which correspond to assignments to receiving BSS feeder-link space stations already included in the Regions 1 and 3 List, or for which the procedure of Article 4 of Appendix S30A has been initiated, as from the date of receipt of the complete Appendix **S4** information.

RESOLUTION 53 (Rev.WRC-2000)

Updating of the "Remarks" columns in the tables of Article 9A of Appendix S30A and Article 11 of Appendix S30 to the Radio Regulations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that this conference has adopted new methodologies and criteria for the calculation of compatibility between the WRC-2000 Regions 1 and 3 Plans in Appendices **S30/S30A** and other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan, and that these methodologies and criteria are included in, or referenced in, Article 11 of Appendix **S30** and Article 9A of Appendix **S30A** and in the Annexes to Appendices **S30/S30A**;

b) that the Regions 1 and 3 downlink Plan (and the associated Regions 1 and 3 feeder-link Plan) were not analysed to identify any incompatibility with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan during this conference using the revised criteria it adopted;

c) that existing systems* and Part B** systems included in the Regions 1 and 3 downlink and feeder-link Plans as established by this conference have already been determined to be compatible with other services having primary allocations in the Plan bands in all three Regions and with the Region 2 Plan;

d) that, by inclusion of symbols in the "Remarks" columns of Article 9A to Appendix **S30A** and Article 11 of Appendix **S30** and their associated Notes explaining the nature of entries in the "Remarks" column, a mechanism is available to identify potential incompatibilities, both in terms of causing interference and receiving interference, that shall be subject to a coordination process before the assignments concerned may be brought into service;

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* Wherever the term "existing" is used in this document, it refers to notified assignments that are in conformity with Appendices S30 and S30A, which have been brought into use and for which the date of bringing into use has been confirmed to the Bureau before 1700 hours (Istanbul time) on 12 May 2000.

** Wherever the term "Part B" is used in this document, it refers to assignments for which the procedures of Article 4 of Appendices **S30** and **S30A** have been successfully completed and for which the due diligence information (when required) has been provided before 1700 hours (Istanbul time) on 12 May 2000, but which have not been brought into use and/or for which the date of bringing into use has not been confirmed to the Bureau.

e) that, in order to analyse the effect of assignments that have not been fully processed, it is necessary to process the assignments which were received prior to this conference,

recognizing

a) that the integrity of the Region 2 Plan and its associated provisions must be preserved, by providing the same protection to the assignments contained in that Plan as is now received under the relevant provisions of the Radio Regulations, and by not requiring more protection from assignments in the Region 2 Plan than that provided under the Radio Regulations;*

b) that the required compatibility between BSS in Regions 1 and 3 and the other services in all three Regions must be ensured;

c) that the Bureau requires clear instructions from this conference on how to complete the analyses and to finalize the entries to be included in the "Remarks" column of both Article 9A of Appendix **S30A** and Article 11 of Appendix **S30**;

d) that the instructions to the Bureau shall take effect on [3 June 2000],

resolves

1 that the Bureau, using the methodology and criteria adopted at this conference, shall complete the required analyses based on the following Notes explaining the nature of the "Remarks" column entries: Notes 3 to 7 in Section 9A.2 of Article 9A of Appendix **S30A** and Notes 5 to 7 in Section 11.2 of Article 11 of Appendix **S30**;

2 that the Radiocommunication Bureau shall publish, after the conference, the results of its analyses together with its related conclusions, in a circular letter;

3 that, once the circular letter referred to in *resolves* 2 has been sent, administrations will have a period of 120 days to decide whether they do or do not wish to continue appearing as "affected or affecting administrations". In the case of a request by an administration appearing in a remark as an affecting administration, its deletion from the remark is subject to the agreement of the affected administration. The Bureau shall send a reminder to all administrations 45 days before the expiry of the above-mentioned deadline in the form of a circular telefax requesting comment/reply. If no reply is received from administrations within that period, it will be taken that there is no need to make any change;

* WRC-2000 decided to apply the procedure of Section 3 of Annex 1 to Appendix **S30** and Section 5 of Annex 1 to Appendix **S30A** in order to preserve this integrity.

4 that the Bureau shall report the results of its review in a further circular letter containing the final lists of administrations to be included in the modified "Remarks" columns of the WRC-2000 Regions 1 and 3 Plans;

5 that the coordination requirements identified in the circular letter referenced in *resolves* 4 shall apply provisionally from the date of that circular letter until the remarks are included in the Radio Regulations by a competent conference;

6 that any request for notification of an assignment included in the Regions 1 and 3 downlink Plan or the Regions 1 and 3 feeder-link Plan adopted at WRC-2000 which may be received before the date of the circular letter mentioned in *resolves* 4 will be subject to an examination by the Bureau with respect to its compatibility with other services having primary allocations in the planned bands in all three Regions and with the Region 2 Plan, using the methodology and criteria adopted at this conference,

instructs the Director of the Radiocommunication Bureau

to include the results of this analysis in his report to the next world radiocommunication conference.

SUP

Res. 518 (Orb-88)	Country/geographical area symbols used in Appendices **S30/30** and **S30A/30A**

SUP

Res. 519 (Orb-88)	Possible extension to Regions 1 and 3 of provisions for interim systems

SUP

Res. 524 (WRC-94)	Future consideration of the Plans for the broadcasting-satellite service in the band 11.7-12.5 GHz (Region 1) and the band 11.7-12.2 GHz (Region 3) in Appendix **S30/30** and the associated feeder-link Plans in Appendix **S30A/30A**

SUP

Res. 531 (WRC-95)	Review of Appendices **S30/30** and **S30A/30A** of the Radio Regulations

SUP

Res. 534 (WRC-97)	Implementation of Annex 5 to Appendix **S30** and Annex 3 to Appendix **S30A** of the Radio Regulations

ADD

RESOLUTION [GT PLEN-1/3] (WRC-2000)

Sharing procedures and criteria between receiving earth stations in the broadcasting-satellite service and transmitting earth stations or terrestrial stations in frequency bands allocated to the broadcasting-satellite service and the fixed-satellite service (Earth-to-space) or to terrestrial services

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that receiving earth stations in the broadcasting-satellite service are ubiquitously deployed throughout the service area of the associated satellite network and therefore cannot be coordinated or notified on the basis of specific earth stations;

b) that Nos. **S9.17** and **S9.17A** and the associated provisions in Article **S11** provide for the coordination and notification of specific earth stations with terrestrial stations or earth stations only;

c) that transmitting earth stations or terrestrial stations sharing spectrum with the broadcasting-satellite service are required to coordinate with receiving earth stations in this service under No. **S9.19** of the Radio Regulations;

d) that No. **S9.19** was introduced in the Radio Regulations by WRC-97 as a new provision, without specific criteria for sharing between these services;

e) that this conference has modified No. **S9.19** to include the coordination of earth stations in opposite directions of transmission and the protection of typical earth stations in the broadcasting-satellite service;

f) that the harmonious development of terrestrial and space services in the bands allocated to the broadcasting-satellite service may be impeded by the lack of suitable procedures and associated sharing criteria;

g) that Appendix **S7** and Annex 3 to Appendix **S30** provide sharing criteria that may be reviewed and adjusted in order to cover the sharing situations referred to above,

resolves to invite ITU-R

to undertake, as a matter of urgency, and complete in time for consideration by WRC-03, the appropriate regulatory, operational and technical studies in the bands allocated to the broadcasting-satellite service and the fixed-satellite service (Earth-to-space) or to terrestrial services, consistent with the decisions of WRC-2000 on No. **S9.19**, in order to enabling WRC-03 to review, and if appropriate revise, the regulatory and technical sharing conditions between these services, with a view to enabling equitable access to spectrum by these services in these bands and ensure their harmonious development,

urges administrations

to participate actively in these studies, with the involvement of terrestrial, broadcasting-satellite and fixed-satellite service interests.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 495-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

B.12 **PLENARY MEETING**

TWELFTH 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	480	**APPENDIX S30B**
		– Art.8 + Annex 2
		RESOLUTION [COM4/2] (WRC-2000)
		RESOLUTION [COM4/4] (WRC-2000)
		RESOLUTION [COM4/5] (WRC-2000)
		RESOLUTION [COM4/6] (WRC-2000)
		RESOLUTION [COM5/8] (WRC-2000)

Annex: 10 pages

APPENDIX S30B

ARTICLE 8

MOD

8.3 Such an assignment shall not be subject to the procedures for advance publication and coordination contained in Sections I and II of Article **S9**[4]. Consequently, the provisions of Article **S11** shall continue to be applicable except with respect to the coordination requirement vis-à-vis space radiocommunication stations of other administrations under No. **S11.32** and related provisions.

MOD **Annex 2**

1.4 *Dates* proposed for bringing into use. The date (actual or foreseen, as appropriate) of bringing the frequency assignment (new or modified) into use. The date of bringing into use denotes the date at which the frequency assignment is brought into regular operation to provide the published radiocommunication service with technical parameters within the technical characteristics notified to the Bureau.

[4] For existing systems in Part B of the Plan, see Section IB of Article 6.

ADD

RESOLUTION [COM4/2] (WRC-2000)

Evaluation of the administrative due diligence procedure for satellite networks

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-97 adopted Resolution **49** (WRC-97) establishing administrative due diligence procedures applicable to some satellite radiocommunication services with effect from 22 November 1997;

b) that the Plenipotentiary Conference adopted Resolution **85** (Minneapolis, 1998) on evaluation of the administrative due diligence procedure for satellite networks;

c) that Resolution **85** (Minneapolis, 1998) instructs the Director of the Radiocommunication Bureau to inform WRC-2000 about the effectiveness of the administrative due diligence procedure, in accordance with Resolution **49** (WRC-97);

d) that Resolution **85** (Minneapolis, 1998) resolves that WRC-2000 shall evaluate the results of the implementation of administrative due diligence and shall inform the next Plenipotentiary Conference, in 2002, of its conclusions in that regard;

e) the report of the Director of the Radiocommunication Bureau on administrative due diligence applicable to some satellite networks;

f) the proposals made to this conference to strengthen administrative due diligence, and to adopt financial due diligence procedures,

noting

a) that the Bureau has not encountered any administrative difficulty in applying the provisions and in gathering and publishing information;

b) that the Bureau has taken action pursuant to *resolves* 6 of Resolution **49** (WRC-97) to cancel the submissions, and accordingly publish the related special sections, in respect of 36 satellite networks;

c) that, for all of these cancellations, the maximum (nine-year) period for bringing into use pursuant to *resolves* 1 and 2 of Resolution **51** (WRC-97) and No. **S11.44** had been reached and hence the submissions would have been cancelled in any event;

d) that, when requested to provide due diligence information (triggered by the original date of bringing into use of their satellite networks), administrations have generally requested, wherever possible, extensions of the regulatory period for bringing into use up to the maximum limit authorized by the Radio Regulations;

e) that the effect of administrative due diligence may not, therefore, be fully apparent until at least 21 November 2003,

recognizing

that administrative due diligence has not yet had any impact on the problem of reservation of orbit and spectrum capacity without actual use,

resolves

1 that further experience is needed in the application of the administrative due diligence procedures adopted by WRC-97, and that several years may be needed to see whether the procedure produces satisfactory results;

[2 that it is premature to consider the adoption, among other procedures, of any financial due diligence procedures,]

instructs the Director of the Radiocommunication Bureau

to report to the 2002 Plenipotentiary Conference 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 2002 Plenipotentiary Conference.

ADD

RESOLUTION [COM4/4] (WRC-2000)

Temporary procedures for improving satellite network coordination and notification procedures

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **86** (Minneapolis, 1998) of the Plenipotentiary Conference;

b) that there is now such a large backlog of satellite network coordination requests pending with the Radiocommunication Bureau that, at current processing rates and with no new filings, it could take the Bureau more than three years to absorb it;

c) that 95 per cent of this backlog consists of coordination requests for geostationary-satellite networks,

recognizing

a) that, in view of the processing delays, an administration may have to wait three years for the Bureau to publish a coordination request and, because of the five-year limit for bringing a network into use, can thus be faced with a short time window in which to effect coordination;

b) that extraordinary measures are needed to enable the Bureau to absorb the backlog in processing satellite network coordination requests;

c) that the current breakdown of ITU's satellite coordination process seriously undermines the ability of such networks to provide services and compromises the role of ITU in this process;

d) that this conference needs to take extraordinary measures to ensure the continued viability and credibility of the ITU satellite coordination process,

resolves

1 that, for those networks for which complete coordination information is received by the Bureau on or after 3 June 2000, the Bureau and administrations shall apply the following provisions, as revised by this conference:

a) Nos. **S9.36**, **S9.36.2**, **S9.41** and **S9.42**;

b) Section D of Annex 2A to Appendix **S4**;

c) No. **S9.7** (GSO/GSO) in Table **S5-1** of Appendix **S5**;

2 that, as from 3 June 2000, for those networks for which complete coordination information has been received by the Bureau prior to 3 June 2000 but not yet published in a special section of the International Frequency Information Circular (IFIC), the Bureau and administrations shall apply the following provisions, as revised by this conference:

a) Nos. **S9.36**, **S9.36.2**, **S9.41** and **S9.42**;

b) Section D of Annex 2A to Appendix **S4**;

c) No. **S9.7** (GSO/GSO) in Table **S5-1** of Appendix **S5**;

3 that, when the Bureau, under No. **S11.32**, conducts its examination of notifications of satellite networks in respect of compliance with the coordination procedure, it shall base its findings on the coordination requirements set by No. **S9.7** (GSO/GSO) in Table **S5-1** of Appendix **S5**, as revised by this conference, only for those networks published and coordinated pursuant to the provisions of this resolution;

4 that an administration in need of assistance may inform the Bureau that it has previously filed systems which might be affected by the proposed satellite network, and may request the Bureau's assistance, under No. **S9.41**, in determining the need for coordination by applying the provisions of No. **S9.7** (GSO/GSO) in Table **S5-1** of Appendix **S5** (items 1, 2 and 3 of the frequency band column), as revised by this conference; this request shall be considered as a disagreement, pending the results of the analysis by the Bureau of the need for coordination;

5 that, as from 3 June 2000, all notice forms (**APS4**/II and III), radio astronomy notices (**APS4**/IV) and API (**APS4**/V and VI) and due diligence information (Resolution **49 (WRC-97)**) for satellite networks and earth stations submitted to the Radiocommunication Bureau pursuant to Articles **S9** and **S11** shall be submitted in electronic format which is compatible with the BR electronic notice form capture software (SpaceCap)[1]:

[1 Administrations of developing countries making no more than three filings a year may continue to submit filings on paper until 3 June 2001.]

a) all notice forms submitted between 3 June and 3 September 2000 may initially be submitted in paper format if administrations deem it necessary;

b) these forms must be resubmitted in electronic format not later than 3 October 2000, without any modification in relation to the paper filing, in order to retain the date of receipt of the original filing; the Bureau will not compare the paper and electronic filing, but both filings will be made available to administrations who may report inconsistencies to the Bureau until 1 March 2001;

c) if these notice forms are not resubmitted in electronic format by 3 October 2000, they shall be considered as incomplete and returned to the administration;

d) all notice forms initially submitted after 3 September 2000 shall be submitted in electronic format; if the data for these notice forms are not received in electronic format, the notice forms shall be considered as incomplete and returned to the administration;

6 that, as from 3 June 2000, all graphical data associated with the submissions addressed in *resolves 5* should be submitted in graphics data format which is compatible with the BR data capture software (GIMS); submission of graphics in paper form will, however, continue to be accepted,

instructs BR

1 to keep Member States periodically informed of the results of these measures, and report on them to the next competent conference;

2 together with administrations, to monitor, in the interval until WRC-03, whether assistance to administrations in applying the provisions of this resolution has been effective, or whether any further actions are necessary;

3 to make available coordination requests and notifications, “as received”, on its International Frequency Information Circular (IFIC) CD-ROM, within 30 days of receipt, and also on its website;

4 to provide administrations with the latest versions of the capture and validation software and any necessary technical means, training and manuals, along with any assistance requested by administrations to enable them to comply with *resolves* 5 and 6 above;

5 to integrate the validation software with the capture software to the extent practicable,

urges administrations

1 to resubmit in electronic format notices previously submitted in paper format, after consultation with the Bureau;

2 to submit, as soon as practicable, the graphical data relating to their notices in a format compatible with the BR graphic data capture software.

ADD

RESOLUTION [COM4/5] (WRC-2000)

Modification of the procedures and requirements for advance publication

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) Resolution **86** (Minneapolis, 1998) of the Plenipotentiary Conference;

b) that there is concern among a number of administrations that some of the current procedures and requirements for advance publication may give rise to inequalities in the satellite filing and coordination process,

resolves

1 that, as of 3 June 2000, the Bureau and administrations shall apply the provisions of Nos. **S9.2** and **S9.5B**, as revised by this conference;

2 that any request for coordination or modifications to a previously submitted API received by the Bureau after 3 June 2000 shall be examined in accordance with the provisions of No. **S9.2** as revised by this conference.

ADD

RESOLUTION [COM4/6] (WRC-2000)

Use of the band 2 630-2 655 MHz in certain Region 3 countries by non-GSO satellite systems in the broadcasting-satellite service (sound)

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the band 2 535-2 655 MHz is allocated under No. **S5.418** to the broadcasting-satellite service (sound) in certain Region 3 countries;

b) that the provisions of Resolution **528** currently limit the use of this band by systems in the broadcasting-satellite service (sound) to the upper 25 MHz of the band;

c) that, prior to WRC-2000, there were no coordination procedures applicable to non-GSO broadcasting-satellite (sound) systems in this band in relation to other non-GSO or GSO satellite networks;

d) that satellite technology has now advanced to the stage where non-GSO systems in the broadcasting-satellite service (sound) are technically and economically feasible when operated with high elevation angles;

e) that satellite systems in the broadcasting-satellite service as described in *considering d)* can be used for the delivery of high-quality, spectrally efficient broadcasting-satellite (sound) service to portable and mobile terminals;

f) that non-GSO systems in the broadcasting-satellite service (sound) in the band 2 630-2 655 MHz in Region 3 have been notified to ITU and are expected to be brought into use in the near future;

g) that, prior to WRC-2000, the protection of existing terrestrial services was addressed through the coordination procedures of No. **S9.11**;

h) that the provision cited in *considering g)* may be inadequate to ensure the future deployment of terrestrial services in this band,

resolves

1 that any broadcasting-satellite service (sound) system using non-GSO orbits brought into operation in the band 2 630-2 655 MHz in Region 3 shall be operated such that the minimum elevation angle over the service area is not less than 40°, for the purposes of sharing with terrestrial services;

2 that, before an administration notifies to the Bureau or brings into use a frequency assignment for a broadcasting-satellite service (sound) system using non-GSO satellites in the band 2 630-2 655 MHz, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, it shall seek the agreement of any administration having a primary allocation to terrestrial services in the same frequency band on whose territory the power flux-density exceeds the following thresholds:

-128	dB(W/m^2) in 1 MHz	for $0^\circ \le \theta \le 5^\circ$
$-128 + 0.75\ (\theta - 5)$	dB(W/m^2) in 1 MHz	for $5^\circ < \theta \le 25^\circ$
-113	dB(W/m^2) in 1 MHz	for $25^\circ < \theta \le 90^\circ$

where θ is the angle of arrival of the incident wave above the horizontal plane, in degrees;[1]

3 that the elevation angle value in *resolves* 1 and the power flux-density threshold values in *resolves* 2 shall be applied provisionally until the end of WRC-03; any broadcasting-satellite service (sound) system using non-GSO satellites in the band 2 630-2 655 MHz, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, shall be subject to the elevation angle and power flux-density threshold values determined by WRC-03 unless Resolution **49** information has been supplied for that system by the beginning of WRC-03;

[1] These values relate to the pfd and angles of arrival which would be obtained under free-space propagation conditions.

4 that systems in the broadcasting-satellite service (sound) using non-GSO satellites shall be limited to national services unless agreement has been reached to include the territories of other administrations in the service area;

5 that, as of 3 June 2000, the Bureau and administrations shall apply the provisions of Nos. **S5.[XXX1] (WRC-2000)**, **S5.[XXX2] (WRC-2000)** and **S5.[XXX3] (WRC-2000)**, as well as No. **S5.418**, as revised by this conference,

invites ITU-R

1 to conduct the necessary studies to develop calculation methodologies and sharing criteria to be used by administrations in applying the provisions of Nos. **S5.[XXX1]**, **S5.[XXX2**] and **S5.[XXX3]**;

2 to conduct the necessary technical and regulatory studies relating to frequency sharing between systems in the broadcasting-satellite service (sound) and terrestrial services in the band 2 535-2 655 MHz with a view avoiding placing undue constraints on either service,

instructs the Radiocommunication Bureau

in its examination of requests for coordination for any broadcasting-satellite service (sound) system using non-GSO satellites in the 2 630-2 655 MHz band, for which complete Appendix **S4** coordination information, or notification information, has been received after 2 June 2000, to determine if the power flux-density thresholds given in *resolves* 2, and taking into account *resolves* 3, are exceeded on the territory of any administration other than the notifying administration and, if so, to inform both the notifying and the affected administrations.

ADD

RESOLUTION [COM5/8] (WRC-2000)

Modification of bringing into use and administrative due diligence requirements as a consequence of allocation changes above 71 GHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that, pursuant to agenda item 1.16 identified in Resolution **721 (WRC-97)**, the preparatory work for this conference included consideration of the allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and radio astronomy services;

b) that agenda item 1.16 took into account Resolution **723 (WRC-97)**, which also included consideration of the allocation of frequency bands above 71 GHz to the space research (passive) service;

c) that changes made to the allocations for these passive science services were accompanied by consequential changes to allocations above 71 GHz to active services;

d) that the allocation changes may cause delays in the design and development of space stations planning to use these allocations;

e) that the delays also have an impact on transmitters and receivers, on the same space stations, planning to use frequencies below 71 GHz;

f) that the Bureau has already received advance publication and coordination information for satellite networks in the fixed-satellite, mobile-satellite or broadcasting-satellite services that includes the use of frequencies above 71 GHz;

g) that this advance publication or coordination information for satellite networks in the fixed-satellite, mobile-satellite or broadcasting-satellite services will have been based on the frequency allocations in force at the time the information was submitted;

h) that No. **S11.44** requires that the notified date of bringing into use of any space station of a satellite network be no later than nine years (for advance publication information received prior to 22 November 1997) or seven years (for advance publication information received on or after 22 November 1997) after the date of receipt by the Bureau of the advance publication information under No. **S9.1**;

i) that No. **S11.44B** allows the notified date of bringing into use to be extended by the Bureau only if the due diligence information required by Resolution **49 (WRC-97)** is provided for the satellite network; if the procedure for effecting coordination has commenced; and if the notifying administration certifies that the reason for the extension is one or more specific circumstances listed in Nos. **S11.44C** to **S11.44I**;

j) that none of the specific circumstances listed in Nos. **S11.44C** to **S11.44I** includes changes to the frequency allocations as a result of the decisions of a world radiocommunication conference;

k) that, in order to provide the necessary protection to the passive science services, satellite networks in the fixed-satellite, mobile-satellite or broadcasting-satellite services using frequencies above 71 GHz for which advance publication or coordination information is considered as having been received by the Bureau prior to 3 June 2000 must adhere to the revised Table of Frequency Allocations resulting from WRC-2000,

resolves

1 that, for satellite networks using frequencies above 71 GHz in the fixed-satellite, mobile-satellite or broadcasting-satellite services for which advance publication or coordination information is considered as having been received by the Bureau prior to 3 June 2000, the Bureau will extend the notified date of bringing into use under No. **S11.44** up to 3 June 2007 at the request of the notifying administration;

2 that, notwithstanding the notified date of bringing into use in *resolves* 1, there shall be no change in the date that the advance publication or coordination information is considered as having been received by the Bureau;

3 that, for any satellite network subject to this resolution, the notifying administration shall have until 31 December 2000 to resubmit to the Bureau the Appendix **S4** advance publication information and coordination information for the space station reflecting the proposed modification in the frequency band above 71 GHz, and that this Appendix **S4** information shall be excluded from the cost-recovery procedures;

4 that the provisions contained in Nos. **S11.44B** to **S11.44I** are applicable with respect to the date of bringing into use communicated to the Bureau under *resolves* 3;

5 that, for any satellite network subject to this resolution and Resolution **49 (WRC-97)**, the notifying administration shall have until the new date of bringing into use under *resolves* 3 to send the administrative due diligence information to the Bureau, including any revision of administrative due diligence information submitted before 3 June 2000;

6 that the above *resolves* apply to any satellite network within the scope of *resolves* 1, including transmitters and receivers in the same network using frequencies below 71 GHz;

7 that, for any satellite network that is not brought into use in the frequency bands above 71 GHz within the time-limits, any extension of the date of bringing into use or due diligence requirements that has been granted under this resolution shall be revoked and the date requirements that were in effect prior to the extension shall apply to all the frequency bands used by the network;

8 that, six months before the date specified in *resolves* 3, the Bureau will provide administrations with a list of the networks to which this resolution applies, and the options under the above *resolves*;

9 that satellite networks using frequencies above 71 GHz for which the advanced publication or coordination information is considered as having been received by the Bureau prior to 3 June 2000 shall adhere to the revised Table of Frequency Allocations resulting from WRC-2000.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 496-E
30 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

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	B.9/478	**ARTICLE S5** – Table of allocations 4 800-5 830 MHz – S5.444 – S5.444B – S5.444C – S5.488 – S5.502 – S5.503 – Table of allocations 24.75-29.9 GHz – S5.5SSS – Table of allocations 29.9-34.2 GHz – S5.5RRR – S5.43 – S5.43A – S5.50 – Table of allocations 200-495 kHz – S5.81 – Table of allocations 495-1 800 kHz 3 230- 5 003 kHz – S5.120 – Table of allocations 5 003- 7 350 kHz 7 350-13 360 kHz 13 360-18 030 kHz 18 030-23 350 kHz 23 350-27 500 kHz

47-75.2 MHz
75.2-137.175 MHz
137.175-148 MHz
410-470 MHz
4 800-5 830 MHz

– S5.536A

– S5.353A
– S5.357A
– S5.491

– Table of allocations
890-1 350 MHz
– S5.328
– S5.328A
– S5.329
– S5.329A
– S5.332
– S5.333
– S5.337A
– Table of allocations
1 525-1 610 MHz

– S5.55
– S5.58
– S5.59
– S5.65
– S5.67
– S5.75
– S5.77
– S5.93
– S5.96
– S5.98
– S5.99
– S5.107
– S5.112
– S5.114
– S5.117
– S5.124
– S5.152
– S5.154
– S5.155A
– S5.160
– S5.162A
– S5.175
– S5.176
– S5.177
– S5.181
– S5.197
– S5.202

– S5.206
– S5.210
– S5.211
– S5.214
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COM 6	B.2/395	**ARTICLE S5** – Table of allocations 18.6-22.21 GHz – S5.522 – S5.522A – S5.522B – S5.522C – S5.523
COM 6	B.6/455	**RESOLUTION [COM4/3] (WRC-2000)**

Annex: 36 pages

ARTICLE S5

Frequency allocations

MOD

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 000-5 150	AERONAUTICAL RADIONAVIGATION S5.367 S5.444 S5.444A S5.444B S5.444C	

MOD

S5.444 The band 5 030-5 150 MHz is to be used for the operation of the international standard system (microwave landing system) for precision approach and landing. The requirements of this system shall take precedence over other uses of this band. For the use of this band, No. **S5.444A** and Resolution **114 (WRC-95)** apply.

ADD

S5.444B *Additional allocation:* The band 5 000-5 010 MHz is also allocated to the radionavigation-satellite service (Earth-to-space) on a primary basis. See Resolution **[COM5/15] (WRC-2000)**.

ADD

S5.444C *Additional allocation:* The band 5 010-5 030 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. In order not to cause harmful interference to the microwave landing system operating above 5 030 MHz, the aggregate power flux-density produced at the Earth's surface in bands above 5 030 MHz by all the space stations within any radionavigation-satellite service system (space-to-Earth) operating in the band 5 010-5 030 MHz shall not exceed –124.5 dB(W/m^2) in a 150 kHz band. In order not to cause harmful interference to the radio astronomy service in the band 4 990-5 000 MHz, the aggregate power flux-density produced in the 4 990-5 000 MHz band by all the space stations within any RNSS (space-to-Earth) system operating in the 5 010-5 030 MHz band shall not exceed the provisional value of –171 dB(W/m^2) in a 10 MHz band at any radio astronomy observatory site for more than 2% of the time. For the use of this band, Resolution **[COM5/16] (WRC-2000)** applies.

MOD

S5.488 The use of the band 11.7-12.2 GHz by geostationary-satellite networks in the fixed-satellite service in Region 2 is subject to the provisions of Resolution **[COM5/18] (WRC-2000)**. For the use of the band 12.2-12.7 GHz by the broadcasting-satellite service in Region 2, see Appendix **S30**.

MOD

S5.502 In the band 13.75-14 GHz, an earth station in the fixed-satellite service shall have a minimum antenna diameter of 4.5 m and the e.i.r.p. of any emission should be at least 68 dBW and should not exceed 85 dBW. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services shall not exceed 59 dBW. The protection of assignments to receiving space stations in the fixed-satellite service operating with earth stations that, individually, have an e.i.r.p. of less than 68 dBW shall not impose constraints on the operation of the radiolocation and radionavigation stations operating in accordance with the Radio Regulations. No. **S5.43** does not apply. See Resolution [**COM5/10**] **(WRC-2000)**.

MOD

S5.503 In the band 13.75-14 GHz, geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 shall operate on an equal basis with stations in the fixed-satellite service; after that date, new geostationary space stations in the space research service will operate on a secondary basis. Until those geostationary space stations in the space research service for which information for advance publication has been received by the Bureau prior to 31 January 1992 cease to operate in this band:

a) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in geostationary-satellite orbit shall not exceed 71 dBW in the 6 MHz band from 13.772 to 13.778 GHz;

b) the e.i.r.p. density of emissions from any earth station in the fixed-satellite service operating with a space station in non-geostationary-satellite orbit shall not exceed 51 dBW in the 6 MHz band from 13.772 to 13.778 GHz.

Automatic power control may be used to increase the e.i.r.p. density in the 6 MHz band in this frequency range to compensate for rain attenuation, to the extent that the power-flux density at the fixed-satellite service space station does not exceed the value resulting from use by an earth station of an e.i.r.p. of 71 dBW or 51 dBW, as appropriate, in the 6 MHz band in clear-sky conditions.

MOD

24.75-29.9 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
27.5-28.5	FIXED S5.5SSS FIXED-SATELLITE (Earth-to-space) S5.484A S5.539 MOBILE S5.538 S5.540	

ADD

S5.5SSS In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 27.5-28.35 GHz may also be used by high altitude platform stations (HAPS). The use of the band 27.5-28.35 GHz by HAPS is limited to operation in the HAPS-to-ground direction and shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services.

MOD

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
31-31.3	FIXED S5.5RRR MOBILE Standard frequency and time signal-satellite (space-to-Earth) Space research S5.544 S5.545 S5.149	

ADD

S5.5RRR In Bhutan, Indonesia, Iran (Islamic Republic of), Japan, Maldives, Mongolia, Myanmar, Pakistan, the Dem. People's Rep. of Korea, Sri Lanka, Thailand and Viet Nam, the allocation to the fixed service in the band 31.0-31.3 GHz may also be used by high altitude platform stations (HAPS) in the ground-to-HAPS direction. The use of the band 31.0-31.3 GHz by systems using HAPS shall not cause harmful interference to, nor claim protection from, other types of fixed-service systems or other co-primary services, taking into account No. **S5.545**. The use of HAPS in the band 31.0-31.3 GHz shall not cause harmful interference to the passive services having a primary allocation in the band 31.3-31.8 GHz, taking into account the interference criteria given in Recommendations ITU-R SA.1029 and ITU-R RA.769. The administrations of the countries listed above are urged to limit the deployment of HAPS in the band 31.0-31.3 GHz to the lower half of this band (31.0-31.15 GHz) until WRC-03.

ARTICLE S5

Frequency allocations

MOD

S5.43 1) Where it is indicated in these Regulations that a service or stations in a service may operate in a specific frequency band subject to not causing harmful interference to another service or to another station in the same service, this means also that the service which is subject to not causing harmful interference cannot claim protection from harmful interference caused by the other service or other station in the same service.

ADD

S5.43A 1*bis*) Where it is indicated in these Regulations that a service or stations in a service may operate in a specific frequency band subject to not claiming protection from another service or from another station in the same service, this means also that the service which is subject to not claiming protection shall not cause harmful interference to the other service or other station in the same service.

MOD

S5.50 5) The footnote references which appear in the Table below the allocated service or services apply to more than one of the allocated services, or to the whole of the allocation concerned.

MOD

200-495 kHz

<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>415-435
MARITIME MOBILE S5.79
AERONAUTICAL RADIONAVIGATION
S5.72</td><td colspan="2" rowspan="2">415-495
MARITIME MOBILE S5.79 S5.79A
Aeronautical radionavigation S5.80</td></tr>
<tr><td>435-495
MARITIME MOBILE S5.79 S5.79A
Aeronautical radionavigation
S5.72 S5.82</td></tr>
<tr><td colspan="2">S5.77 S5.78 S5.82</td><td></td></tr>
</table>

SUP

S5.81

MOD

495-1 800 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
505-526.5 MARITIME MOBILE S5.79 S5.79A S5.84 AERONAUTICAL RADIONAVIGATION S5.72	**505-510** MARITIME MOBILE S5.79 **510-525** MOBILE S5.79A S5.84 AERONAUTICAL RADIONAVIGATION	**505-526.5** MARITIME MOBILE S5.79 S5.79A S5.84 AERONAUTICAL RADIONAVIGATION Aeronautical mobile Land mobile

MOD

3 230-5 003 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
3 500-3 800 AMATEUR FIXED MOBILE except aeronautical mobile S5.92	**3 500-3 750** AMATEUR S5.119	**3 500-3 900** AMATEUR FIXED MOBILE
3 800-3 900 FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE	**3 750-4 000** AMATEUR FIXED MOBILE except aeronautical mobile (R)	
3 900-3 950 AERONAUTICAL MOBILE (OR) S5.123		**3 900-3 950** AERONAUTICAL MOBILE BROADCASTING
3 950-4 000 FIXED BROADCASTING	S5.122 S5.124 S5.125	**3 950-4 000** FIXED BROADCASTING S5.126

SUP

S5.120

MOD

5 003-7 350 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
7 000-7 100	AMATEUR AMATEUR-SATELLITE S5.140 S5.141	
7 100-7 300 BROADCASTING	**7 100-7 300** AMATEUR S5.142	**7 100-7 300** BROADCASTING

MOD

7 350-13 360 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
10 100-10 150	FIXED Amateur	

MOD

13 360-18 030 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
14 000-14 250	AMATEUR AMATEUR-SATELLITE	
14 250-14 350	AMATEUR S5.152	

MOD

18 030-23 350 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18 068-18 168	AMATEUR AMATEUR-SATELLITE S5.154	
21 000-21 450	AMATEUR AMATEUR-SATELLITE	

MOD

23 350-27 500 kHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
24 890-24 990	AMATEUR AMATEUR-SATELLITE	

MOD

47-75.2 MHz

<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="4">47-68
BROADCASTING

S5.162A S5.163 S5.164 S5.165
S5.169 S5.171</td><td>47-50
FIXED
MOBILE</td><td>47-50
FIXED
MOBILE
BROADCASTING
S5.162A</td></tr>
<tr><td colspan="2">50-54
AMATEUR
S5.166 S5.167 S5.168 S5.170 S5.162A</td></tr>
<tr><td>54-68
BROADCASTING
Fixed
Mobile

S5.172</td><td>54-68
FIXED
MOBILE
BROADCASTING

S5.162A</td></tr>
</table>

MOD

75.2-137.175 MHz

<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>75.2-87.5
FIXED
MOBILE except aeronautical mobile

S5.175 S5.179 S5.184 S5.187</td><td colspan="2">75.2-75.4
FIXED
MOBILE
S5.179</td></tr>
<tr><td rowspan="3"></td><td>75.4-76
FIXED
MOBILE</td><td>75.4-87
FIXED
MOBILE

S5.182 S5.183 S5.188</td></tr>
<tr><td>76-88
BROADCASTING
Fixed
Mobile

S5.185</td><td rowspan="2">87-100
FIXED
MOBILE
BROADCASTING</td></tr>
<tr><td>88-100
BROADCASTING</td></tr>
<tr><td>87.5-100
BROADCASTING

S5.190</td><td colspan="2"></td></tr>
</table>

MOD

137.175-148 MHz

<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>144-146</td><td colspan="2">AMATEUR
AMATEUR-SATELLITE
S5.216</td></tr>
</table>

MOD

410-470 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
455-456 FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E	**455-456** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.286A S5.286B S5.286C S5.209	**455-456** FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E
459-460 FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E	**459-460** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) S5.286A S5.286B S5.286C S5.209	**459-460** FIXED MOBILE S5.209 S5.271 S5.286A S5.286B S5.286C S5.286E

MOD

4 800-5 830 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
5 150-5 250	AERONAUTICAL RADIONAVIGATION FIXED-SATELLITE (Earth-to-space) S5.447A S5.446 S5.447 S5.447B S5.447C	

MOD

S5.536A Administrations installing earth exploration-satellite earth stations cannot claim protection from stations in the fixed and mobile services operated by neighbouring administrations. In addition, earth stations operating in the earth exploration-satellite service should take into account Recommendation ITU-R SA.1278.

ARTICLE S5

Frequency allocations

MOD

S5.353A In applying the procedures of Section II of Article **S9** 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. (The provisions of Resolution **[COM5/22] (WRC-2000)** shall apply.)

MOD

S5.357A In applying the procedures of Section II of Article **S9** 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 providing transmission of messages with priority 1 to 6 in Article **S44**. Aeronautical mobile-satellite (R) service 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, aeronautical mobile-satellite (R) service 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. (The provisions of Resolution **[COM5/22] (WRC-2000)** shall apply.)

MOD

S5.491 *Additional allocation:* in Region 3, the band 12.2-12.5 GHz is also allocated to the fixed-satellite (space-to-Earth) service on a primary basis. The power flux-density limits in Article **S21**, Table **S21-4** shall apply to this frequency band. The introduction of the service in relation to the broadcasting-satellite service in Region 1 shall follow the procedures specified in Article 7 of Appendix **S30**, with the applicable frequency band extended to cover 12.2-12.5 GHz.

ARTICLE S5

Frequency allocations

MOD

890-1 350 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
960-1 215	AERONAUTICAL RADIONAVIGATION S5.328 S5.328A	
1 215-1 240	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) S5.330 S5.331 S5.332	
1 240-1 260	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.330 S5.331 S5.332 S5.334 S5.335	
1 260-1 300	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329 S5.329A SPACE RESEARCH (active) Amateur S5.282 S5.330 S5.331 S5.333 S5.334 S5.335	
1 300-1 350	AERONAUTICAL RADIONAVIGATION S5.337 RADIOLOCATION RADIONAVIGATION SATELLITE (Earth-to-space) S5.149 S5.337A	

MOD

S5.328 The use of the band 960-1 215 MHz by the aeronautical radionavigation service is reserved on a worldwide basis for the operation and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

ADD

S5.328A *Additional allocation:* the band 1 164-1 215 MHz is also allocated to the radionavigation-satellite service (space-to-Earth) (space-to-space) on a primary basis. The aggregate power flux-density produced by all the space stations of all radionavigation-satellite systems at the

Earth's surface shall not exceed the provisional value of –115 dB(W/m^2) in any 1 MHz band for all angles of arrival. Stations in the radionavigation-satellite service shall not cause harmful interference to, nor claim protection from, stations of the aeronautical-radionavigation service. The provisions of Resolution **[COM5/19] (WRC-2000)** apply.

MOD

S5.329 Use of the radionavigation-satellite service in the band 1 215-1 300 MHz shall be subject to the condition that no harmful interference is caused to, and no protection is claimed from, the radionavigation service authorized under No. **S5.331**. See also Resolution **[COM5/20] (WRC-2000)**.

ADD

S5.329A Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 300 MHz and 1 559-1 610 MHz is not intended to provide safety service applications, and shall not impose any additional constraints on other systems or services operating in accordance with the Table of Frequency Allocations.

MOD

S5.332 In the band 1 215-1 260 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.

MOD

S5.333 In the band 1 260-1 300 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 and other services allocated by footnotes on a primary basis.

ADD

S5.337A The use of the band 1 300-1 350 MHz by earth stations in the radionavigation-satellite service and by stations in the radiolocation service shall not cause harmful interference to, nor constrain the operation and development of, the aeronautical-radionavigation service.

MOD

1 525-1 610 MHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
1 559-1 610	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) (space-to-space) S5.329A S5.341 S5.363 S5.355A S5.359A	

ARTICLE S5

Frequency allocations

MOD

S5.55 *Additional allocation:* in Armenia, Azerbaijan, Bulgaria, the Russian Federation, Georgia, Kyrgyzstan, Tajikistan and Turkmenistan, the band 14-17 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.58 *Additional allocation:* in Armenia, Azerbaijan, Georgia, Kazakstan, Kyrgyzstan, the Russian Federation, Tajikistan and Turkmenistan, the band 67-70 kHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.59 *Different category of service:* in Bangladesh and Pakistan, the allocation of the bands 70-72 kHz and 84-86 kHz to the fixed and maritime mobile service is on a primary basis (see No. **S5.33**).

MOD

S5.65 *Different category of service:* in Bangladesh, the allocation of the bands 112-117.6 kHz and 126-129 kHz to the fixed and maritime mobile services is on a primary basis (see No. **S5.33**).

MOD

S5.67 *Additional allocation:* in Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Romania and Turkmenistan, 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

S5.75 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Moldova, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and the Black Sea areas of Bulgaria and Romania, the allocation of the band 315-325 kHz to the maritime radionavigation service is on a primary basis under the condition that in the Baltic Sea area, the assignment of frequencies in this band to new stations in the maritime or aeronautical radionavigation services shall be subject to prior consultation between the administrations concerned.

MOD

S5.77 *Different category of service:* in Australia, China, the French Overseas Territories of Region 3, India, Indonesia (until 1 January 2005), Iran (Islamic Republic of), Japan, Pakistan, Papua New Guinea and Sri Lanka, the allocation of the band 415-495 kHz to the aeronautical radionavigation service is on a primary basis. Administrations in these countries shall take all practical steps necessary to ensure that aeronautical radionavigation stations in the band 435-495 kHz do not cause interference to reception by coast stations of ship stations transmitting on frequencies designated for ship stations on a worldwide basis (see No. **S52.39**).

MOD

S5.93 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Georgia, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, the Russian Federation, Tajikistan, Chad, Turkmenistan and Ukraine, the bands 1 625-1 635 kHz, 1 800-1 810 kHz and 2 160-2 170 kHz and, in Bulgaria, the bands 1 625-1 635 kHz and 1 800-1 810 kHz, are also allocated to the fixed and land mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.96 In Germany, Armenia, Austria, Azerbaijan, Belarus, Denmark, Estonia, Finland, Georgia, Hungary, Ireland, Israel, Jordan, Kazakstan, Latvia, Liechtenstein, Lithuania, Malta, Moldova, Norway, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, the United Kingdom, the Russian Federation, Sweden, Switzerland, Tajikistan, Turkmenistan and Ukraine, administrations may allocate up to 200 kHz to their amateur service in the bands 1 715-1 800 kHz and 1 850-2 000 kHz. However, when allocating the bands within this range to their amateur service, administrations shall, after prior consultation with administrations of neighbouring countries, take such steps as may be necessary to prevent harmful interference from their amateur service to the fixed and mobile services of other countries. The mean power of any amateur station shall not exceed 10 W.

MOD

S5.98 *Alternative allocation:* in Angola, Armenia, Azerbaijan, Belarus, Belgium, Bulgaria, Cameroon, the Congo, Denmark, Egypt, Eritrea, Spain, Ethiopia, Georgia, Greece, Italy, Kazakstan, Lebanon, Lithuania, Moldova, the Netherlands, Syria, Kyrgyzstan, the Russian Federation, 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, Austria, 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

S5.107 *Additional allocation:* in Saudi Arabia, Botswana, Eritrea, Ethiopia, Iraq, Lesotho, Libya, Somalia and Swaziland, 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, Greece, Iceland, Malta, Sri Lanka 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, Greece, Iraq, Malta, 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, Greece, Iceland, Liberia, Malta, Sri Lanka, Togo and Yugoslavia, the band 3 155-3 200 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

SUP

S5.124

MOD

S5.152 *Additional allocation:* in Armenia, Azerbaijan, China, Côte d'Ivoire, Georgia, Iran (Islamic Republic of), Kazakstan, Moldova, Kyrgyzstan, the Russian Federation, 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, Kyrgyzstan, the Russian Federation, 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.

MOD

S5.155A In Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Czech Republic, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the use of the band 21 850-21 870 kHz by the fixed service is limited to provision of services related to aircraft flight safety.

MOD

S5.160 *Additional allocation:* in Botswana, Burundi, Lesotho, Malawi, Dem. Rep. of the Congo, Rwanda and Swaziland, the band 41-44 MHz is also allocated to the aeronautical radionavigation service on a primary basis.

MOD

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, the Netherlands, Poland, Portugal, Slovakia, the Czech Republic, the United Kingdom, the Russian Federation, Sweden and Switzerland 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 **217 (WRC-97)**.

MOD

S5.175 *Alternative allocation:* in Armenia, Azerbaijan, Belarus, Georgia, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 68-73 MHz and 76-87.5 MHz are allocated to the broadcasting service on a primary basis. The services to which these bands are allocated in other countries and the broadcasting service in the countries listed above are subject to agreements with the neighbouring countries concerned.

MOD

S5.176 *Additional allocation:* in Australia, China, Korea (Rep. of), the Philippines, the Dem. People's Rep. of Korea, Estonia (subject to agreement obtained under No. **S9.21**) and Western Samoa, the band 68-74 MHz is also allocated to the broadcasting service on a primary basis.

MOD

S5.177 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Kazakstan, Latvia, Moldova, Uzbekistan, Poland, Kyrgyzstan, the Russian Federation, 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 Egypt, Israel, Japan, and Syria, 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

S5.197 *Additional allocation:* in Japan, Pakistan and Syria, 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

S5.202 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Bulgaria, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Jordan, Latvia, Moldova, Oman, Uzbekistan, Poland, Syria, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan 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.

MOD

S5.206 *Different category of service:* in Armenia, Azerbaijan, Belarus, Bulgaria, Egypt, Finland, France, Georgia, Greece, Kazakstan, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Syria, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the allocation of the band 137-138 MHz to the aeronautical mobile (OR) service is on a primary basis (see No. **S5.33**).

MOD

S5.210 *Additional allocation:* in 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

S5.211 *Additional allocation:* in Germany, Saudi Arabia, Austria, Bahrain, Belgium, Bosnia and Herzegovina, Denmark, the United Arab Emirates, Spain, Finland, Greece, Ireland, Israel, Kenya, Kuwait, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Malta, Norway, the Netherlands, Qatar, the United Kingdom, Somalia, Sweden, Switzerland, Tanzania, Tunisia, Turkey and Yugoslavia, the band 138-144 MHz is also allocated to the maritime mobile and land mobile services on a primary basis.

MOD

S5.214 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Eritrea, Ethiopia, Kenya, The Former Yugoslav Republic of Macedonia, Malta, Somalia, Sudan, Tanzania and Yugoslavia, the band 138-144 MHz is also allocated to the fixed service on a primary basis.

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, Korea (Rep. of), Croatia, Cuba, Denmark, Egypt, the United Arab Emirates, Eritrea, Spain, Estonia, Ethiopia, Finland, France, Gabon, Ghana, Greece, Guinea, Guinea Bissau, Hungary, India, Iran (Islamic Republic of), Ireland, Iceland, Israel, Italy, Jamaica, Japan, Jordan, Kazakstan, Kenya, Kuwait, Latvia, The Former Yugoslav Republic of Macedonia, Lebanon, Libya, Liechtenstein, Lithuania, Luxembourg, Malaysia, Mali, Malta, Mauritania, Moldova, Mongolia, Mozambique, Namibia, Norway, New Zealand, Oman, Uganda, Uzbekistan, Pakistan, Panama, Papua New Guinea, Paraguay, the Netherlands, the Philippines, Poland, Portugal, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the United Kingdom, the Russian Federation, 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

S5.259 *Additional allocation:* in Egypt, Israel, Japan, and Syria, 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

S5.262 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Bulgaria, Colombia, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Georgia, Hungary, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kazakstan, Kuwait, Liberia, Malaysia, Moldova, Nigeria, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, Slovakia, Romania, the Russian Federation, Singapore, Somalia, Tajikistan, Turkmenistan, Ukraine and Yugoslavia, the band 400.05-401 MHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.271 *Additional allocation:* in Azerbaijan, Belarus, China, Estonia, India, Latvia, Lithuania, Kyrgyzstan and Turkmenistan, the band 420-460 MHz is also allocated to the aeronautical radionavigation service (radio altimeters) on a secondary basis.

MOD

S5.277 *Additional allocation:* in Angola, Armenia, Azerbaijan, Belarus, Cameroon, Congo, Djibouti, Georgia, Hungary, Israel, Kazakstan, Latvia, Mali, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, 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, Azerbaijan, Belarus, China, Japan, Mongolia, Uzbekistan, Kyrgyzstan, Slovakia, the Russian Federation, 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

S5.293 *Different category of service:* in Canada, Chile, Colombia, Cuba, the United States, Guyana, Honduras, Jamaica, Mexico, Panama and Peru, the allocation of the bands 470-512 MHz and 614-806 MHz to the fixed and mobile services is on a primary basis (see No. **S5.33**), subject to agreement obtained under No. **S9.21**. In Argentina and Ecuador, the allocation of the band 470-512 MHz to the fixed and mobile services 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, Lithuania, 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 listed 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.

MOD

S5.297 *Additional allocation:* in Costa Rica, Cuba, El Salvador, the United States, Guatemala, Guyana, Honduras, Jamaica and Mexico, the band 512-608 MHz is also allocated to the fixed and mobile services on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.314 *Additional allocation*: in Austria, Italy, Moldova, Uzbekistan, the United Kingdom and Swaziland, the band 790-862 MHz is also allocated to the land mobile service on a secondary basis.

MOD

S5.315 *Alternative allocation*: in Greece, Italy and Tunisia, the band 790-838 MHz is allocated to the broadcasting service on a primary basis.

MOD

S5.316 *Additional allocation*: in Germany, Saudi Arabia, 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.

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, Namibia, Nigeria, South Africa, Tanzania, Zimbabwe and Zambia, subject to agreement obtained under No. **S9.21**.

MOD

S5.331 *Additional allocation:* in Algeria, Germany, Austria, Bahrain, Belgium, Benin, Bosnia and Herzegovina, Burundi, Cameroon, China, Croatia, Denmark, the United Arab Emirates, France, Greece, India, Iran (Islamic Republic of), Iraq, Kenya, The Former Yugoslav Republic of Macedonia, Liechtenstein, Luxembourg, Mali, Mauritania, Norway, Oman, the Netherlands, Portugal, Qatar, Senegal, Slovenia, Somalia, Sudan, Sri Lanka, Sweden, Switzerland, Turkey and Yugoslavia, the band 1 215-1 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.338 In Azerbaijan, Bulgaria, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania and Turkmenistan, 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, 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, France, Iran (Islamic Republic of), Iraq, Israel, Kazakstan, Kuwait, The Former Yugoslav Republic of Macedonia, Lebanon, Morocco, Qatar, Syria, Kyrgyzstan, Romania, Turkmenistan, 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**).

MOD

S5.350 *Additional allocation:* in Azerbaijan, Kyrgyzstan and Turkmenistan, 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, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the bands 1 540-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a secondary basis.

ADD

S5.355A *Additional allocation:* in Bahrain, Bangladesh, Congo, Egypt, Eritrea, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Qatar, Syria, Somalia, Sudan, Chad, Togo and Yemen, the band 1 559-1 610 MHz is also allocated to the fixed service on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and not authorize new frequency assignments to fixed-service systems in this band.

MOD

S5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Lebanon, Libya, Lithuania, Mali, Morocco, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Tunisia, Turkmenistan and Ukraine, the bands 1 550-1 559 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz are also allocated to the fixed service on a primary basis. Administrations are urged to make all practicable efforts to avoid the implementation of new fixed-service stations in these bands.

ADD

S5.359A *Additional allocation:* The band 1 559-1 610 MHz is also allocated to the fixed service on a primary basis until 1 January 2005 in Germany, Armenia, Azerbaijan, Belarus, Benin, Bosnia and Herzegovina, Bulgaria, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Kazakstan, Latvia, Lithuania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Kyrgyzstan, the Dem. People's Rep. of Korea, Romania, the Russian Federation, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan and Ukraine, and until 1 January 2010 in Saudi Arabia, Cameroon, Jordan, Kuwait, Lebanon, Libya, Mali, Morocco, Mauritania, Syria and Tunisia. After these dates, the fixed service may continue to operate on a secondary basis until 1 January 2015, at which time this allocation shall no longer be valid. Administrations are urged to take all practicable steps to protect the radionavigation-satellite service and the aeronautical radionavigation service and not authorize new frequency assignments to fixed-service systems in this band.

MOD

S5.387 *Additional allocation:* in Azerbaijan, Belarus, Georgia, Kazakstan, Mali, Mongolia, Kyrgyzstan, Slovakia, Romania, Tajikistan and Turkmenistan, 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

S5.389F In Algeria, Benin, Cape Verde, Egypt, Iran (Islamic Republic of), Mali, Syria and Tunisia, the use of the bands 1 980-2 010 MHz and 2 170-2 200 MHz by the mobile-satellite service shall neither cause harmful interference to the fixed and mobile services, nor hamper the development of those services prior to 1 January 2005, nor shall the former service request protection from the latter services.

MOD

S5.390 In Argentina, Brazil, Chile, Colombia, Cuba, Ecuador, Suriname and Uruguay, 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 No. **S9.11A** and to the provisions of Resolution **716 (WRC-95)**.

MOD

S5.393 *Additional allocation:* in the United States, 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)**, with the exception of *resolves* 3 in regard to the limitation on broadcasting-satellite systems in the upper 25 MHz.

SUP

S5.408

MOD

S5.412 *Alternative allocation:* in Azerbaijan, Bulgaria, Kyrgyzstan and Turkmenistan, the band 2 500-2 690 MHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

MOD

S5.415A *Additional allocation*: in India and 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 their national boundaries.

SUP*

S5.417

MOD

S5.418 *Additional allocation:* in Bangladesh, Belarus, Korea (Rep. of), India, Japan, Pakistan, Singapore, Sri Lanka and Thailand, the band 2 535-2 655 MHz is also allocated to the broadcasting-satellite service (sound) and complementary terrestrial broadcasting service on a primary basis. Such use is limited to digital audio broadcasting and is subject to provisions of Resolution **528 (WARC-92)**. The provisions of No. **S5.416** and Article **S21**, Table **S21-4**, do not apply to this additional allocation.

MOD

S5.420A *Additional allocation:* in India and 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 operation limited to within their national boundaries.

MOD

S5.422 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, Brunei Darussalam, Congo, Côte d'Ivoire, Cuba, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Gabon, Georgia, Guinea, Guinea-Bissau, Iran (Islamic Republic of), Iraq, Israel, Jordan, Lebanon, Malaysia, Mali, Mauritania, Moldova, Mongolia, Nigeria, Oman, Uzbekistan, Pakistan, the Philippines, Qatar, Syria, Kyrgyzstan, the Dem. Rep. of the Congo, Romania, the Russian Federation, Somalia, Tajikistan, Tunisia, Turkmenistan, Ukraine, Yemen and Yugoslavia, 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, Mongolia, Kyrgyzstan, Romania and Turkmenistan, the band 3 100-3 300 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.430 *Additional allocation:* in Azerbaijan, Bulgaria, Cuba, Mongolia, Kyrgyzstan, Romania and Turkmenistan, 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 Korea (Rep. of), 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

S5.437

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* Consequential amendment - The reference to this resolution in No. **S5.417** is deleted.

MOD

S5.439 *Additional allocation:* in Iran (Islamic Republic of) and Libya, the band 4 200-4 400 MHz is also allocated to the fixed service on a secondary basis.

MOD

S5.447 *Additional allocation:* in Germany, Austria, Belgium, Denmark, Spain, Estonia, Finland, France, Greece, Israel, Italy, Japan, Jordan, Lebanon, Liechtenstein, Lithuania, Luxembourg, Malta, Norway, Pakistan, the Netherlands, Portugal, Syria, the United Kingdom, Sweden, Switzerland and Tunisia, the band 5 150-5 250 MHz is also allocated to the mobile service, on a primary basis, subject to agreement obtained under No. **S9.21**.

MOD

S5.448 *Additional allocation:* in Austria, Azerbaijan, Bulgaria, Libya, Mongolia, Kyrgyzstan, Slovakia, the Czech Republic, Romania and Turkmenistan, the band 5 250-5 350 MHz is also allocated to the radionavigation service on a primary basis.

MOD

S5.453 *Additional allocation:* in Saudi Arabia, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Libya, Madagascar, Malaysia, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. 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 Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, 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

S5.469 *Additional allocation:* in Armenia, Azerbaijan, Belarus, Bulgaria, Georgia, Hungary, Lithuania, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the band 8 500-8 750 MHz is also allocated to the land mobile and radionavigation services on a primary basis.

MOD

S5.473 *Additional allocation:* in Armenia, Austria, Azerbaijan, Belarus, Bulgaria, Cuba, Georgia, Hungary, Moldova, Mongolia, Uzbekistan, Poland, Kyrgyzstan, Slovakia, the Czech Republic, Romania, the Russian Federation, Tajikistan, Turkmenistan and Ukraine, the bands 8 850-9 000 MHz and 9 200-9 300 MHz are also allocated to the radionavigation service on a primary basis.

MOD

S5.477 *Different category of service:* in Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guyana, India, Indonesia, Iran (Islamic Republic of), Iraq, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Malaysia, Nigeria, Oman, Pakistan, Qatar, the Dem. People's Rep. 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, 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 Argentina, Brazil, Chile, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Honduras, Mexico, Paraguay, Peru, Uruguay and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.481 *Additional allocation:* in Germany, Angola, Brazil, China, Costa Rica, El Salvador, Ecuador, Spain, Guatemala, Japan, Morocco, Nigeria, Oman, Uzbekistan, Paraguay, Peru, the Dem. People’s Rep. of Korea, Sweden, Tanzania, Thailand and Uruguay, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD

S5.483 *Additional allocation:* in Saudi Arabia, Armenia, Azerbaijan, Bahrain, Belarus, Bosnia and Herzegovina, China, Colombia, Korea (Rep. of), Costa Rica, Egypt, the United Arab Emirates, Georgia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kazakstan, Kuwait, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Qatar, Kyrgyzstan, the Dem. People’s Rep. of Korea, Romania, the Russian Federation, 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

S5.495 *Additional allocation:* in Bosnia and Herzegovina, Croatia, Denmark, France, Greece, Liechtenstein, Monaco, 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, Kyrgyzstan and Turkmenistan, 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 listed in this footnote. Coordination of these earth stations is not required with stations of the fixed and mobile services of the countries listed 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 listed in this footnote.

MOD

S5.500 *Additional allocation:* in Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, Egypt, the United Arab Emirates, Gabon, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, 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, Hungary, Japan, Mongolia, Kyrgyzstan, Romania, the United Kingdom and Turkmenistan, 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, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, Congo, Korea (Rep. of), Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lesotho, Lebanon, Malaysia, Mali, Morocco, Mauritania, Oman, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. 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, Bosnia and Herzegovina, France, Greece, Ireland, Iceland, Italy, The Former Yugoslav Republic of Macedonia, Libya, Liechtenstein, Portugal, the United Kingdom, Slovenia, Switzerland and Yugoslavia, the band 14.25-14.3 GHz is also allocated to the fixed service on a primary basis.

MOD

S5.509 *Additional allocation:* in Japan the band 14.25-14.3 GHz is also allocated to the mobile, except aeronautical mobile, service 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, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Libya, Nepal, Nicaragua, Oman, Pakistan, Qatar, Slovenia, Sudan 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 and Slovakia, 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, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Iran (Islamic Republic of), Iraq, Israel, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, the Dem. Rep. of the Congo, Syria, the Dem. People's Rep. of Korea, Singapore, Somalia, Sudan, Tanzania, Chad, Togo and Tunisia, 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 the 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, Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, Guinea, India, Iran (Islamic Republic of), Iraq, Japan, Jordan, Kuwait, Lebanon, Malaysia, Mali, Morocco, Mauritania, Nepal, Pakistan, the Philippines, Qatar, Syria, the Dem. People's Rep. 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, Georgia, Mongolia, Kyrgyzstan, the Russian Federation, 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

S5.546 *Different category of service:* in Saudi Arabia, Armenia, Azerbaijan, Belarus, Egypt, the United Arab Emirates, Spain, Estonia, Finland, Georgia, Hungary, Iran (Islamic Republic of), Israel, Jordan, Latvia, Lebanon, Moldova, Mongolia, Uzbekistan, Poland, Syria, Kyrgyzstan, Romania, the United Kingdom, the Russian Federation, 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**).

MOD

S5.550 *Different category of service:* in Armenia, Azerbaijan, Belarus, Georgia, Mongolia, Uzbekistan, Kyrgyzstan, the Russian Federation, 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**).

SUP

S5.551D

ARTICLE S5

Frequency allocations

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 geostationary-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 a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite system in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. [No. **S5.43** does not apply.] Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

S5.484A 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 a non-geostationary-satellite system in the fixed-satellite service is subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. [No. **S5.43** does not apply.] Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

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 systems and subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the broadcasting-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. [No. **S5.43** does not apply.] Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

S5.516 The use of the band 17.3-18.1 GHz by geostationary-satellite systems in the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. The use of the band 17.3-17.8 GHz in Region 2 by systems in the fixed-satellite service (Earth-to-space) is limited to geostationary satellites. 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-geostationary-satellite systems in the fixed-satellite service is subject to application of the provisions of No. **S9.12** for coordination with other non-geostationary-satellite systems in the fixed-satellite service. Non-geostationary-satellite systems in the fixed-satellite service shall not claim protection from geostationary-satellite networks in the fixed-satellite service operating in accordance with the Radio Regulations, irrespective of the dates of receipt by the Bureau of the complete coordination or notification information, as appropriate, for the non-GSO FSS systems and of the complete coordination or notification information, as appropriate, for the GSO networks. [No. **S5.43** does not apply.] Non-geostationary-satellite systems in the fixed-satellite service in the above bands shall be operated in such a way that any unacceptable interference that may occur during their operation shall be rapidly eliminated.

MOD

S5.520 The use of the band 18.1-18.4 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links of geostationary-satellite systems in the broadcasting-satellite service.

MOD

18.6-22.21 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
18.6-18.8 EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) S5.522B MOBILE except aeronautical mobile Space research (passive) S5.522A S5.522C	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) S5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) S5.522A	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) S5.522B MOBILE except aeronautical mobile Space research (passive) S5.522A

SUP

S5.522

ADD

S5.522A The emissions of the fixed service and the fixed-satellite service in the band 18.6-18.8 GHz are limited to the values given in Nos. **S21.5A** and **S21.16.2**, respectively.

ADD

S5.522B The use of the band 18.6-18.8 GHz by the fixed-satellite service is limited to geostationary systems and systems with an orbit of apogee greater than 20 000 km.

ADD

S5.522C In the band 18.6-18.8 GHz, in Algeria, Saudi Arabia, Bahrain, Egypt, the United Arab Emirates, Jordan, Lebanon, Libya, Morocco, Oman, Qatar, Syria, Tunisia and Yemen, fixed-service systems in operation at the date of entry into force of the Final Acts of WRC-2000 are not subject to the limits of No. **S21.5A**.

SUP

S5.523

ADD

RESOLUTION [COM4/3] (WRC-2000)

Provisions relating to earth stations located on board vessels which operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that there is a demand for global wideband satellite communication services on vessels;

b) that the technology exists that enables earth stations on board vessels (ESVs) to use fixed-satellite service (FSS) networks operating in the 3 700-4 200 MHz and 5 925-6 425 MHz bands;

c) that ESVs have the potential to cause unacceptable interference to other services in the band 5 925-6 425 MHz;

d) that ESVs operating in these bands require considerably less than the full bandwidth in this FSS allocation and only a portion of the visible geostationary arc;

e) that there are a limited number of geostationary FSS systems that have global coverage;

f) that the number of vessels equipped with ESVs may be such as to place a heavy coordination burden on some administrations, especially those in developing countries;

g) that in order to ensure the protection and future growth of other services, ESVs shall operate with requisite technical and operational constraints;

h) that, based on appropriate assumptions, a minimum distance can be calculated beyond which an ESV will not have the potential to cause unacceptable interference to other services in this band,

noting

a) that ESVs may operate in fixed-satellite service networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz under No. **S4.4** of the Radio Regulations and shall not claim protection from, nor cause interference to, other services having allocations in the band;

b) that there is no need for new regulatory procedures for ESVs operating at specified fixed points,

recognizing

a) that progress has been made within ITU-R in determining the technical and operational provisions under which ESVs could operate;

b) that further studies are needed,

resolves

1 to invite ITU-R to continue to study, as a matter of urgency, the regulatory, technical and operational constraints to be applied to ESV operations, having regard to the provisional guidelines for ESV use in Annex 1 and the provisional technical guidelines given in Annex 2 and, in particular, to determine the appropriate value for the minimum distance from ESV stations beyond which these stations are assumed not to have the potential to cause unacceptable interference to stations of other services of any administration and beyond which no coordination would be required;

2 to invite ITU-R, as a matter of urgency:

– to develop Recommendations on methods for coordination between terrestrial services and ESVs;

– to study the feasibility of mitigation techniques, such as various frequency arrangements or dual-band systems, as a way to avoid the need for detailed coordination of ESVs without constraining existing services;

– to study, as a complement to the 3 700-4 200 MHz and 5 925-6 425 MHz bands, the use of other FSS allocations for ESVs transmitting in the 6 GHz and 14 GHz bands;

3 to invite WRC-03 to assess, in the light of these studies, the provisions under which ESVs could operate in FSS networks in the bands 3 700-4 200 MHz and 5 925-6 425 MHz, without causing unacceptable interference to radiocommunication services operating in accordance with the Radio Regulations;

4 that, until a decision is adopted for ESVs by WRC-03, agreement between the administrations licensing ESVs and affected administrations should be reached on a bilateral or multilateral basis, in accordance with the guidelines in Annexes 1 and 2;

5 that, until a decision is adopted for ESVs by WRC-03, administrations licensing ESVs that enter into bilateral or multilateral agreements under *resolves* 4 above should ensure that, as part of the licensing process, ESVs operate in compliance with such agreements, taking into consideration the interests of concerned neighbouring countries,

encourages concerned administrations

to cooperate with administrations which license ESVs while seeking agreement under *resolves* 4,

encourages ESV licensing administrations

to consider registering their ESV frequency assignments in the Master International Frequency Register, for information purposes only,

urges all administrations

to participate actively in the above-mentioned studies by submitting contributions,

instructs the Secretary-General

to bring this resolution to the attention of the Secretary-General of the International Maritime Organization and to invite IMO to participate in the work on this issue.

ANNEX 1 TO RESOLUTION [COM4/3] (WRC-2000)

Provisional guidelines for ESV use

1 The administration that issues the licence for the use of ESVs in these bands (licensing administration) shall ensure that such stations do not cause unacceptable interference to the services of other concerned administrations.

2 Operators of ESVs shall comply with the technical guidelines listed in Annex 2 and/or those agreed by the licensing and concerned administrations.

3 ESVs shall not claim protection from transmissions of other services operating in accordance with the Radio Regulations.

4 Any transmissions from ESVs within an agreed distance, as identified in *resolves* 1 of this resolution, shall be based upon the prior agreement of the concerned administration.

5 Administrations which issue ESV licences shall ensure that ESV operators endeavour to provide the necessary assistance to the concerned administrations in order to facilitate the agreement.

6 Administrations, in determining the distance referred to in item 4 above, are encouraged to exclude those parts of their territory, such as remote small islands, where other services in the band 5 925-6 425 MHz are neither operating nor planned.

7 If an administration changes its actual or planned deployment of stations in other services, it may require revision of the agreement with the ESV licensing administration(s).

8 The ESV system should include means of identification and automatic mechanisms to terminate transmissions whenever the station operates outside its authorized geographic (see item 4 above) or operational limits.

9 ESVs should be equipped so as to enable the licensing administration under the provisions of Article **S18** to verify earth station performance and to terminate ESV transmissions immediately upon request by an administration whose services may be affected.

10 When ESVs operating beyond the territorial waters but within a specified distance (as referred to in item 4 above) fail to comply with the terms required by the concerned administration pursuant to items 2 and 4, then that administration may:

– request the ESV to comply with such terms or cease operation immediately; or

– request the licensing administration to require such compliance or immediate cessation of the operation.

11 Any licensing authority that licenses ESVs should maintain at all times a point of contact that may be contacted by a concerned administration.

ANNEX 2 TO RESOLUTION [COM4/3] (WRC-2000)

Provisional technical guidelines applicable to ESVs operating in the bands 3 700-4 200 MHz and 5 925-6 425 MHz

Minimum diameter of ESV antenna:	2.4 m
Maximum half-power beamwidth of ESV antenna:	1.5º
Minimum elevation angle of ESV antenna:	10°
Maximum necessary bandwidth per vessel:	2.346 MHz
Maximum necessary bandwidth in a single operating area:	36 MHz (see Note)
Maximum ESV transmitter power spectral density at the input to the antenna:	17 dB(W/MHz)
Tracking accuracy of ESV antenna:	0.2º

NOTE - The actual bandwidth required in an operating area will depend on the number of ESVs that would be present simultaneously in that area, and in many areas the required bandwidth will be less than 36 MHz. In addition, because ESVs are frequency agile, the necessary bandwidth per vessel (2.346 MHz) can be generally identified anywhere within the 4/6 GHz bands and does not have to be contiguous with bandwidth of other ESVs.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 497-E
31 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note from the Chairperson of GT PLEN-1

Please find the attached texts proposed to replace section 1 of Annex 1 of Appendix S30 and section 4 of Annex 1 of Appendix S30A appearing currently in square brackets in Document 493 (source: Document DT/116) submitted to the Editorial Committee.

R. ZEITOUN
Chairperson, GT PLEN-1, Box 27

ATTACHMENT

Proposed criteria for protection of the Regions 1 and 3 Plan or List or assignments previously proposed for inclusion in the List

ANNEX 1 TO APPENDIX S30

MOD

1 Limits for ~~to~~ the ~~change in the wanted-to-interfering signal ratio with respect to~~interference into frequency assignments in conformity with the Regions 1 and 3 Plan or with the Regions 1 and 3 List or into new or modified assignments in the Regions 1 and 3 List

~~With respect to § 4.3.1.1 of Article 4, an administration in Region 1 or 3 shall be considered as being affected if the effect of the proposed modification to the Regions 1 and 3 Plan would result in the wanted-to-interfering signal ratio at any point within the service area associated with any of its frequency assignments in that Plan falling below either 30 dB or the value resulting from the frequency assignments in the Plan at the date of entry into force of the Final Acts[14], whichever is the lower.~~

NOTE – In performing the calculation, the effect at the receiver input of all the co-channel and adjacent-channel signals is expressed in terms of one equivalent co-channel interfering signal. This value is usually expressed in decibels.

ADD

Under assumed free-space propagation conditions, the power flux-density of a proposed new or modified assignment in the List shall not exceed the value of –103.6 dB(W/m^2/27 MHz).

With respect to paragraphs 4.1.1 a) or b) of Article 4, an administration in Region 1 or 3 shall be considered as being affected if the minimum orbital spacing between the wanted and interfering space stations, under worst case station keeping conditions, is less than 9°. However, an administration shall not be considered as affected if either of the following two conditions are met:

a) under assumed free-space propagation conditions, the power flux-density at any test point within the service area associated with any of its frequency assignments in the Plan or in the List or for which the procedure of Article 4 has been initiated, does not exceed the following values:[14*bis*]

~~[14] Final Acts of the 1977 Conference, which entered into force on 1 January 1979.~~

[14*bis*] For the protection of analogue assignments brought in service before 17 October 1997, the following values shall be used and until 1 January 2015:

–147 dB(W/m^2/27 MHz)	for $0° \leq \theta < 0.44°$
$-138 + 25 \log \theta$ dB(W/m^2/27 MHz)	for $0.44° \leq \theta < 9°$.

-147 dB(W/m^2/27 MHz)	for $0° \leq \theta < 0.245°$
$-134.8 + 20 \log \theta$ dB(W/m^2/27 MHz)	for $0.245° \leq \theta < 1.7°$
$-135 + 1.66\ \theta^2$ dB(W/m^2/27 MHz)	for $1.7° \leq \theta < 3.6°$
$-127.5 + 25 \log \theta$ dB(W/m^2/27 MHz)	for $3.6° \leq \theta < 9°$;

b) the effect of the proposed new or modified assignments in the List is that the equivalent downlink protection margin[13*bis*] corresponding to a test point of its entry in the Regions 1 and 3 Plan or List, or for which the procedure of Article 4 of this Appendix has been initiated, including cumulative effect of any previous modification to the List or any previous agreement, does not fall more than 0.45 dB below 0 dB or, if already negative, more than 0.45 dB below the value resulting from:

– the Regions 1 and 3 Plan and List as established by WRC-2000; *or*

– a proposed new or modified assignment to the List in accordance with this Appendix; *or*

– a new entry in the Regions 1 and 3 List as the result of successful application of Article 4 procedures.

ANNEX 1 TO APPENDIX S30A

MOD

4 Limits to the <u>interference</u> ~~change~~ <u>into</u> ~~the feeder-link equivalent protection margin with respect to~~ frequency assignments in conformity with the Regions 1 and 3 Plan[12] <u>or with the Regions 1 and 3 List or proposed new or modified assignments in the Regions 1 and 3 List</u>

~~With respect to the modification to the Regions 1 and 3 Plan and when it is necessary under this Appendix to seek the agreement of any other administration of Region 1 or 3, an administration shall be considered affected if the feeder-link equivalent protection margin[13] corresponding to a test point of its entry in the Plan, including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:~~

~~– the Plan as established by the 1988 Conference; *or*~~

~~– a modification of the assignment in accordance with this Appendix; *or*~~

~~– a new entry in the Plan under Article 4; *or*~~

~~– any agreement reached in accordance with this Appendix.~~

13*bis* For the definition of the equivalent protection margin, see § 3.4 of Annex 5.

~~12 With respect to § 4, the limit specified relates to the feeder-link equivalent protection margin calculated in accordance with § 1.7 of Annex 3.~~

~~13 For the definition of the equivalent protection margin, see § 1.7 of Annex 3.~~

ADD

Under assumed free-space propagation conditions, the power flux-density of a proposed new or modified assignment in the List shall not exceed the value of –76 dB(W/m^2/27 MHz) at any point in the GSO orbit, and the relative off-axis e.i.r.p. of the associated feeder-link antenna shall be in compliance with Figure A (WRC-97 curves) of Annex 3 to this Appendix.

With respect to paragraphs 4.1.1 a) or b) of Article 4, an administration in Region 1 or 3 shall be considered as being affected if the minimum orbital spacing between the wanted and interfering space stations, under worst-case station-keeping conditions, is less than 9°.

However, an administration shall not be considered as affected if, under assumed free-space propagation conditions, the effect of the proposed new or modified assignments in the List is that the feeder-link equivalent protection margin[13] corresponding to a test point of its entry in the Plan and the List or for which the procedure of Article 4 of this Appendix has been initiated, including the cumulative effect of any previous modification to the List or any previous agreement, does not fall more than 0.45 dB below 0 dB, or, if already negative, more than 0.45 dB below the value resulting from:

– the Regions 1 and 3 Plan and List as established by WRC-2000; *or*

– a proposed new or modified assignment to the List in accordance with this Appendix; *or*

– a new entry in the Regions 1 and 3 List as the result of the successful application of Article 4 procedures.

For a proposed new or modified assignment to the List, in the interference analysis, for each test point, the antenna characteristics described in section 3.5 of Annex 3 to this Appendix shall apply.

[13] For the definition of the equivalent protection margin, see § 1.7 of Annex 3.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 498-E
31 May 2000
Original: French

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 3

SUMMARY RECORD

OF THE

THIRD AND FINAL MEETING OF COMMITTEE 3

(BUDGET CONTROL)

Monday, 29 May 2000, at 0930 hours

Chairperson: Mr B. GRACIE (Canada)

Subjects discussed		**Documents**
1	Approval of the summary records of the first and second meetings of Committee 3	189, 394
2	Draft report of the Budget Control Committee to the Plenary Meeting	DT/115

1 Approval of the summary records of the first and second meetings of Committee 3 (Documents 189 and 394)

1.1 The summary records of the first and second meetings of Committee 3 were **approved**.

2 Draft report of the Budget Control Committee to the Plenary Meeting (Document DT/115)

2.1 The **Chairperson** introduced the various sections of the draft report, which he submitted to Committee 3 for approval.

2.2 The **delegate of the United States** said he was not aware of the measures taken by Working Group 2 of the Plenary to provide, as indicated in § 8.1.1. of the draft report of Committee 3, the information needed in order to estimate the financial implications for the Union of preparations for forthcoming conferences.

2.3 The **Chairperson** explained that at the beginning of the conference it had been laid down in the terms of reference of Committee 3 and Working Group 2 of the Plenary that the latter would provide the material needed in order to have some idea of the scale of financial resources required for the preparatory work on the items to be included in the agendas of the next two WRCs. It now appeared that the working group would be unable to provide that information. In that connection, § 8.2 of the draft report indicated that the complexity of the work of the conference and the limited time available to carry out a realistic analysis made it difficult to supply definitive financial estimates. Annex 2 to the draft report gave only very rough financial estimates for decisions of the conference that were likely to increase the workload of ITU-R and/or other Sectors and departments of the Union.

2.4 The **Director of the Radiocommunication Bureau** pointed out that it was extremely difficult to cost conference decisions, for three reasons: in a number of cases it was not known what decision would be taken; the staff capable of estimating the financial implications of decisions were fully engaged in providing other support services to the conference; and many of the cost components were difficult to foresee, being beyond BR's control, for instance, the number of study group and other meetings devoted to preparing for future WRCs, the volume of documentation that would be submitted by Member States and Sector Members, and so on. It would be possible to have a better idea of all those financial implications following the first session of CPM, which would be held immediately after the conference and would draw up a preparatory work plan for the next conference. Accordingly, the amounts shown in Annex 2 were no more than a very provisional estimate, as at 26 May 2000, of the impact of certain decisions that the conference had taken or might take.

2.5 Generally speaking, the financial situation of the Union was not good. Budgeted expenditure was already reaching the ceiling set at the Minneapolis Plenipotentiary Conference, and a ceiling had also been placed on the amount of the contributory unit. Even if the Union's income exceeded the estimates, it would be practically impossible to ask the Council to allocate additional resources. The only realistic solution was to review the Sector's priorities, which was not easy to do but had already been done on previous occasions. To that end, ITU-R's operational plan for 2001 and the remainder of the operational plan for 2000 would have to be revised with a view to reducing, postponing or even dropping certain activities. The financial report for 1998-1999 to be submitted to the Council revealed budgetary overspending of CHF 240 000 for study group and CPM meetings to prepare for WRC-2000 and there was every reason to fear that the preparatory work for the next two WRCs would be even more costly. Furthermore, unless all those who were hoping for an improvement in the situation regarding satellite network filings were to be

disappointed, the savings that could be made by applying the measures envisaged by Committee 4 in that respect would have to be devoted to absorbing the backlog of filings. A more detailed analysis of the full financial implications of the decisions of the conference would be submitted to the Council at its next session.

2.6 The **Chairperson** noted that, according to alternative b) in § 8.4 of the draft report, the main effect of the decisions of the conference was that some activities would have to be reduced, postponed or even dropped. He also reminded delegates that the timing of major Radiocommunication Sector meetings had a bearing on the Union's general financial situation, a fact which would be brought to the attention of the Plenary at the proper time.

2.7 The **delegate of the United States** said he was in favour of alternative a) in § 8.4 of the draft report, which consisted in absorbing the workload within the existing resources of the Union. He also asked whether, as in 1997, savings had been made on the budget of the Radiocommunication Assembly and, if so, whether those savings could be used to cover the expenses of the conference.

2.8 The **Director of the Radiocommunication Bureau** pointed out that alternative a) called for the development of appropriate tools and mechanisms, which would in itself require resources, in the short term at least. The resources allocated to software design in BR were somewhat limited and the Bureau already had a heavy programme in that area.

2.9 The **Secretary** stated that the savings made on the budget of the recent Radiocommunication Assembly amounted to CHF 67 000. However, the Financial Regulations of the Union prevented that amount from being transferred to the WRC budget to cover its expenses.

2.10 The **Chairperson** pointed out that at its 2001 session the Council would establish the biennial budget for 2002-2003 and that the ceiling set for expenditure at the Minneapolis Plenipotentiary Conference would make any allocation of additional resources extremely difficult, particularly for post-conference activities, without putting the Union in a very awkward financial situation.

2.11 The **delegate of the United States** noted that the estimated cost of republishing on CD-ROM, at the request of Committee 4, all circulars and special sections of the past ten years amounted to some CHF 900 000. He suggested that DVD should be used instead of CD-ROM, which would reduce the cost of the operation by a factor of ten.

2.12 That suggestion was **noted**.

2.13 The draft report of Committee 3 was **approved** in the light of the comments made during the debate.

The meeting rose at 1000 hours.

The Secretary:
G. EIDET

The Chairperson:
B. GRACIE

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 499-E
31 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

Note by Chairperson of Committee 5

TRANSITIONAL ARRANGEMENTS

Discussion in Committee 5 indicated that new of revised provisions of the Radio Regulations considered by the Committee should have effect immediately after WRC-2000. Draft Resolution [COM 5/31] (annexed) addresses this issue. It is submitted for consideration by the Plenary.

Chris Van DIEPENBEEK
Chairperson, Committee 5

RESOLUTION [COM 5/31]

Transitional and implementation arrangements in certain frequency bands for the use of geostationary networks in the fixed-satellite service and broadcasting-satellite service, and non-geostationary systems in the fixed-satellite service as well as for the use of networks in the radionavigation-satellite service, and terrestrial services

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that WRC-2000 revised the sharing criteria and associated regulatory provisions between and among GSO FSS and BSS networks, non-GSO FSS systems, and terrestrial stations in certain parts of the 10.7-30 GHz band;

b) that it is important for geostationary satellite networks and terrestrial stations, and for non-GSO FSS systems for which complete notification or coordination information, as appropriate, has been received by the Bureau after 21 November 1997, that the new and revised power limits in Articles **S21** and **S22** and associated provisions be immediately brought into force;

c) that, by the end of the year 2000, the Bureau is expected to have modified its database and capture software, and to have issued a circular letter defining the format in which the data should be submitted, along with any other necessary information;

considering further

a) that this conference has decided to introduce new or revised allocations for the radionavigation–satellite service (space-to-Earth) (space-to-space) in the bands 960 – 1 300 MHz, 1 559 – 1 610MHz and 5 000 – 5 150 MHz and for the radionavigation–satellite service (Earth-to-space) in the bands 1 300 – 1 350 MHz and 5 000 – 5 150 MHz as well as for other services in these bands;

b) that certain provisions regarding the new allocations shall apply as of 3 June 2000 (See Resolution **COM 5/16 (WRC-2000)** and Resolution **COM 5/19 (WRC-2000)**;

c) that some administrations have expressed the wish to start the notification procedure for radionavigation–satellite networks and other systems as soon as possible following this Conference;

resolves

1 that, as of 22 November 1997, in the frequency bands specified in Tables **S22-1A, S22-1B, S22-1C, S22-1D, S22-2,** and **S22-3** of Article **S22**, non-GSO FSS systems for which complete notification or coordination information, as appropriate, has been received by the Bureau after 21 November 1997 shall be subject to the power limits in these tables, as established by WRC-2000;

2 that, as of 3 June 2000, in any case where complete coordination or notification information, as appropriate, is considered as having been received between 22 November 1997 and 2 June 2000 for a non-GSO FSS system in the frequency bands specified in *resolves 1* above, the responsible Administration shall, within six months after the BR letter referenced in considering c) or by 1 July 2001, whichever is later, submit all necessary supplementary information (see

Annex **2A,** Sections **A.4b6, A.4b7,** and **A.14** and **C.9d** of Appendix **S4**) to permit the Bureau to make a finding in compliance with the limits in Tables **S22-1A, S22-1B, S22-1C, S22-1D, S22-2,** and **S22-3** of Article **S22**, as established by WRC-2000;

3 that, as of 22 November 1997, in the frequency bands specified in Tables **S22-4A** (including Table **S22-4A1), S22-4B,** and **S22-4C** of Article **S22**, non-GSO FSS systems for which complete notification or coordination information, as appropriate, is considered as having been received by the Bureau after 21 November 1997 shall be subject to the power limits in these tables, as established by WRC-2000;

4 that, as of 3 June 2000, in any case where complete coordination or notification information, as appropriate, is considered as having been received between 22 November 1997 and 2 June 2000 for a non-GSO FSS system in the frequency bands specified in *resolves 3* above, the responsible Administration shall, within six months after the BR letter referenced in considering c) or by 1 July 2001, whichever is later, submit the commitment in Sections **A.15** of Annex **2A** of Appendix **S4** to meeting the single-entry additional operational $epfd_{down}$ limits in Table **S22-4A1**, as established by WRC-2000;

5 that in the frequency bands specified in Table **S22-1D**, which are allocated to the broadcasting-satellite service and subject to the Plan of Appendix **S30**, no advance publication, coordination or notification information for non-GSO FSS systems shall be considered as having a date of receipt before 22 November 1997;

6 that as of 3 June 2000, the following provisions of these Regulations, as revised or established by WRC-2000, shall apply : Nos. **S22.5B** through **S22.5K**, inclusive; Nos. **S9.11A** through **S9.16**, inclusive; Nos. **S22.26** through **S22.39**, inclusive; No. **S5.520**; No. **S5.516**; No. **S5.441**; No. **S5.484A**; No. **S5.487A**; No. **S5.491**; No. **S5.502**, No. **S5.503**; Nos. **S9.7A** through **S9.7B**, inclusive; No. **S9.35.1**; Nos. **S11.32.A** through **S11.33**, inclusive; Annexes **2A** and **2B** of Appendix **S4**; Table **S5-1** of Appendix **S5**; and Table **S21-4** and its associated footnotes;

further resolves

that the new or revised allocations in the bands 960 – 1 300 MHz, 1 300 – 1 350 MHz, 1 559 – 1 610 MHz and 5 000 – 5 150 MHz shall enter into force on 3 June 2000;

instructs the Radiocommunication Bureau

as of 3 June 2000, and taking into account *resolves 2*, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22** (WRC-97) for a non-GSO FSS system for which complete coordination or notification information, as appropriate, has been received between 22 November 1997 and 2 June 2000, inclusive. This review shall be based on the limits in Tables **S22-1A, S22-1B, S22-1C, S22-1D, S22-2,** and **S22-3** of Article **S22**, as adopted by WRC-2000.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 500-E
2 June 2000
Original: French/ English/ Spanish

ISTANBUL, 8 MAY – 2 JUNE 2000

LIST OF DOCUMENTS ISSUED
(Documents 451 – 500)

DOCUMENT NUMBER	***SOURCE***	***TITLE***	***DESTINATION***
451	C5	Sixth series of texts submitted by Committee 5 to the Editorial Committee	C6
452	WG PLEN-1	Note by the Chairperson of GT PLEN-1 to the Chairperson of Committee 4	C4
453	C4	Seventh series of texts submitted by Committee 4 to the Editorial Committee	C6
454	C4	ITU-R Recommendations containing texts incorporated by reference in the Radio Regulations	PL
455	C6	**B.6** - Sixth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
456 + Add.1	C5	Seventh series of texts submitted by Committee 5 to the Editorial Committee	C6
457	C5	Note from Chairperson, Committee 5	WG PLEN-2
458 + Rev.1	SG	Review and possible revision of the 1997 Broadcasting-Satellite Service Plans for Regions 1 and 3	PL
459	C6	**R.2** - Second series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
460	C6	**B.7** - Seventh series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
461	WG PLEN-1	Annex 2 of Appendices S30 and S30A	C4
462 + Add.1-2	C6	**B.8(Add.1) + (Add.2)** - Eighth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
463	C5	Note from Chairperson, Committee 5	PL

DOCUMENT NUMBER	*SOURCE*	*TITLE*	*DESTINATION*
464	C5	Summary Record of the fourth meeting of Committee 5 (Allocation and associated issues)	C5
465	C5	Review of Resolutions and Recommendations	PL
466	WG PLEN-1	Second series of texts submitted by Working Group 1 of the Plenary to the Editorial Committee	C6
467	C4	Eighth series of texts submitted by Committee 4 to the Editorial Committee	C6
468	C4	Note by the Chairperson of Committee 4	C4
469	C3	Report of the Budget Control Committee to the Plenary Meeting	PL
470	C4	Summary Record of the fifth meeting of Committee 4 (Regulatory and associated issues)	C4
471 + Rev.1	-	This document was withdrawn	-
472	C4	Ninth series of texts submitted by Committee 4 to the Editorial Committee	C6
473	C4	Summary Record of the sixth meeting of Committee 4 (Regulatory and associated issues)	C4
474	WG PLEN-1	Third series of texts submitted by Working Group 1 of the Plenary to the Editorial Committee	C6
475	WG PLEN-1	Determination of Plan systems and List systems	PL
476	WG PLEN-1	List of "Existing" systems included in the replanning process for subsequent inclusion in the Plan or in the List	PL
477	C6	**R.3** - Third series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
478	C6	**B.9** - Ninth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
479	WG PLEN-1	Note by the Chairperson of Working Group 1 of the Plenary to Committee 6	C6
480	C4	Tenth series of texts submitted by Committee 4 to the Editorial Committee	C6
481	C6	**R.4** - Fourth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
482	C4	Note by the Chairperson of Committee 4	PL

DOCUMENT NUMBER	*SOURCE*	*TITLE*	*DESTINATION*
483	C2	Summary Record of the second and last meeting of Committee 2 (Credentials)	C2
484	C4	Note by the Chairperson of Committee 4	PL
485	C4	Modification to RR Appendices S4 and S5	C6
486	C4	Eleventh series of texts submitted by Committee 4 to the Editorial Committee	C6
487	Chairperson, WRC-2000	ITU-R Recommendations containing texts incorporated by reference in the radio regulations	PL
488	C6	**R.5** - Fifth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
489	C6	**R.6** - Sixth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
490	C6	**B.10** - Tenth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
491	WG PLEN-2	Final report of GT PLEN-2 to the Plenary	PL
492	WG PLEN-2	Second series of texts submitted by GT PLEN-2 to the Editorial Committee	C6
493 + Add.1	WG PLEN-1	Fourth series of texts submitted by Working Group 1 of the plenary to the Editorial Committee	C6
494	C6	**B.11** - Eleventh series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
495	C6	**B.12** - Twelfth series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
496	C6	**R.7** - Seventh series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
497	WG PLEN-1	Note from the Chairperson of GT PLEN-1	PL
498	C3	Summary Record of the third and last meeting of Committee 3 (Budget Control)	C3
499	C5	Transitional arrangements	PL
500	BR	List of documents issued (451 – 500)	