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

To reduce download time, the ITU Library and Archives Service has divided the conference documents into sections.

- This PDF includes Document No. 201-300
- The complete set of conference documents includes Document No. 1-544, DT No. 1-132 and DL No. 1-79.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 201-E
15 May 2000
Original : English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Chairperson of Working Group 4B
to the Chairperson of Committee 4

AGENDA ITEM 2
(Incorporation by reference)

Suggested WRC procedures for adoption of texts for incorporation by reference

The Working Group considered the mechanism that this conference should apply in taking action under agenda item 2. The following procedures are therefore suggested for the conference's consideration for adding or updating references to ITU-R Recommendations contained in the Radio Regulations pursuant to Resolution 27 (Rev.WRC-97) and Resolution 28 (WRC-95). They are based on the procedures employed by WRC-97, and further developed by the Special Committee and contained in CPM-99 Report (Document 3), at Annex 2 to Chapter 7.

In order for a WRC to incorporate new texts or to update references to texts already incorporated, the following working procedures should be observed:

- the actual references to Recommendations liable to be incorporated must be published as conference documents, and approved on second reading by the plenary meeting in all cases where a WRC wishes them to be incorporated by reference;

- for a plenary meeting to adopt a text as being incorporated by reference on a mandatory basis, it is necessary and sufficient that the delegations participating in the plenary meeting should have been provided access to the text in question, but this does not necessarily mean that the texts should be published as official conference documents.

During the course of a WRC it will therefore be necessary to ensure that a list of the Recommendations proposed for incorporation by reference is developed, maintained and published as a conference document in line with developments during the conference, and that all texts listed for mandatory incorporation are available for delegates to consult in their final English, Spanish and French versions.

By adoption of a reference to a Recommendation at second reading in accordance with the above conditions, the plenary meeting is therefore deemed to have formally adopted the text of the Recommendation.

Following the conference, the secretariat shall update volume 4 of the Radio Regulations containing the full text of all Recommendations incorporated by reference on a mandatory basis. To ensure the completeness of this volume, the Committees should clearly identify their intentions with respect to Recommendations incorporated.

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

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 202-E
2 June 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 2

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 2

(CREDENTIALS)

Thursday, 11 May 2000, at 1110 hours

Chairperson: Mr A.M.T. ABU (Nigeria)

Please note that paragraph 3.1 should read as follows:

3.1 The **Chairperson** said that the instruments for transfer of full powers from Eritrea to Saudi Arabia, with effect from 20 May onwards, have been deposited with the Secretariat.

The Chairperson:
A.M.T. ABU

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 202-E
15 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 2

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 2
(CREDENTIALS)

Thursday, 11 May 2000, at 1110 hours

Chairperson: Mr A.M.T. ABU (Nigeria)

Subjects discussed		**Documents**
1	Terms of reference of the Credentials Committee	2
2	Examination of credentials	-
3	Transfer of powers	-
4	Organization of work	-

1 Terms of reference of the Credentials Committee (Document 2)

1.1 The terms of reference of the committee, as contained in Document 2, were **noted**.

2 Examination of credentials

2.1 The **Chairperson** invited the Committee to examine the credentials deposited.

2.2 Following the examination of the credentials, the **Secretary** said that the credentials of the following countries had been verified: Germany, Andorra, Saudi Arabia, Argentina, Australia, Bahrain, Botswana, Brazil, Brunei Darussalam, Burundi, Cameroon, Canada, Central African Republic, China, Cyprus, Vatican, Comoros, Korea (Rep. of), Cuba, Egypt, El Salvador, United Arab Emirates, Eritrea, Finland, Guatemala, Guyana, India, Ireland, Iceland, Japan, Jordan, Kenya, the Former Yugoslav Republic of Macedonia, Lebanon, Liechtenstein, Lithuania, Luxembourg, Mali, Malta, Morocco, Mongolia, Nigeria, Norway, New Zealand, Oman, Uganda, Papua New Guinea, Netherlands, Poland, Portugal, Syria, Slovakia, United Kingdom, Russia, San Marino, Sweden, Switzerland, Suriname, Chad, Thailand, Tonga, Tunisia, Turkey, Ukraine, Uruguay and Viet Nam.

2.3 The **delegate of Spain** suggested that the credentials of the United Kingdom should be re-examined, since the title of the person providing the accreditation had not been entered.

2.4 That suggestion was **noted**.

2.5 The list of countries whose credentials had been verified was **approved**.

3 Transfer of powers

3.1 The **Chairperson** said that two States had transferred their full powers to other countries: Eritrea to Saudi Arabia, from 20 May onwards, and Liechtenstein to Switzerland.

3.2 The transfer of powers was **noted**.

4 Organization of work

4.1 In reply to a question from the **delegate of Spain**, the **Chairperson** said that the Committee will be reporting to Plenary on 29 May 2000 and the second meeting of the Committee would take place accordingly. So far, of the 124 States present at the Conference the credentials of 66 had been verified and two had transferred powers.

The meeting rose at 1225 hours.

The Secretary:
D. SCHUSTER

The Chairperson:
A.M.T. ABU

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 203-E
15 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Israel (State of)

PROPOSAL FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.6.1

The Administration of the State of Israel wishes to make the following proposals for the work of the Conference:

The bands 1 885-2 025 and 2 110-2 200 MHz are intended for use, on a worldwide basis, by administrations wishing to implement the 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 State of Israel proposes to identify for implementation of IMT-2000 and other advanced communication applications the additional bands 824-960, 1 710-1 885 and 2 500-2 690 MHz, allocated to mobile and mobile-satellite services, provided such use does not preclude the use of these bands by other services to which these bands are allocated. These bands should be given equal regulatory treatment.

In each administration, due consideration should be given to the need and regulatory conditions associated with the implementation of these bands, in order to achieve harmonized worldwide use.

The State of Israel also proposes to conduct studies for implementation of IMT-2000 in the bands 824-960, 1 710-1 885 and 2 500-2 690 MHz.

In the band 2 700-2 900 MHz, Israel proposes NO CHANGE to the current allocations.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 204-E
15 May 2000
Original: French

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Central African Republic

PROPOSALS FOR THE WORK OF THE CONFERENCE

AGENDA ITEM 1.1

Having examined the footnotes to the Table of Frequency Allocations referred to in agenda item 1.1, the Administration of the Central African Republic proposes that its country name be deleted from the following footnotes:

MOD CAF/204/1

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, 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 CAF/204/2

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.

INTERNATIONAL TELECOMMUNICATION UNION

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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

United Kingdom of Great Britain and Northern Ireland

PROPOSALS FOR THE WORK OF THE CONFERENCE

RESOLUTION 85 (MINNEAPOLIS, 1998)

Proposals to improve the application of administrative due diligence

Introduction

The United Kingdom recalls the three key conclusions of the Special Committee in respect of Resolution **18 (Kyoto, 1994)** prior to WRC-97 that led to the introduction of administrative due diligence through Resolution **49 (WRC-97)** and related changes in Articles **S9** and **S11**:

Recommendation 1: The advance publication (API) stage should be retained but simplified and streamlined, and its regulatory status (starting the clock) should be preserved. In addition, the API should be automatically deleted if not followed by coordination information (AP3) submission within 24 months of the date of receipt of the API information.

Recommendation 2: The period between the submission of the API and the date of bringing into use should be reduced and the right of extension should be limited.

Recommendation 3: Administrative due diligence should be adopted as a means of addressing the problem of reservation of capacity without actual use. Any due diligence approach adopted should apply (in accordance with the transitional measures to be adopted) to any satellite network being coordinated and to satellite networks notified or recorded in the MIFR.

The United Kingdom stated its strong support for these recommendations together with the view that it would be essential for the recommended changes to become effective as soon as possible, that is, as from the date of their adoption by WRC-97.

In any event, the procedures established under Resolution **49 (WRC-97)** were hedged with exceptions and transitional arrangements that have delayed the full effectiveness of the procedures to eliminate speculative filings. This delay will last another two to three years from now, depending on the circumstances of the original filing.

The finding contained in the report of the Bureau to WRC-2000, in response to Resolution **85 (Minneapolis, 1998)**, that administrative due diligence procedures have not, in themselves, contributed to any reduction in the paper satellite problem, comes as no surprise because of this delay.

Besides the delay in application, a more fundamental criticism of the present due diligence procedure is that the ultimate sanction, that is the cancellation of a filing, is reserved to the end of the process, around the date of bringing into use.

The alternative concept of financial due diligence finds no favour in the United Kingdom because of the unwelcome implications as to the principles of equitable access to spectrum and orbit resources and the change to the status of ITU that would result from a change from technical to financial regulation of these scarce resources.

The United Kingdom would therefore encourage WRC-2000 to review the procedures of Resolution **49 (WRC-97)** in response to Resolution **85 (Minneapolis, 1998)** with a view to improving the effectiveness of administrative due diligence at an earlier stage and adopting more rigorous time-scales to define the entire process from notification to bringing into use.

It is considered that the proposed changes to the API, coordination and administrative due diligence procedures will eventually reduce the volume of filings substantially and ensure that filings are progressed to operation in a timely manner. It is proposed that Resolution **49** is amended to have effect from 1 January 2001. Because of the increasing impact of the existing Resolution **49 (WRC-97)** provisions should not disadvantage the implementation of genuine networks already in progress.

Proposals

The following outline proposals are intended to reduce the overall time period from the notification to the bringing into use of satellite networks and to ensure that effective progress is maintained at all stages.

The necessary improvements to Resolution **49 (WRC-97)** and the associated provisions of Articles **S9** and **S11** could be achieved through part or all of the following measures:

G/205/1

Reduce the overall time limit for bringing a satellite network into use from five to four years from the date of the API submission through modification of Nos. **S9.1**, **S11.44** and Resolution **49 (WRC-97)**. The maximum extension period permitted in the extraordinary circumstances listed in **S11.44C** to **S11.44I** would also be reduced from two years to one year through modification of No. **S11.44**.

G/205/2

Reduce the time allowed for receipt of the request for coordination by the Bureau from within two years to within 18 months of the date of receipt of the API submission through modification of No. **S9.52D**. Maintain the ultimate sanction of cancellation of the filing if the information is not submitted as required.

G/205/3

Bring forward the time-limit allowed for administrations to provide complete due diligence information to the Bureau in respect of networks in the coordination process, or networks recorded in the MIFR but not yet brought into use, to no later than six months before the date of bringing into use through modification of Resolution **49 (WRC-97)**. Failure to provide the complete due diligence information will, as at present, result in the network being deleted from the process and no longer taken into account with respect to other coordination activities.

G/205/4

Introduction of interim due diligence “milestones” to ensure effective progress in realizing satellite networks through additional procedures in Resolution **49 (WRC-97)** and additional provisions in Article **S9**. Satellite filings that have not made sufficient progress within the set time-scales will be placed in suspension or, if appropriate, cancelled.

G/205/5

Retain the API stage in recognition of its utility in setting a reference date for the entire process of notification, coordination, provision of due diligence information and bringing into use, and in helping administrations to prepare for impending coordination requests. However, the following useful improvements should be implemented:

1) reduce the maximum time-limit for presenting coordination data from six to four months after the API date through modification of No. **S9.1**;

2) not allow resubmission of ostensibly the same GSO network with satellite(s) outside the original service arc(s) through modification of No. **S9.2**.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 206-E
15 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Report by the Chairperson of Working Group 4B

FIRST REPORT FROM WORKING GROUP 4B TO COMMITTEE 4

(Agenda item 1.2)

At its fifth meeting on 15 May 2000, the Working Group reviewed the texts of Appendix S3 and Recommendation 66 (Rev.WRC-97).

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

Furthermore, the Working Group agreed on the suppression of Recommendation 507.

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

APPENDIX S3

Table of maximum permitted spurious emission power levels

(See Article **S3**)

NOC

1 to 5

Section I – Spurious emission limits for transmitters installed on or before 1 January 2003 (valid until 1 January 2012)

MOD

6 ~~The measurement methods for radar systems should be guided by Recommendation ITU-R M.1177. For those radar systems for which acceptable methods of measurement do not exist, the lowest practicable power of spurious emission should be achieved.~~Radar systems are exempt from spurious emission limits under this section. This lowest practicable power of spurious emission should be achieved.

NOC

TABLE I

Section II – Spurious emission limits for transmitters installed after 1 January 2003 and for all transmitters after 1 January 2012

NOC

7

MOD

8 Guidance regarding the methods of measuring spurious emissions is given in the most recent version of Recommendation ITU-R SM.329. The e.i.r.p. method specified in that Recommendation should be used when it is not possible to accurately measure the power supplied to the antenna transmission line, for example radars, or for specific applications where the antenna is designed to provide significant attenuation at the spurious frequencies. Additionally, the e.i.r.p. method may need some modification for special cases, e.g. beam forming radars.

NOC

9 to 11

ADD

11*bis* As an emitted signal becomes more and more narrow (to the limiting case of an unmodulated carrier with theoretical necessary bandwidth of zero), the application of the term "necessary bandwidth" as used in determining the region where spurious emission limits apply to space services, becomes more and more difficult. In the limit, ±250% of necessary bandwidth (recognized in many cases as establishing the region beyond which spurious emissions are defined), approaches zero. Beacons and other unmodulated signals, such as those used in uplink and downlink circuits in control and tracking of satellites, are examples of a case where it is

difficult to practically apply the term “necessary bandwidth” in determining where out-of-band emissions end, and spurious emissions begin. Pending further studies and definitive action by a future world radiocommunication conference, in calculating the region where spurious emission limits apply for transmitters using amplifiers to pass essentially an unmodulated signal (or a signal with very small bandwidth), the amplifier bandwidth is taken to be the necessary bandwidth.

ADD

11*ter* For the case of a single satellite operating more than one transponder into the same service area, and when considering the limits for spurious emissions as indicated by Headnote 11 to Appendix **S3**, spurious emissions from one transponder may fall on a frequency at which a companion, second transponder is transmitting. In these situations, the level of spurious emissions from the first transponder is well exceeded by the fundamental or out of band emissions of the second transponder. Therefore, the limits of Appendix **S3** should not apply to those spurious emissions of a satellite that fall either within the necessary bandwidth or out-of-band region of another transponder on the same satellite, into the same service area (see Figure 1).

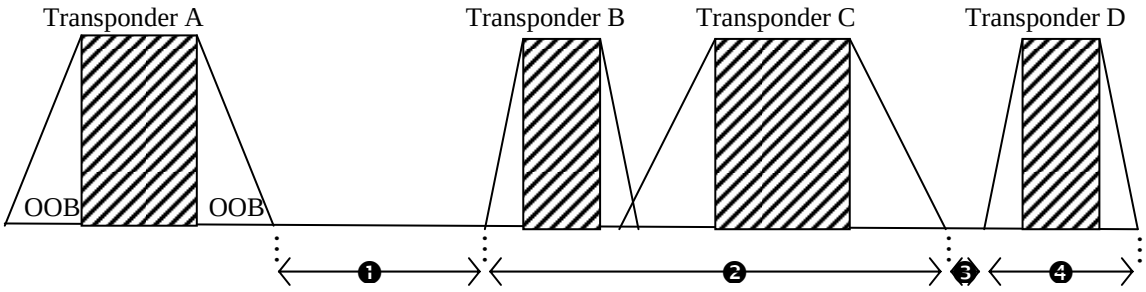

FIGURE 1

EXAMPLE OF THE APPLICABILITY OF SPURIOUS EMISSION LIMITS TO A SATELLITE TRANSPONDER

Transponders A, B, C and D are operating on the same satellite into the same service area. Transponder A is exempted from spurious emission limits in frequency ranges ❷ and ❹, but is required to meet spurious emission limits in frequency ranges ❶ and ❸.

NOC

12

MOD

TABLE II

Attenuation values used to calculate maximum permitted spurious emission power levels for use with radio equipment

Service category in accordance with Article S1, or equipment type [15]	**Attenuation (dB) below the power supplied to the antenna transmission line**
All services except those services quoted below:	43 + 10 log (*P*), or 70 dBc, whichever is less stringent
Space services (earth stations) [10, ~~14~~16]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Space services (space stations) [10, ~~14~~17]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Radiodetermination [14]	43 + 10 log (*PEP*), or 60 dB, whichever is less stringent
Broadcast television [11]	46 + 10 log (*P*), or 60 dBc, whichever is less stringent, without exceeding the absolute mean power level of 1 mW for VHF stations or 12 mW for UHF stations. However, greater attenuation may be necessary on a case by case basis.
Broadcast FM	46 + 10 log (*P*), or 70 dBc, whichever is less stringent; the absolute mean power level of 1 mW should not be exceeded
Broadcasting at MF/HF	50 dBc; the absolute mean power level of 50 mW should not be exceeded
SSB from mobile stations [12]	43 dB below *PEP*
Amateur services operating below 30 MHz (including ~~with~~those using SSB) [~~12~~16]	43 + 10 log (*PEP*), or 50 dB, whichever is less stringent
Services operating below 30 MHz, except space, radiodetermination, broadcast, those using SSB from mobile stations, and amateur [12]	43 + 10 log (*X*), or 60 dBc, whichever is less stringent, where $X = PEP$ for SSB modulation, and $X = P$ for other modulation

TABLE II (*end*)

Service category in accordance with Article S1, or equipment type[15]	**Attenuation (dB) below the power supplied to the antenna transmission line**
Low-power device radio equipment[13]	56 + 10 log (*P*), or 40 dBc, whichever is less stringent
Emergency transmitters[18] ~~Emergency position-indicating radio beacon~~ ~~Emergency locator transmitter~~ ~~Personal location beacon~~ ~~Search and rescue transponder~~ ~~Ship emergency, lifeboat and survival craft transmitters~~ ~~Land, aeronautical or maritime transmitters when used in emergency~~	No limit

NOC

P, PEP and dBc

NOC

10 to 13

MOD

14 ~~These values are "design objectives". This note will not be applicable after WRC-99.~~ Radiodetermination (Radar as defined by No. S1.100) system spurious emission dB attenuation shall be determined for radiated emission levels, not at the antenna transmission line. The measurement methods for determining the radiated spurious emission levels from the radar systems should be guided by Recommendation ITU-R M.1177.

NOC

15

ADD

16 Amateur earth stations operating below 30 MHz are in the service category "Amateur services operating below 30 MHz (including those using SSB)".

ADD

17 Space stations in the space research service intended for operation in deep space as defined by No. **S1.177**, are exempt from spurious emission limits.

ADD

18 "Emergency position-indicating radio beacon", "emergency locator transmitters", "personal location beacons", "search and rescue transponders", "ship emergency and survival craft transmitters", "emergency land, aeronautical or maritime transmitters".

MOD

RECOMMENDATION 66 (Rev.WRC-~~97~~2000)

Studies of the maximum permitted levels of unwanted emissions

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

considering

a) that Appendix **S3** specifies the maximum permitted levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line;

b) that the principal objective of Appendix **S3** is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;

c) that excessive levels of unwanted emissions may give rise to harmful interference;

d) that while out-of-band emissions can also give rise to harmful interference, the Radio Regulations do not provide general limits for these emissions;

e) that while Appendix **S3** applies generally to the mean power of a transmitter and its spurious emissions, it also takes account of a variety of emissions where interpretation of the term "mean power", and thus its measurement, would be difficult, particularly in the cases of digital modulation broadband systems, pulsed modulation and narrow-band high-power transmitters;

~~*f)* that while Appendix **S3** covers spurious emissions for all radio services, those listed for space services are included only as design objectives;~~

~~*g*~~*f)* that unwanted emissions from transmitters operating in space stations may cause harmful interference, particularly emissions from wideband amplifiers which cannot be adjusted after launch;

~~*h*~~*g)* that unwanted emissions may cause harmful interference to safety services and radio astronomy and space services using passive sensors;

~~*i*~~*h)* that, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** may be required to protect specific services, such as safety services and passive services in specific bands or situations;

~~*j*~~*i)* that broadband digital modulation may cause unwanted emissions at frequencies far from the carrier frequency,

noting

a) that safety services and passive services have in many cases been allocated frequencies adjacent or close to those of services employing high-power transmitters;

b) that some administrations have adopted more stringent limits for spurious emissions than those specified in Appendix **S3**~~,~~;

c) that at this time in response to Resolution 722 (WRC-97) 2.3.2, ITU-R determined to recommend not placing general out-of-band limits in the Radio Regulations,

recommends that ITU-R

~~1 study, as a matter of urgency, the question of spurious emissions resulting from space service transmissions, and, on the basis of those studies, develop Recommendations for maximum permitted levels of spurious emissions in terms of mean power of spurious components supplied by the transmitter to the antenna transmission line;~~

~~2 submit a report to WRC-99 on the results of its studies with a view to reviewing and including spurious emission limits for space services in Appendix **S3**;~~

~~3~~1 continue the study of spurious emission levels in all frequency bands, emphasizing the study of those frequency bands, services and modulation techniques not presently covered by Appendix **S3**;

~~4~~2 study the question of unwanted emissions resulting from transmitters of all services and all modulation methods, and, on the basis of those studies, develop a Recommendation or Recommendations for maximum permitted levels of spurious emissions and out-of-band emissions;

~~5~~3 establish appropriate measurement techniques for unwanted emissions, where those techniques do not currently exist, including the determination of reference levels for wideband transmissions as well as the applicability of reference measurement bandwidths;

~~6~~4 study the reasonable boundary of spurious emissions and out-of-band emissions with a view to defining such a boundary in Article **S1**;

~~7~~5 study those frequency bands and instances where, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** 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;

~~8~~6 study those frequency bands and instances where, for technical or operational reasons, out-of-band 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;

7 study the matter of reference bandwidth in the space services and the option of modifying Appendix **S3**, Table II by separately identifying individual space services;

~~9 report to a future competent world radiocommunication conference the results of studies under *recommends that ITU-R* 3, 4 and 5 above, with a view to recommending whether or not it is appropriate to include general limits for out-of-band emissions in the Radio Regulations;~~

1~~0~~8 report the results of studies ~~under *recommends that ITU-R* 6, 7 and 8 above~~ to a competent world radiocommunication conference(s).

SUP

RECOMMENDATION 507

Relating to spurious emissions in the broadcasting-satellite service[1]

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 207-E
15 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 6

FIRST SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 is continuing its consideration of the Changes in the Allocation of Call Signs. As a result of these deliberations, it has unanimously adopted, at its second meeting, the attached text that is sumitted for your consideration with a view to its subsequent submission to the Plenary.

H. RAILTON
Chairperson of Committee 4

Annex: 1

ANNEX

The provisions of No. **S19.33** of the Radio Regulations stipulate that, between radiocommunication conferences, the Secretary-General is authorized to deal with questions relating to changes in the allocation of series of call signs, on a provisional basis, and subject to confirmation by the following conference.

The following provisional allocations have been made in accordance with No. **S19.33** between the end of WRC-97 and the date of preparation of this Report (14 April 2000):

Call sign series	**Allocated to**
4WA - 4WZ	United Nations
E4A – E4Z	Palestinian Authority (in response to Resolution 99 of PP-98)
VRA – VRZ	China (People's Republic of) – Hongkong

In accordance with No. **S19.33** the Conference is invited to confirm these provisional allocations with a view to their definitive inclusion into the Table of allocation of international call sign series (Appendix **S42** to the Radio Regulations).

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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15 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP
GT PLEN-2

Note by the Chairperson of Working Group 4B to the Chairperson of GT PLEN-2

Working group 4B has concluded that the issues related to unwanted emissions (in Recommends 8 of Recommendation 66 (Rev. WRC-2000)) should be considered by GT PLEN-2 for inclusion in the agenda of the next World Radiocommunication Conference. The revision of Recommendation 66 is contained in document 206.

Working group 4B has also concluded that the general out-of-band emission limits should not be considered for the inclusion in the agenda of the next Conference.

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

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP
GT PLEN-2

Draft Note by the Chairperson of Working Group 4B to the Chairperson of GT PLEN-2

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

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 1 OF THE PLENARY

TERMS OF REFERENCE

SUB-GROUPS OF GT PLEN-1

Plen-1/AH1	Technical Aspects Chairperson: C. Dosch (Germany) All technical aspects related to BSS re-planning including methodology, criteria and compatitibilty issues
Plen-1/1	Regulatory/procedural matters Chairperson: J. Chartier (France) All regulatory/procedural aspects related to agenda items 1.19, 1.19 bis, 1.20.

R. Zeitoun
Chairperson, GT PLEN-1, Box 27

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COMMITTEE 5

Chairperson, Working Group 5C

Working Group 5C at its meeting held on Monday, 15 May 2000 agreed to forward draft new Resolution [COM5/1] to GT PLEN-2.

Donald JANSKY
Chairperson, Working Group 5C, Box # 5

Attachment: Draft new Resolution [COM5/1] (WRC-2000)

ADD ASP/20/336

RESOLUTION [COM5/1] (WRC-2000)

Use of the frequency band 35.5-35.6 GHz by spaceborne precipitation radar

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the frequency band 35.5-36.0 GHz is expanded from 35.5-35.6 GHz with footnote **S5.551** and allocated to the Earth exploration-satellite (active) service as a primary service with footnote **S5.551A** and allocated to meteorological aids and radiolocation services on a primary basis;

b) that the frequency band 35.5-35.6 GHz is allocated to radars located on spacecraft on a primary basis with no restriction based upon **S5.551** before WRC-97;

c) that performance criteria and interference criteria for spaceborne precipitation radar within 35.5-36.0 GHz is included in Recommendation ITU-R SA.1166-2;

d) that spaceborne precipitation radar is very important to measure rain rate globally and study global water circulation;

e) that minimum observable rain rate around 35 GHz is less than 0.2 mm/h;

f) that combination between part of 35.5-35.6 GHz and 13.4-13.75 GHz is very useful to measure rain rate precisely;

g) that studies have shown that sharing between spaceborne active sensors and radiolocation systems in 35.5-36 GHz is feasible as shown in section 5.7.2.1 of Chapter 5 of the CPM-97 Report,

resolves

1 to invite ITU-R to study sharing between the spaceborne precipitation radar and other services in 35.5-35.6 GHz;

2 that WRC-02 would review the results of these studies and consider exclusion of footnote **S5.551A** in 35.5-35.6 GHz used for spaceborne precipitation radar.

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WORKING GROUP 5A

Chairperson, Sub-Working Group 5A-2

CONCLUSIONS RELATING TO AGENDA ITEM 1.11 ON THE CONSIDERATION OF CONSTRAINTS ON EXISTING ALLOCATIONS FOR NON-GEOSTATIONARY MSS BELOW 1 GHz

With regard to agenda item 1.11, following the consideration of the conclusion of ITU-R studies in the CPM Report and the various proposals to this Conference, Sub-Working Group 5A-2 agreed that there is no need for modification of the constraints on existing allocations for the non-geostationary MSS below 1 GHz. As a result, no changes are proposed to be made to the Radio Regulations in this regard.

Mehdi M. RAZI
Chairperson, Sub-Working Group 5A-2

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SUB-WORKING GROUP 5B-2

Chairperson, Drafting Group 5B-2B

WRC-2000 AGENDA ITEM 1.15.3

Drafting Group 5B-2B has completed its work concerning WRC-2000 agenda item 1.15.3 and prepared the annexed draft. That text is submitted for consideration and approval by Sub-Working Group 5B-2.

Daniel BRANDEL
Chairperson, Drafting Group 5B-2B
Box 357

ARTICLE S5

Frequency allocations

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) S5.341 MOD S5.355 ADD S5.355A MOD S5.359 ADD S5.359A S5.363	

MOD

S5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, 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, 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, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, Mali, Mauritania, Moldova, Mongolia, Nigeria, Uganda, Uzbekistan, Pakistan, Poland, Syria, Kyrgyzstan, Democratic People's Republic of Korea, Romania, Russia, Senegal, Swaziland, Tajikistan, Tanzania, Turkmenistan, Ukraine, Zambia and Zimbabwe 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.

MOD

S5.355 *Additional allocation:* in Bahrain, Bangladesh, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the bands 1 540-1 559 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, United Arab Emirates, Eritrea, Ethiopia, Iran (Islamic Republic of), Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the band 1 559-1 610 MHz is also allocated to the fixed service 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 not authorize new frequency assignments to fixed service systems in this band.

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ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

NOTE BY THE SECRETARY-GENERAL

DATE LIMIT FOR SUBMISSION OF CREDENTIALS

Following the general programme of the Conference, the second and final meeting of the Credentials Committee (Committee 2) is scheduled on Friday, 26 May 2000. In order to conclude its work and prepare the report to the Plenary, as appropriate, the delegations that have not yet submitted their credentials are invited to submit them to the secretariat of Committee 2 as soon as possible but not later than Thursday, 25 May 2000, by 1900 hours.

Y. UTSUMI
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

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WORKING GROUP 5C

CHAIRPERSON, SUB-WORKING GROUP 5C-3

1 Revision of Table S21-4

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°**	
31.0-31.3 GHz	Fixed-satellite Mobile-satellite Space research	–115 [10]	–115 + 0.5(δ – 5) [10]	–105 [10]	1 MHz
31.8-32.3 (GHz)	Space research	–120 *	–120 + 0.75(δ – 5) *	–105	1 MHz
32.0-33.0 (GHz)	Inter-satellite	–135	–135 + (δ – 5)	–115	1 MHz
34.7-35.2 GHz (space-to-Earth transmissions referred to in No. **S5.550** on the territories of countries listed in No. **S5.549**) 37.0-40.5 GHz	Fixed-satellite Mobile-satellite Space research	–115 [10]	–115 + 0.5(δ – 5) [10]	–105 [10]	1 MHz

ADD

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* **S21.16.11** During the launch and near-Earth operational phase of deep-space facilities, a power flux-density limit of the space research system shall not exceed –115/–105 dB(W/m^2 per MHz).

2 Revision of footnote S5.547A

29.9-34.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
31.8-32	FIXED MOD S5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) S5.547 S5.547B S5.547C S5.548	
32-32.3	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) S5.547 S5.547C S5.548	
32.3-33	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION S5.547 S5.547D S5.548	
33-33.4	FIXED MOD S5.547A RADIONAVIGATION S5.547 S5.547E	

MOD

S5.547A ~~Use of the band 31.8-33.4 GHz by the fixed service shall be in accordance with Resolution **126 (WRC-97)**.~~Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems.

3 Suppression of Resolution 126

SUP

RESOLUTION 126 (WRC-97)

Use of the frequency band 31.8-33.4 GHz for high-density systems in the fixed service

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WORKING GROUP 5C

Chairperson, Sub-Working Group 5C-3

1 Revision of Table S21-4

TABLE **S21**

Frequency band	**Service**	**Limit in dB(W/m^2)**			**Reference bandwidth**
		0-5 deg	**5-25 deg**	**25-90 deg**	
31.8-32.3 (GHz)	Space research	–120 *	–120 + 0.75(δ-5) *	–105	1 MHz
32.0-33.0 (GHz)	Inter-satellite	–135	–135 + (δ-5)	–115	1 MHz

ADD

* **S21.16.11** During the launch and near Earth operational phase of deep-space facilities, a power flux-density limit of the space research system shall not exceed –115/105 dB(W/m^2 per MHz).

2 Revision of footnote S5.547A

Allocation to services		
Region 1	**Region 2**	**Region 3**
31.8-32	FIXED MOD S5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) S5.547 S5.547B S5.547C S5.548	

32-32.3	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) S5.547 S5.547C S5.548
32.3-33	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION S5.547 S5.547D S5.548
33-33.4	FIXED MOD S5.547A RADIONAVIGATION S5.547 S5.547E

MOD

S5.547A ~~Use of the band 31.8-33.4 GHz by the fixed service shall be in accordance with Resolution **126 (WRC-97)**.~~Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems.

3 Suppression of Resolution 126

SUP

RESOLUTION 126 (WRC-97)

Use of the frequency band 31.8-33.4 GHz for high-density systems in the fixed service

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ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

NOTE BY THE SECRETARY-GENERAL

TRANSFER OF POWERS

ERITREA - SAUDI ARABIA (KINGDOM OF)

1 The Government of Eritrea has informed me that it will be represented from 20 May 2000 until the end of the Conference by the delegation of the Kingdom of Saudi Arabia 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

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WORKING GROUP 5C

Note by the Chairperson, Sub-Working Group 5C-2

ALLOCATION ABOVE 71 GHz

Sub-Working Group 5C-2 considered contributions to agenda item 1.16:

> to consider allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution **723 (WRC-97)**,

and has successfully created the modified allocation table above 71 GHz and related footnotes and resolutions (see Annex 1).

S. SAYEENATHAN
Chairperson, Sub-Working Group 5C-2
Box 757

ANNEX 1

Modified allocation table and footnotes above 71 GHz

~~66~~71-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
71-74	FIXED FIXED-SATELLITE (~~Earth-to-space~~space-to-Earth) MOBILE MOBILE-SATELLITE (~~Earth-to-space~~space-to-Earth) ~~S5.149 S5.556~~	
74-75.5	BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (~~Earth-to-space~~space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561	
75.5-76	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561 S5.EEE	
76-~~81~~77.5	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) MOD S5.149~~S5.560~~	
~~76-81~~77.5-78	AMATEUR AMATEUR-SATELLITE ~~RADIOLOCATION~~ ~~Amateur~~ ~~Amateur-satellite~~ Radio astronomy Space research (space-to-Earth) ~~S5.560~~MOD S5.149	
~~76-81~~78-79	RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) MOD S5.149 S5.560	

~~76~~79-81	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) MOD S5.149~~S5.560~~
81-84	FIXED FIXED-SATELLITE (~~space to~~ Earth-to-space) MOBILE MOBILE-SATELLITE (~~space to~~ Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) MOD S5.149 S5.DDD
84-86	FIXED FIXED-SATELLITE (Earth-to-space) S5.PPP MOBILE BROADCASTING ~~BROADCASTING-SATELLITE~~ RADIO ASTRONOMY MOD S5.149~~S5.561~~

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
86-92	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	
92-94	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149 ~~S5.556~~	
94-94.1	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy S5.562 S5.FFF	
94.1-95	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149	
95-100	FIXED MOBILE ~~S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~Radiolocation~~ MOD S5.149 MOD S5.554 ~~S5.555~~	
100-102	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341	
102-105	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	

105-~~116~~109.5	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149~~S5.340~~ S5.341
~~105-116~~109.5-111.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341
~~105-116~~111.8-114.25	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149~~S5.340~~ S5.341
~~105~~114.25-116	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341
116-119.98	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.341

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
119.98-120.02	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~Amateur~~ S5.341	
120.02-122.25~~6~~	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.138	
~~120.02-126~~122.25-123	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ Amateur S5.138	
~~120.02~~123-126	~~EARTH EXPLORATION-SATELLITE (passive)~~ ~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~INTER-SATELLITE~~ ~~MOBILE S5.558~~ MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~SPACE RESEARCH (passive)~~ Radio astronomy ~~S5.138~~MOD S5.554	
126-~~134~~130	~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~INTER-SATELLITE~~ ~~MOBILE S5.558~~ MOBILE-SATELLITE (space-to-Earth) ~~RADIOLOCATION S5.559~~ RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.QQQ MOD S5.149 MOD S5.554	

~~126~~130-134	EARTH EXPLORATION-SATELLITE (active) S5.LLL FIXED INTER-SATELLITE MOBILE MOD S5.558 RADIO ASTRONOMY ~~RADIOLOCATION S5.559~~ MOD S5.149 S5.FFF
134-~~142~~136	AMATEUR AMATEUR-SATELLITE ~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Radio astronomy ~~Radiolocation~~ ~~S5.149 S5.340 S5.554 S5.555~~
136-141~~134-142~~	~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Amateur Amateur-satellite ~~Radiolocation~~ MOD S5.149~~ S5.340 S5.554 S5.555~~
~~134~~141-142	FIXED MOBILE~~ S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ ~~Radiolocation~~ MOD S5.149~~ S5.340 S5.554 S5.555~~
142-144	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149

144-149~~8~~.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION ~~Amateur~~ ~~Amateur-satellite~~ MOD S5.149~~ S5.555~~
~~144~~148.5-149	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY ~~RADIOLOCATION~~ SPACE RESEARCH (passive) ~~Amateur~~ ~~Amateur-satellite~~ ~~S5.149~~ MOD S5.340~~ S5.555~~
149-150	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340
150-151	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~S5.149~~ MOD S5.340~~S5.385~~
151-15~~6~~1.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340
151.5-15~~6~~5.5	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149
~~151~~155.5-156	EARTH EXPLORATION-SATELLITE (passive) S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149 S5.BBB

156-158	EARTH EXPLORATION-SATELLITE (passive) S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149 S5.BBB

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
158-1645~~8~~.5	EARTH EXPLORATION-SATELLITE (passive) S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149 S5.BBB	
158.5-164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
164-168~~7~~	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	
164~~7~~-168	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 ~~RADIO ASTRONOMY~~ ~~SPACE RESEARCH (passive)~~	
168-170	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 MOD S5.149	
170-174.5	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 MOD S5.149 S5.QQQ~~S5.385~~	
174.5-174.8~~6.5~~	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ ~~S5.149 S5.385~~	
174.5~~8~~- 176.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~	

176.5-182	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~
182-185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.563
185-190	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~
190-~~200~~191.8	EARTH EXPLORATION-SATELLITE (passive) ~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ SPACE RESEARCH (passive) ~~S5.341 S5.554~~MOD S5.340
191.8~~0~~-200	FIXED INTER-SATELLITE MOBILE ~~S5.553~~MOD S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE MOD S5.149 S5.341 MOD S5.554
200-202	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341 S5.RRR

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
202-2~~17~~09	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (Earth-to-space)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341 S5.RRR	
~~202~~209-217	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	
217-~~231~~226	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149~~S5.340~~ S5.341	
~~217~~226-231	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 ~~S5.341~~	
231-~~235~~231.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~Radiolocation~~ MOD S5.340	
231.5-23~~5~~2	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE Radiolocation	
~~231~~232-235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	
235-238	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~MOBILE~~ SPACE RESEARCH (passive) S5.RRR S5.NNN	

238-~~241~~240	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~Radiolocation~~
~~238~~240-241	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIOLOCATION ~~Radiolocation~~
241-248	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite S5.138 MOD S5.149
248-250	AMATEUR AMATEUR-SATELLITE Radio astronomy MOD S5.149
250-252	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) ~~S5.149 S5.555~~MOD S5.340 S5.RRR
252-265	FIXED MOBILE S5.553 MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE MOD S5.149~~ S5.385~~ S5.554~~ S5.555 S5.564~~
265-275	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149 S5.RRR
275-~~400~~1 000	(Not allocated) MOD S5.565

NOC 5C2/S5.138

S5.138 The following bands:

6 765-6 795 kHz	(centre frequency 6 780 kHz),
433.05-434.79 MHz	(centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. **S5.280**,
61-61.5 GHz	(centre frequency 61.25 GHz),
122-123 GHz	(centre frequency 122.5 GHz), and
244-246 GHz	(centre frequency 245 GHz)

are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.

MOD 5C2/S5.149

S5.149 In making assignments to stations of other services to which the bands:

13 360-13 410 kHz,	23.07-23.12 GHz*,	~~150-151 GHz*,~~
25 550-25 670 kHz,	31.2-31.3 GHz,	151.5-158.5 GHz,
37.5-38.25 MHz,	31.5-31.8 GHz in Regions 1 and 3,	168.59-168.93 GHz,
73-74.6 MHz in Regions 1 and 3,	36.43-36.5 GHz*,	171.11-171.45 GHz,
150.05-153 MHz in Region 1,	42.5-43.5 GHz,	172.31-172.65 GHz,
322-328.6 MHz*,	42.77-42.87 GHz*,	173.52-173.85 GHz,
406.1-410 MHz,	43.07-43.17 GHz*,	~~174.42-175.02 GHz*,~~
608-614 MHz in Regions 1 and 3,	43.37-43.47 GHz*,	~~177-177.4 GHz*,~~
1 330-1 400 MHz*,	48.94-49.04 GHz*,	~~178.2-178.6 GHz*,~~
1 610.6-1 613.8 MHz*,	~~72.77-72.91 GHz*,~~	~~181-181.46 GHz*,~~
1 660-1 670 MHz,	76-86 GHz,	~~186.2-186.6 GHz*,~~
1 718.8-1 722.2 MHz*,	~~93.07-93.27 GHz*,~~	195.75-196.15 GHz,
2 655-2 690 MHz,	92-94 GHz,	209-226 GHz,
3 260-3 267 MHz*,	94.1-100 GHz,	241-250 GHz,
3 332-3 339 MHz*,	~~97.88-98.08 GHz*,~~	~~250-251 GHz*,~~
3 345.8-3 352.5 MHz*,	102-109.5 GHz,	252-275 GHz
4 825-4 835 MHz*,	111.8-114.25 GHz,	~~257.5-258 GHz*,~~
4 950-4 990 MHz,	128.33-128.59 GHz,	~~261-265 GHz,~~
4 990-5 000 MHz,	129.23-129.49 GHz,	~~262.24-262.76 GHz*,~~
6 650-6 675.2 MHz*,	130-134 GHz,	~~265-275 GHz,~~
10.6-10.68 GHz,	136-148.5 GHz,	~~265.64-266.16 GHz*,~~
14.47-14.5 GHz*,	~~140.69-140.98 GHz*,~~	~~267.34-267.86 GHz*,~~
22.01-22.21 GHz*,	~~144.68-144.98 GHz*,~~	~~271.74-272.26 GHz*~~
22.21-22.5 GHz,	~~145.45-145.75 GHz*,~~	
22.81-22.86 GHz*,	~~146.82-147.12 GHz*,~~	

are allocated ~~(* indicates radio astronomy use for spectral line observations)~~, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **S4.5** and **S4.6** and Article **S29**).

MOD 5C2/S5.340

S5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by Nos. **S5.421** and **S5.422**,
10.68-10.7 GHz,	except those provided for by No. **S5.483**,
15.35-15.4 GHz,	except those provided for by No. **S5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations,
50.2-50.4 GHz~~2~~,	except those provided for by No. **S5.555A**,
52.6-54.25 GHz,	
86-92 GHz,	
100-102 GHz,	
~~105-116 GHz,~~	
109.5-111.8 GHz,	
114.25-116 GHz	
~~140.69-140.98 GHz,~~	~~from airborne stations and from space stations in the space-to-Earth direction,~~
148.5-151.5 GHz,	
164-167 GHz,	
182-185 GHz,	except those provided for by No. **S5.563**,
190-191.8 GHz,	
200-209 GHz,	
~~217-231 GHz.~~	
226-231.5 GHz,	
250-252 GHz.	

NOC 5C2/S5.341

S5.341 In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

MOD 5C2/S5.385

S5.385 *Additional allocation:* the bands 1 718.8-1 722.2 MHz~~, 150-151 GHz, 174.42-175.02 GHz, 177-177.4 GHz, 178.2-178.6 GHz, 181-181.46 GHz, 186.2-186.6 GHz and 257.5-258 GHz are~~ is also allocated to the radio astronomy service on a secondary basis for spectral line observations.

MOD 5C2/S5.553

S5.553 In the bands 43.5-47 GHz~~,~~ and 66-71 GHz~~, 95-100 GHz, 134-142 GHz, 190-200 GHz and 252-265 GHz,~~ stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **S5.43**).

MOD 5C2/S5.554

S5.554 In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, ~~134-142 GHz, 190~~191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service.

MOD 5C2/S5.555

S5.555 *Additional allocation:* the band~~s~~ 48.94-49.04 GHz~~, 97.88-98.08 GHz, 140.69-140.98 GHz, 144.68-144.98 GHz, 145.45-145.75 GHz, 146.82-147.12 GHz, 250-251 GHz and 262.24-262.76 GHz are~~ is also allocated to the radio astronomy service on a primary basis.

MOD 5C2/S5.556

S5.556 In the bands 51.4-54.25 GHz, 58.2-59 GHz~~,~~ and 64-65 GHz~~, 72.77-72.91 GHz and 93.07-93.27 GHz~~, radio astronomy observations may be carried out under national arrangements.

MOD 5C2/S5.558

S5.558 In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, ~~116-134 GHz,~~ 122.25-123 GHz, 130-134 GHz, ~~170-182 GHz and~~ 167-174.8 GHz ~~185-190 GHz~~ and 191.8-200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

MOD 5C2/S5.559

S5.559 In the bands 59-64 GHz ~~and 126-134 GHz~~, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

NOC 5C2/S5.560

S5.560 In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration-satellite service and in the space research service.

MOD 5C2/S5.561

S5.561 In the band ~~84-86~~74-76 GHz, stations in the fixed~~,~~ and mobile ~~and broadcasting~~ services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite stations operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

NOC 5C2/S5.562

S5.562 The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars.

SUP 5C2/S5.564

~~**S5.564** *Additional allocation:* in Germany, Argentina, Spain, Finland, France, India, Italy and the Netherlands, the band 261-265 GHz is also allocated to the radio astronomy service on a primary basis.~~

MOD 5C2/S5.565

S5.565 The frequency band 275-~~400~~1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

– radio astronomy service: ~~278-280 GHz and 343-348 GHz;~~ 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;

– Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, ~~300-302 GHz, 324-326 GHz, 345-347 GHz, 363-365 GHz and 379-381 GHz.~~ 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the ~~next competent world radiocommunication conference~~ date when the allocation table is established in the frequency band mentioned above.

ADD 5C2/S5.AAA

S5.AAA In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018.

ADD 5C2/S5.BBB

S5.BBB The date of entry for the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018.

ADD 5C2/S5.CCC

S5.CCC Use of this allocation is limited to space-based radio astronomy only.

ADD 5C2/S5.DDD

S5.DDD The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis.

ADD 5C2/S5.EEE

S5.EEE The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006.

ADD 5C2/S5.FFF

S5.FFF Transmission from space stations of the EESS (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the transmitters and the concerned radio astronomy stations should mutually plan their operations to avoid, to the maximum extent possible, such occurrences.

ADD 5C2/S5.LLL

S5.LLL The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz.

ADD 5C2/S5.NNN

S5.NNN The frequency band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only.

ADD 5C2/S5.PPP

S5.PPP In Japan, use of the band 84-86 GHz, as the fixed-satellite service (Earth-to-space) is limited to the feeder link by the broadcasting-satellite service in the geostationary satellite.

ADD 5C2/S5.QQQ

S5.QQQ *Additional allocation*: In Korea (Republic of), the bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are allocated to the radio astronomy service in a primary basis until 2015.

ADD 5C2/S5.RRR

S5.RRR In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents.

ADD 5C2/S5.XXX

S5.XXX Use of the bands 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –148 dBW/m^2/MHz for all angles of arrival.

ADD 5C2/S5.YYY

S5.YYY Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –144 dBW/m^2/MHz for all angles of arrival.

ADD 5C2/RES1

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 allocations by WRC-2000 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. These requirements are reflected in the changes made to the table of allocations by WRC-2000;

c) that several bands above 71 GHz are already used by EESS (passive) and SR (passive) because they are unique bands to measure specific atmospheric parameters;

d) that currently there is 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 for the frequency bands above 71 GHz;

f) that in the future, there should be accommodation of alternative spectrum needs of the active and passive services when the new technologies become available;

g) that, following the revisions to the table of allocations by WRC-2000, 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 within 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, WRC-2000 avoided co-allocations of active and passive services in some bands such as 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, to prevent potential sharing problems,

recognizing

that to the extent practicable, the burden of sharing among active and passive services should be equitably distributed amongst the allocated services,

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,

resolves

that a future competent conference should consider the results of ITU-R studies with a view to revise as appropriate the Radio Regulations in order to accommodate the emerging requirements of the active services taking into account the requirements of the passive services, in bands above 71 GHz;

instructs the Secretary-General

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

ADD 5C2/RES2

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 WRC-2000 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 WRC-2000;

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 fulfill the spectrum requirements for active services for which the technology is 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 a basis for a review of active service allocations above 71 GHz at a future competent conference, if necessary,

requests 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 5C2/S4.XXX

S4.XXX Regarding frequency bands above 71 GHz, administrations should consider Resolutions **[5C2-1]** and **[5C2-2]** in the development of domestic policies and regulations which would permit the use of specific bands by an allocated radio service. Administrations should note the possibility of changes to Article **S5** to accommodate emerging requirements of active services, as indicated in Resolutions **[5C2-1]** and **[5C2-2]**.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5C

Note by the Chairperson, Sub-Working Group 5C-2

ALLOCATION ABOVE 71 GHz

Sub-Working Group 5C-2 considered contributions to agenda item 1.16:

> to consider allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution **723 (WRC-97)**,

and has successfully created the modified allocation table above 71 GHz and related footnotes and resolutions (see Annex 1).

S. SAYEENATHAN
Chairperson, Sub-Working Group 5C-2
Box 757

ANNEX 1

Modified allocation table and footnotes above 71 GHz

~~66~~71-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
71-74	FIXED FIXED-SATELLITE (~~Earth-to-space~~space-to-Earth) MOBILE MOBILE-SATELLITE (~~Earth-to-space~~space-to-Earth) ~~S5.149 S5.556~~	
74-75.5	BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (~~Earth-to-space~~space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561	
75.5-76	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561 S5.EEE	
76-~~81~~77.5	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) MOD S5.149~~S5.560~~	
~~76-81~~77.5-78	AMATEUR AMATEUR-SATELLITE ~~RADIOLOCATION~~ ~~Amateur~~ ~~Amateur-satellite~~ Radio astronomy Space research (space-to-Earth) ~~S5.560~~MOD S5.149	
~~76-81~~78-79	RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) MOD S5.149 S5.560	

~~76~~79-81	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) MOD S5.149~~S5.560~~
81-84	FIXED FIXED-SATELLITE (~~space to~~ Earth-to-space) MOBILE MOBILE-SATELLITE (~~space to~~ Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) MOD S5.149 S5.DDD
84-86	FIXED FIXED-SATELLITE (Earth-to-space) S5.PPP MOBILE BROADCASTING ~~BROADCASTING-SATELLITE~~ RADIO ASTRONOMY MOD S5.149~~S5.561~~

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
86-92	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	
92-94	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149 ~~S5.556~~	
94-94.1	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy S5.562 S5.FFF	
94.1-95	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149	
95-100	FIXED MOBILE ~~S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~Radiolocation~~ MOD S5.149 MOD S5.554 ~~S5.555~~	
100-102	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341	
102-105	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	

105-~~116~~109.5	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149~~S5.340~~ S5.341
~~105-116~~109.5-111.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341
~~105-116~~111.8-114.25	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149~~S5.340~~ S5.341
~~105~~114.25-116	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341
116-119.98	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.341

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
119.98-120.02	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~Amateur~~ S5.341	
120.02-122.25~~6~~	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.138	
~~120.02-126~~122.25-123	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ Amateur S5.138	
~~120.02~~123-126	~~EARTH EXPLORATION-SATELLITE (passive)~~ ~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~INTER-SATELLITE~~ ~~MOBILE S5.558~~ MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~SPACE RESEARCH (passive)~~ Radio astronomy ~~S5.138~~MOD S5.554	
126-~~134~~130	~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~INTER-SATELLITE~~ ~~MOBILE S5.558~~ MOBILE-SATELLITE (space-to-Earth) ~~RADIOLOCATION S5.559~~ RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy S5.QQQ MOD S5.149 MOD S5.554	

~~126~~130-134	EARTH EXPLORATION-SATELLITE (active) S5.LLL FIXED INTER-SATELLITE MOBILE MOD S5.558 RADIO ASTRONOMY ~~RADIOLOCATION S5.559~~ MOD S5.149 S5.FFF
134-~~142~~136	AMATEUR AMATEUR-SATELLITE ~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Radio astronomy ~~Radiolocation~~ ~~S5.149 S5.340 S5.554 S5.555~~
136-141~~134-142~~	~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Amateur Amateur-satellite ~~Radiolocation~~ MOD S5.149~~ S5.340 S5.554 S5.555~~
~~134~~141-142	FIXED MOBILE~~ S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ ~~Radiolocation~~ MOD S5.149~~ S5.340 S5.554 S5.555~~
142-144	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149

144-149~~8~~.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION ~~Amateur~~ ~~Amateur-satellite~~ MOD S5.149 ~~S5.555~~
~~144~~148.5-149	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY RADIOLOCATION SPACE RESEARCH (passive) ~~Amateur~~ ~~Amateur-satellite~~ ~~S5.149~~ MOD S5.340 ~~S5.385~~
149-150	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340
150-151	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~S5.149~~ MOD S5.340~~S5.385~~
151-15~~6~~1.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340
151.5-15~~6~~5.5	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149
~~151~~155.5-156	EARTH EXPLORATION-SATELLITE (passive) S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149 S5.BBB

156-158	EARTH EXPLORATION-SATELLITE (passive) S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149 S5.BBB

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
158-1645~~8~~.5	EARTH EXPLORATION-SATELLITE (passive) S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149 S5.BBB	
158.5-164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
164-168~~7~~	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	
164~~7~~-168	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 ~~RADIO ASTRONOMY~~ ~~SPACE RESEARCH (passive)~~	
168-170	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 MOD S5.149	
170-174.5	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 MOD S5.149 S5.QQQ~~S5.385~~	
174.5-174.8~~6.5~~	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ ~~S5.149 S5.385~~	
176.5-182	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~	

176.5-182	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~
182-185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.563
185-190	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~
190-~~200~~191.8	EARTH EXPLORATION-SATELLITE (passive) ~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ SPACE RESEARCH (passive) ~~S5.341 S5.554~~MOD S5.340
191.8~~0~~-200	FIXED INTER-SATELLITE MOBILE ~~S5.553~~MOD S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE MOD S5.149 S5.341 MOD S5.554
200-202	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341 S5.RRR

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
202-~~21~~709	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (Earth-to-space)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341 S5.RRR	
~~202~~209-217	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	
217-~~231~~226	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149~~S5.340~~ S5.341	
~~217~~226-231	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 ~~S5.341~~	
231-~~235~~231.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~Radiolocation~~ MOD S5.340	
231.5-23~~5~~2	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE Radiolocation	
~~231~~232-235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	
235-238	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~MOBILE~~ SPACE RESEARCH (passive) S5.RRR S5.NNN	

~~238~~240-241	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIOLOCATION ~~Radiolocation~~
241-248	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite S5.138 MOD S5.149
248-250	AMATEUR AMATEUR-SATELLITE Radio astronomy MOD S5.149
250-252	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) ~~S5.149 S5.555~~MOD S5.340 S5.RRR
252-265	FIXED MOBILE S5.553 MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE MOD S5.149 ~~S5.385~~ S5.554 ~~S5.555 S5.564~~
265-275	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149 S5.RRR
275-~~400~~1 000	(Not allocated) MOD S5.565

NOC 5C2/S5.138

S5.138 The following bands:

6 765-6 795 kHz	(centre frequency 6 780 kHz),
433.05-434.79 MHz	(centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. **S5.280**,
61-61.5 GHz	(centre frequency 61.25 GHz),
122-123 GHz	(centre frequency 122.5 GHz), and
244-246 GHz	(centre frequency 245 GHz)

are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.

MOD 5C2/S5.149

S5.149 In making assignments to stations of other services to which the bands:

13 360-13 410 kHz,	23.07-23.12 GHz*,	~~150-151 GHz*,~~
25 550-25 670 kHz,	31.2-31.3 GHz,	151.5-158.5 GHz,
37.5-38.25 MHz,	31.5-31.8 GHz in Regions 1 and 3,	168.59-168.93 GHz,
73-74.6 MHz in Regions 1 and 3,	36.43-36.5 GHz*,	171.11-171.45 GHz,
150.05-153 MHz in Region 1,	42.5-43.5 GHz,	172.31-172.65 GHz,
322-328.6 MHz*,	42.77-42.87 GHz*,	173.52-173.85 GHz,
406.1-410 MHz,	43.07-43.17 GHz*,	~~174.42-175.02 GHz*,~~
608-614 MHz in Regions 1 and 3,	43.37-43.47 GHz*,	~~177-177.4 GHz*,~~
1 330-1 400 MHz*,	48.94-49.04 GHz*,	~~178.2-178.6 GHz*,~~
1 610.6-1 613.8 MHz*,	~~72.77-72.91 GHz*,~~	~~181-181.46 GHz*,~~
1 660-1 670 MHz,	76-86 GHz,	~~186.2-186.6 GHz*,~~
1 718.8-1 722.2 MHz*,	~~93.07-93.27 GHz*,~~	195.75-196.15 GHz,
2 655-2 690 MHz,	92-94 GHz,	209-226 GHz,
3 260-3 267 MHz*,	94.1-100 GHz,	241-250 GHz,
3 332-3 339 MHz*,	~~97.88-98.08 GHz*,~~	~~250-251 GHz*,~~
3 345.8-3 352.5 MHz*,	102-109.5 GHz,	252-275 GHz
4 825-4 835 MHz*,	111.8-114.25 GHz,	~~257.5-258 GHz*,~~
4 950-4 990 MHz,	128.33-128.59 GHz,	~~261-265 GHz,~~
4 990-5 000 MHz,	129.23-129.49 GHz,	~~262.24-262.76 GHz*,~~
6 650-6 675.2 MHz*,	130-134 GHz,	~~265-275 GHz,~~
10.6-10.68 GHz,	136-148.5 GHz,	~~265.64-266.16 GHz*,~~
14.47-14.5 GHz*,	~~140.69-140.98 GHz*,~~	~~267.34-267.86 GHz*,~~
22.01-22.21 GHz*,	~~144.68-144.98 GHz*,~~	~~271.74-272.26 GHz*~~
22.21-22.5 GHz,	~~145.45-145.75 GHz*,~~	
22.81-22.86 GHz*,	~~146.82-147.12 GHz*,~~	

are allocated ~~(* indicates radio astronomy use for spectral line observations)~~, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **S4.5** and **S4.6** and Article **S29**).

MOD 5C2/S5.340

S5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by Nos. **S5.421** and **S5.422**,
10.68-10.7 GHz,	except those provided for by No. **S5.483**,
15.35-15.4 GHz,	except those provided for by No. **S5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations,
50.2-50.4 GHz~~2~~,	except those provided for by No. **S5.555A**,
52.6-54.25 GHz,	
86-92 GHz,	
100-102 GHz,	
~~105-116 GHz,~~	
109.5-111.8 GHz,	
114.25-116 GHz	
~~140.69-140.98 GHz,~~	~~from airborne stations and from space stations in the space-to-Earth direction,~~
148.5-151.5 GHz,	
164-167 GHz,	
182-185 GHz,	except those provided for by No. **S5.563**,
190-191.8 GHz,	
200-209 GHz,	
~~217-231 GHz.~~	
226-231.5 GHz,	
250-252 GHz.	

NOC 5C2/S5.341

S5.341 In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

MOD 5C2/S5.385

S5.385 *Additional allocation:* the bands 1 718.8-1 722.2 MHz~~, 150-151 GHz, 174.42-175.02 GHz, 177-177.4 GHz, 178.2-178.6 GHz, 181-181.46 GHz, 186.2-186.6 GHz and 257.5-258 GHz are~~ is also allocated to the radio astronomy service on a secondary basis for spectral line observations.

MOD 5C2/S5.553

S5.553 In the bands 43.5-47 GHz~~,~~ and 66-71 GHz~~, 95-100 GHz, 134-142 GHz, 190-200 GHz and 252-265 GHz,~~ stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **S5.43**).

MOD 5C2/S5.554

S5.554 In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, ~~134-142 GHz, 190~~191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service.

MOD 5C2/S5.555

S5.555 *Additional allocation:* the band~~s~~ 48.94-49.04 GHz~~, 97.88-98.08 GHz, 140.69-140.98 GHz, 144.68-144.98 GHz, 145.45-145.75 GHz, 146.82-147.12 GHz, 250-251 GHz and 262.24-262.76 GHz are~~ is also allocated to the radio astronomy service on a primary basis.

MOD 5C2/S5.556

S5.556 In the bands 51.4-54.25 GHz, 58.2-59 GHz~~,~~ and 64-65 GHz~~, 72.77-72.91 GHz and 93.07-93.27 GHz~~, radio astronomy observations may be carried out under national arrangements.

MOD 5C2/S5.558

S5.558 In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, ~~116-134 GHz,~~ 122.25-123 GHz, 130-134 GHz, ~~170-182 GHz and~~ 167-174.8 GHz ~~185-190 GHz~~ and 191.8-200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

MOD 5C2/S5.559

S5.559 In the bands 59-64 GHz ~~and 126-134 GHz~~, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

NOC 5C2/S5.560

S5.560 In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration-satellite service and in the space research service.

MOD 5C2/S5.561

S5.561 In the band ~~84-86~~74-76 GHz, stations in the fixed~~,~~ and mobile ~~and broadcasting~~ services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite stations operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

NOC 5C2/S5.562

S5.562 The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars.

SUP 5C2/S5.564

~~**S5.564** *Additional allocation:* in Germany, Argentina, Spain, Finland, France, India, Italy and the Netherlands, the band 261-265 GHz is also allocated to the radio astronomy service on a primary basis.~~

MOD 5C2/S5.565

S5.565 The frequency band 275-400 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

– radio astronomy service: ~~278-280 GHz and 343-348 GHz;~~ 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;

– Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, ~~300-302 GHz, 324-326 GHz, 345-347 GHz, 363-365 GHz and 379-381 GHz.~~ 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the ~~next competent world radiocommunication conference~~ date when the allocation table is established in the frequency band mentioned above.

ADD 5C2/S5.AAA

S5.AAA In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018.

ADD 5C2/S5.BBB

S5.BBB The date of entry for the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018.

ADD 5C2/S5.CCC

S5.CCC Use of this allocation is limited to space-based radio astronomy only.

ADD 5C2/S5.DDD

S5.DDD The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis.

ADD 5C2/S5.EEE

S5.EEE The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006.

ADD 5C2/S5.FFF

S5.FFF Transmission from space stations of the EESS (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the transmitters and the concerned radio astronomy stations should mutually plan their operations to avoid, to the maximum extent possible, such occurrences.

ADD 5C2/S5.LLL

S5.LLL The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz.

ADD 5C2/S5.NNN

S5.NNN The frequency band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only.

ADD 5C2/S5.PPP

S5.PPP In Japan, use of the band 84-86 GHz, as the fixed-satellite service (Earth-to-space) is limited to the feeder link by the broadcasting-satellite service in the geostationary satellite.

ADD 5C2/S5.QQQ

S5.QQQ *Additional allocation*: In Korea (Republic of), the bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are allocated to the radio astronomy service in a primary basis until 2015.

ADD 5C2/S5.RRR

S5.RRR In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents.

ADD 5C2/S5.XXX

S5.XXX Use of the bands 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –148 dBW/m^2/MHz for all angles of arrival.

ADD 5C2/S5.YYY

S5.YYY Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –144 dBW/m^2/MHz for all angles of arrival.

ADD 5C2/RES1

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 allocations by WRC-2000 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. These requirements are reflected in the changes made to the table of allocations by WRC-2000;

c) that several bands above 71 GHz are already used by EESS (passive) and SR (passive) because they are unique bands to measure specific atmospheric parameters;

d) that currently there is 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 for the frequency bands above 71 GHz;

f) that in the future, there should be accommodation of alternative spectrum needs of the active and passive services when the new technologies become available;

g) that, following the revisions to the table of allocations by WRC-2000, 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 within 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, WRC-2000 avoided co-allocations of active and passive services in some bands such as 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, to prevent potential sharing problems,

recognizing

that to the extent practicable, the burden of sharing among active and passive services should be equitably distributed amongst the allocated services,

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,

resolves

that a future competent conference should consider the results of ITU-R studies with a view to revise as appropriate the Radio Regulations in order to accommodate the emerging requirements of the active services taking into account the requirements of the passive services, in bands above 71 GHz;

instructs the Secretary-General

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

ADD 5C2/RES2

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 WRC-2000 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 WRC-2000;

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 fulfill the spectrum requirements for active services for which the technology is 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 a basis for a review of active service allocations above 71 GHz at a future competent conference, if necessary,

requests 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 5C2/S4.XXX

S4.XXX Regarding frequency bands above 71 GHz, administrations should consider Resolutions **[5C2-1]** and **[5C2-2]** in the development of domestic policies and regulations which would permit the use of specific bands by an allocated radio service. Administrations should note the possibility of changes to Article **S5** to accommodate emerging requirements of active services, as indicated in Resolutions **[5C2-1]** and **[5C2-2]**.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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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 is of the opinion that proposals ASP/20/339, ASP/20/340, INS/101/1, INS/101/2, and INS/101/3 can be dealt by Working Group 1 to the Plenary more efficiently. Therefore, proposals ASP/20/339, ASP/20/340, INS/101/1, INS/101/2, and INS/101/3 are forwarded to Working Group GT PLEN-1 for further consideration.

N. KISRAWI
Chairperson of Working Group 4A

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

China (People's Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

Agenda item 1.6.1 - the satellite component of IMT-2000

Background

The CPM Report concludes on total spectrum requirements for the satellite component of IMT-2000 for the three Regions, which are based on the sum of the spectrum currently identified for IMT-2000 in S5.388. CPM concludes with the emphasis on the 1 610-1 626.5/2 483.5-2 500 MHz bands, indicating that the band 1 610-1 626.5 MHz is also allocated worldwide to the aeronautical radionavigation service on a co-primary basis, and the band 1 610-1 626.5 MHz in Region 2 and some Region 3 countries also allocated on a co-primary basis to the radiodetermination-satellite service, and the sub-band 1 610.6-1 613.8 MHz is also allocated in all three Regions to the radio astronomy service on a co-primary basis. CPM also notes that the band 2 483.5-2 500 MHz is allocated worldwide on a co-primary basis to the fixed and mobile services while at the same time allocated to the radiolocation service on a co-primary basis in Regions 2 and 3, and in Region 2 and some Region 3 countries the band is also allocated on a co-primary basis to the radiodetermination-satellite service.

Proposals on the satellite component of IMT-2000

CHN/218/1

China proposes that the bands of 2 500-2 520/2 670-2 690 MHz be identified for the satellite component of IMT-2000, as a global spectrum, to satisfy the requirement for IMT-2000 as referred to in the CPM Report. However, depending on market developments, it may be possible for these bands to be used by the terrestrial component of IMT-2000.

CHN/218/2

As indicated by S5.369 and S5.400, the Chinese Administration does not agree to identify the bands 2 483.5-2 500 MHz and 1 610-1 626.5 MHz to be used by the satellite component for IMT-2000, to guarantee the use of these bands by the radiodetermination-satellite service and aeronautical navigation service.

Reasons: The need to satisfy the requirement for IMT-2000 as referred to in the CPM Report and to guarantee the use of the radiodetermination-satellite service and aeronautical navigation service in the bands 1 610-1 626.5 MHz and 2 483.5-2 500 MHz in Region 3, as indicated by S5.369 and S5.400.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5D

NOTE FROM THE CHAIRPERSON OF WORKING GROUP 4A TO THE CHAIRPERSON OF WORKING GROUP 5D

During consideration of Docment 47 in Working Group 4A, it was mentioned that this proposal deals a specific allocation issue. Working Group 4A is of the opinion that Document 47 can be treated by Working Group 5D more efficiently. Therefore Document 47 is forwarded to Working Group 5D for further consideration.

N. KISRAWI
Chairperson of Working Group 4A

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 220-E
18 May 2000

ISTANBUL, 8 MAY – 2 JUNE 2000

B.1 **PLENARY MEETING**

FIRST 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	207	**APPENDIX S42**
		– Call signs
COM 5	224	**ARTICLE S5**
		– Table of allocations band 14.25-15.63 GHz – S5.511A – S5.541A
		ARTICLE S11
		– S11.32A – S11.32A.1 – S11.33 – S11.35
		RESOLUTION 121
		RESOLUTION 123
COM 4	256	**APPENDIX S3**
		– Section I, § 6 – Section II, § 8 – 11*bis* – 11*ter* – Table II (+ Notes)
		RECOMMENDATION 66
		RECOMMENDATION 507
		RESOLUTION 10
		RESOLUTION 300
		RESOLUTION 644

Annex: 15 pages

BLUE PAGES

APPENDIX S42

Table of allocation of international call sign series

	Call sign series	Allocated to
ADD		
	*4WA-4WZ	United Nations
ADD		
	E4A-E4Z	Palestinian Authority[1]
MOD		
	VRA-VRZ	China (People's Republic of) – Hong Kong

[1] In response to Resolution 99 (Minneapolis, 1998) of the Plenipotentiary Conference.

BLUE PAGES

ARTICLE S5

MOD

14.25-15.63 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
15.43-15.63	FIXED-SATELLITE (Earth-to-space) MOD S5.511A AERONAUTICAL RADIONAVIGATION S5.511C	

MOD

S5.511A The band 15.43-15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **S9.11A**. The use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to feeder links of non-geostationary systems in the mobile-satellite service for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. In order to protect the radio astronomy service in the band 15.35-15.4 GHz, the aggregate power flux-density radiated in the 15.35-15.4 GHz band by all the space stations within any non-GSO MSS feeder-link (space-to-Earth) system operating in the 15.43-15.63 GHz band shall not exceed the level of –156 dB(W/m^2) in a 50 MHz bandwidth, which is given in Recommendation ITU-R RA.769-1, into any radio astronomy observatory site for more than 2% of the time.

MOD

S5.541A Feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix **S4** coordination information is considered as having been received by the Bureau after 17 May 1996 and until they are changed by a future competent world radiocommunication conference. Administrations submitting Appendix **S4** information for coordination before this date are encouraged to utilize these techniques to the extent practicable.

ARTICLE S11

MOD

S11.32A *c)* with respect to the probability of harmful interference that may be caused to or by assignments recorded with a favourable finding under Nos. **S11.36** and **S11.37** or **S11.38**, or recorded in application of No. **S11.41**, or published under Nos. **S9.38** or **S9.58** but not yet notified, as appropriate, for those cases for which the notifying administration states that the procedure for coordination under Nos. **S9.7**, **[S9.7A**, **S9.7B**,**] S9.11**, **S9.12**, **S9.13** or **S9.14,** could not be successfully completed (see also No. **S9.65**);[10] or

MOD

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[10] **S11.32A.1** The examination of such notices with respect to any other frequency assignment for which a request for coordination under Nos. **S9.7**, **[S9.7A**, **S9.7B]**, **S9.12** or **S9.13**, as appropriate, has been published under No. **S9.38** but not yet notified shall be effected by the Bureau in the order of their publication under the same number using the most recent information available.

MOD

S11.33 *d)* with respect to the probability of harmful interference that may be caused to or by other assignments recorded with a favourable finding in application of Nos. **S11.36** and **S11.37** or **S11.38** or in application of No. **S11.41**, as appropriate, for those cases for which the notifying administration states that the procedure for coordination or prior agreement under Nos. **S9.15**[11], **S9.16**[11], **S9.17**[11], **S9.17A** or **S9.18**[11] could not be successfully completed (see also No. **S9.65**);[12] or

MOD

S11.35 In cases where the Bureau is not in a position to conduct the examination under No. **S11.32A** or **S11.33**, the Bureau shall immediately inform the notifying administration, which may then resubmit its notice under No. **S11.41**, under the assumption that the finding under No. **S11.32A** or **S11.33** is unfavourable.

SUP

RESOLUTION 121 (Rev.WRC-97)

Continued development of interference criteria and methodologies for fixed-satellite service coordination between feeder links of non-geostationary satellite networks in the mobile-satellite service and geostationary-satellite networks in the fixed-satellite service in the bands 19.3-19.7 GHz and 29.1-29.5 GHz

SUP

RESOLUTION 123 (WRC-97)

Feasibility of implementing feeder links of non-geostationary satellite networks in the mobile-satellite service in the band 15.43-15.63 GHz (space-to-Earth) while taking into account the protection of the radio astronomy service, the Earth exploration-satellite (passive) service and the space research (passive) service in the band 15.35-15.4 GHz

BLUE PAGES

APPENDIX S3

Table of maximum permitted spurious emission power levels

(See Article **S3**)

NOC

1 to 5

Section I – Spurious emission limits for transmitters installed on or before 1 January 2003 (valid until 1 January 2012)

MOD

6 Radar systems are exempt from spurious emission limits under this section. The lowest practicable power of spurious emission should be achieved.

NOC

TABLE I

Section II – Spurious emission limits for transmitters installed after 1 January 2003 and for all transmitters after 1 January 2012

NOC

7

MOD

8 Guidance regarding the methods of measuring spurious emissions is given in the most recent version of Recommendation ITU-R SM.329. The e.i.r.p. method specified in that Recommendation should be used when it is not possible to accurately measure the power supplied to the antenna transmission line (for example, radars), or for specific applications where the antenna is designed to provide significant attenuation at the spurious frequencies. Additionally, the e.i.r.p. method may need some modification for special cases, e.g. beam forming radars.

NOC

9 to 11

ADD

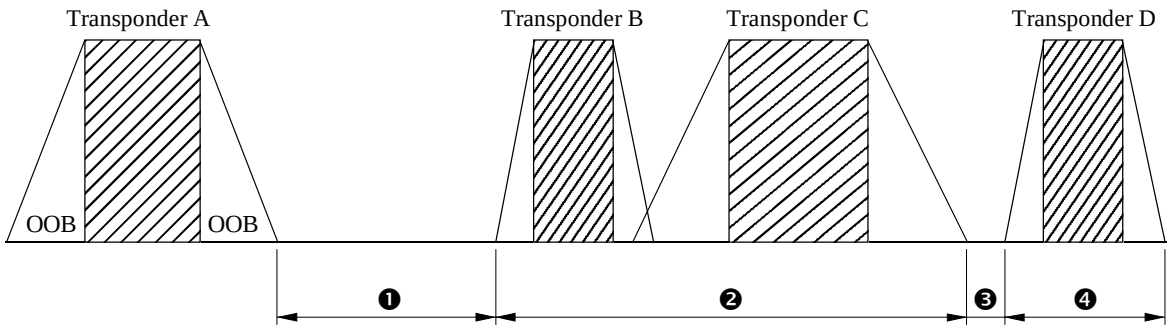
11*bis* As the bandwidth of an emitted signal becomes more and more narrow (to the limiting case of an unmodulated carrier with a theoretical necessary bandwidth of zero), the application of the term “necessary bandwidth” as used in determining the region where spurious emission limits apply to space services becomes more and more difficult. In the limiting case, ±250% of necessary bandwidth (recognized in many cases as establishing the region beyond which spurious emissions are defined) approaches zero. Beacon signals and other unmodulated signals, such as those used in uplink and downlink circuits in control and tracking of satellites, are examples of a case where it is difficult in practice to apply the concept of “necessary bandwidth” in determining where out-of-band emissions end, and spurious emissions begin. Pending further studies and definitive action by a future world radiocommunication conference for determining the portion of spectrum where spurious emission limits apply for transmitters using amplifiers to pass an essentially unmodulated signal (or a signal with very small bandwidth), the amplifier bandwidth is taken to be the necessary bandwidth.

ADD

11*ter* For the case of a single satellite operating with more than one transponder in the same service area, and when considering the limits for spurious emissions as indicated in § 11 of this Appendix, spurious emissions from one transponder may fall on a frequency at which a second, companion transponder is transmitting. In these situations, the level of spurious emissions from the first transponder is well exceeded by the fundamental or out-of-band emissions of the second transponder. Therefore, the limits of this Appendix should not apply to those spurious emissions of a satellite that fall within either the necessary bandwidth or the out-of-band region of another transponder on the same satellite, in the same service area (see Figure 1).

FIGURE 1

Example of the applicability of spurious emission limits to a satellite transponder



CMR-2000/256-01

Transponders A, B, C and D are operating on the same satellite in the same service area. Transponder A is not required to meet spurious emission limits in frequency ranges ❷ and ❹, but is required to meet them in frequency ranges ❶ and ❸.

NOC

12

MOD

TABLE II

Attenuation values used to calculate maximum permitted spurious emission power levels for use with radio equipment

Service category in accordance with Article S1, or equipment type [15]	**Attenuation (dB) below the power supplied to the antenna transmission line**
All services except those services quoted below:	43 + 10 log (*P*), or 70 dBc, whichever is less stringent
Space services (earth stations) [10, 16]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Space services (space stations) [10, 17]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Radiodetermination [14]	43 + 10 log (*PEP*), or 60 dB, whichever is less stringent
Broadcast television [11]	46 + 10 log (*P*), or 60 dBc, whichever is less stringent, without exceeding the absolute mean power level of 1 mW for VHF stations or 12 mW for UHF stations. However, greater attenuation may be necessary on a case by case basis.
Broadcast FM	46 + 10 log (*P*), or 70 dBc, whichever is less stringent; the absolute mean power level of 1 mW should not be exceeded
Broadcasting at MF/HF	50 dBc; the absolute mean power level of 50 mW should not be exceeded
SSB from mobile stations [12]	43 dB below *PEP*
Amateur services operating below 30 MHz (including those using SSB) [16]	43 + 10 log (*PEP*), or 50 dB, whichever is less stringent
Services operating below 30 MHz, except space, radiodetermination, broadcast, those using SSB from mobile stations, and amateur [12]	43 + 10 log (*X*), or 60 dBc, whichever is less stringent, where $X = PEP$ for SSB modulation, and $X = P$ for other modulation
Low-power device radio equipment [13]	56 + 10 log (*P*), or 40 dBc, whichever is less stringent
Emergency transmitters [18]	No limit

NOC

P, PEP and dBc

NOC

10 to 13

MOD

14 For radiodetermination systems (radar as defined by No. S1.100), spurious emission attenuation (in dB) shall be determined for radiated emission levels, and not at the antenna transmission line. The measurement methods for determining the radiated spurious emission levels from radar systems should be guided by Recommendation ITU-R M.1177.

NOC

15

ADD

16 Earth stations in the amateur-satellite service operating below 30 MHz are in the service category “Amateur services operating below 30 MHz (including those using SSB)”.

ADD

17 Space stations in the space research service intended for operation in deep space as defined by No. **S1.177** are exempt from spurious emission limits.

ADD

18 Emergency position-indicating radio beacon, emergency locator transmitters, personal location beacons, search and rescue transponders, ship emergency lifeboat and survival craft transmitters, emergency land, aeronautical or maritime transmitters.

MOD

RECOMMENDATION 66 (Rev.WRC-2000)

Studies of the maximum permitted levels of unwanted emissions

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that Appendix **S3** specifies the maximum permitted levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line;

b) that the principal objective of Appendix **S3** is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;

c) that excessive levels of unwanted emissions may give rise to harmful interference;

d) that while out-of-band emissions can also give rise to harmful interference, the Radio Regulations do not provide general limits for these emissions;

e) that while Appendix **S3** applies generally to the mean power of a transmitter and its spurious emissions, it also takes account of a variety of emissions where interpretation of the term "mean power", and thus its measurement, would be difficult, particularly in the cases of digital modulation broadband systems, pulsed modulation and narrow-band high-power transmitters;

f) that unwanted emissions from transmitters operating in space stations may cause harmful interference, particularly emissions from wideband amplifiers which cannot be adjusted after launch;

g) that unwanted emissions may cause harmful interference to safety services and radio astronomy and space services using passive sensors;

h) that, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** may be required to protect specific services, such as safety services and passive services in specific bands or situations;

i) that broadband digital modulation may cause unwanted emissions at frequencies far from the carrier frequency,

noting

a) that safety services and passive services have in many cases been allocated frequencies adjacent or close to those of services employing high-power transmitters;

b) that some administrations have adopted more stringent limits for spurious emissions than those specified in Appendix **S3**;

c) that, at this time, in response to *resolves* 2.3.2 of Resolution 722 (WRC-97), ITU-R has decided to recommend not including general out-of-band limits in the Radio Regulations,

recommends that ITU-R

1 continue the study of spurious emission levels in all frequency bands, emphasizing the study of those frequency bands, services and modulation techniques not presently covered by Appendix **S3**;

2 study the question of unwanted emissions resulting from transmitters of all services and all modulation methods, and, on the basis of those studies, develop a Recommendation or Recommendations for maximum permitted levels of spurious emissions and out-of-band emissions;

3 establish appropriate measurement techniques for unwanted emissions, where those techniques do not currently exist, including the determination of reference levels for wideband transmissions as well as the applicability of reference measurement bandwidths;

4 study the reasonable boundary of spurious emissions and out-of-band emissions with a view to defining such a boundary in Article **S1**;

5 study those frequency bands and instances where, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** 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;

6 study those frequency bands and instances where, for technical or operational reasons, out-of-band 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;

7 study the matter of reference bandwidth in the space services and the option of modifying Table II of Appendix **S3** by separately identifying individual space services;

8 report the results of these studies to a competent world radiocommunication conference(s).

BLUE PAGES

SUP

RECOMMENDATION 507

Relating to spurious emissions in the broadcasting-satellite service[1]

MOD

RESOLUTION 10 (Rev.WRC-2000)

Use of two-way wireless telecommunications by the International Red Cross and Red Crescent Movement

The World Radiocommunication Conference, (Istanbul, 2000),

considering

a) that the worldwide humanitarian operations carried out by the International Red Cross and Red Crescent Movement - composed of the International Committee of the Red Cross, the International Federation of Red Cross and Red Crescent Societies and national Red Cross and Red Crescent societies - are of great importance and often indispensable;

b) that in such circumstances normal communication facilities are frequently overloaded, damaged, completely interrupted or not available;

c) that it is necessary to facilitate by all possible measures the reliable intervention of these national and international organizations;

d) that rapid and independent contact is essential to the intervention of these organizations;

e) that for the efficient and safe conduct of their humanitarian operations, these organizations rely heavily on two-way wireless telecommunication facilities, and particularly on an extensive HF and VHF radio network,

resolves to urge administrations

1 to take account of the possible needs of the International Red Cross and Red Crescent Movement for two-way wireless telecommunication means when normal communication facilities are interrupted or not available;

2 to assign to these organizations the minimum number of necessary working frequencies in accordance with the Radio Regulations;

3 to take all practicable steps to protect such communications from harmful interference.

MOD

RESOLUTION 300 (Rev.WRC-2000)

Use and notification of the paired frequencies reserved for narrow-band direct-printing telegraphy and data transmission systems in the HF bands allocated on an exclusive basis to the maritime mobile service

(See Appendix **S17** (Part B, Section II))

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that certain sections of the HF bands allocated to the maritime mobile service have been reserved for narrow-band direct-printing telegraphy and data transmission systems for use on a paired frequency basis only;

b) that Appendix **S17** (Part B, Section II) contains a channelling arrangement in the maritime mobile HF bands for narrow-band direct-printing telegraphy and data systems (paired frequencies);

c) that WMARC-74 and WARC-Mob-87 established a provisional procedure for the use and notification of paired frequencies for narrow-band direct-printing telegraphy and that the application of this procedure by administrations and by the Radiocommunication Bureau was satisfactory;

d) that WRC-95 and WRC-97 modified the relevant procedures for examination of the frequency assignments in the non-planned bands,

resolves

that paired frequencies in the HF bands reserved for narrow-band direct-printing telegraphy between coast stations and ship stations shall be used by these stations, notified to the Bureau and recorded in the Master International Frequency Register in accordance with the standard procedures of Article **S11** as from 3 June 2000,

instructs the Bureau

to review the frequency assignments referred to in this resolution, which are currently recorded in the Master Register, and to modify the related findings so as to reflect the standard examination and recording procedures as stipulated in Article **S11**.

MOD

RESOLUTION 644 (Rev.WRC-2000)

Telecommunication resources for disaster mitigation and relief operations

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that ITU, in the same spirit as reflected in Articles 40 and 46 of its Constitution has specifically recognized the importance of the international use of radiocommunications in the event of natural disasters, epidemics, famines and similar emergencies;

b) that the Plenipotentiary Conference of the International Telecommunication Union (Minneapolis, 1998), in endorsing Resolution 19 of the World Telecommunication Development Conference (Valetta, 1998), adopted Resolution 36 (Rev.Minneapolis, 1998) on telecommunications in the service of humanitarian assistance;

c) that administrations have been urged to take all practical steps to facilitate the rapid deployment and effective use of telecommunication resources for disaster mitigation and disaster relief operations by reducing and, where possible, removing regulatory barriers and strengthening transborder cooperation between States,

recognizing

a) the potential of modern telecommunication technologies as an essential tool for disaster mitigation and relief operations and the vital role of telecommunications for the safety and security of relief workers in the field;

b) the particular needs of developing countries and the special requirements of the inhabitants of remote areas,

noting

that the Intergovernmental Conference on Emergency Telecommunications (ICET-98), held from 16 to 18 June 1998 in Tampere, Finland, adopted the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (Tampere Convention),

resolves

to invite the ITU Radiocommunication Sector to continue to study, as a matter of urgency, those aspects of radiocommunications that are relevant to disaster mitigation and relief operations, such as decentralized means of communications that are appropriate and generally available, including amateur radio facilities and mobile and portable satellite terminals,

requests the Director of the Radiocommunication Bureau

to support administrations in their work towards the implementation of Resolution 36 (Rev.Minneapolis, 1998) and the Tampere Convention.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

PROPOSAL FOR AGENDA ITEM 1.4

"to consider issues concerning allocations and regulatory aspects related to Resolutions 126 (WRC-97), 128 (WRC-97), 129 (WRC-97), 133 (WRC-97), 134 (WRC-97) and 726 (WRC-97)"

A proposal to indicate that other bands are available for high-density applications in the fixed service and the need for further studies to facilitate sharing between high-density systems in the fixed service and other services in the shared bands.

Background information

With the future introduction of high-density fixed systems (HDFS) in the fixed service into the 31.8-32.3 GHz and 37-38 GHz bands, there has been increasing concern about the possibility of interference to space research service (SRS) earth stations supporting deep space and other categories of space missions from the aggregate emissions of HDFS systems in nearby urban/suburban population centres. A preliminary study conducted in preparation for WRC-2000 showed that for a single urban population centre, a maximum coordination distance on the order of 250 km may be required to provide a level of protection that is in conformity with Recommendations ITU-R SA.609 and SA.1157. Because of a lack of information on the characteristics of anomalous propagation to a single earth station from stations in the fixed service that are randomly distributed over a geographic area as large as an urban population centre, it was not possible for ITU-R to prepare a recommendation on the coordination distance required to ensure protection of a receiving SRS (deep space) earth station and other more conventional earth stations from the emissions of an ensemble of geographically dispersed HDFS stations. ITU-R WP 3M is expected to undertake studies in the next study cycle that are necessary to characterize the anomalous propagation paths.

There are about thirteen SRS (deep space) earth stations operated or planned to be operated worldwide. These earth stations employ state-of-the-art, low-noise amplifiers and receiving antennas with a diameter up to 70 metres and an aperture gain in excess of 80 dB. The United States currently operates an SRS (deep space) earth station near Goldstone in California as part of a global, deep-space network (DSN) that includes comparable earth stations located near Madrid, Spain and Canberra, Australia. The Goldstone station is currently operational and is supporting Mars missions. The Madrid and Canberra stations will become operational in 2002. The other planned 32 GHz earth stations will be operated by the European Space Agency (ESA), Japan, the Russian Federation, Belgium, Italy, Germany and the Ukraine.

The operation of these deep-space earth stations and other, more conventional SRS earth stations must be protected in conformity with Recommendations ITU-R SA.609 and SA.1157 from interference from the emissions of HDFS systems.

Proposals

MOD USA/221/1

S5.547 The bands 31.8-33.4 GHz, 37-40 GHz, 42.0-43.5 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 Resolution **726 (Rev.WRC-~~97~~2000)**).

Reasons: Many administrations throughout the world have permitted the deployment of high-density fixed systems in various parts of the frequency range 37-40 GHz. The band 42.0-43.5 GHz is very suitable for HDFS applications given the radio astronomy use of the band 42.5-43.5 GHz.

ADD USA/221/2

S5.HDFS In the bands 37.0-40.0 GHz and 42.0-43.5 GHz, administrations should take the availability of these bands for high-density applications in the fixed service into account when considering the use of other allocated services (see Resolution **726 (Rev.WRC-2000)**).

Reasons: To encourage and facilitate fixed service use of the subject bands.

MOD USA/221/3

RESOLUTION 726 (~~WRC-97~~Rev.WRC-2000)

Frequency bands above 30 GHz available for high-density applications in the fixed service

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

considering

a) that there is a dramatically increasing demand for high-density applications in the fixed service resulting from the deployment of new mobile networks and from the rapid worldwide deregulation in the provision of local broadband services, including multimedia;

b) that the frequency range from 30 GHz to about 50 GHz is the range preferred to satisfy initial requirements, as indicated in *considering a)*, while the bands above about 50 GHz are preferred for similar applications but which take technical advantage of high atmospheric absorption;

c) that the lower part of the spectrum above 30 GHz has advantages for the fixed service in areas where longer path lengths are necessary;

d) that the 38 GHz band is already heavily used by many administrations for high-density applications in the fixed service;

e) that the needs of other services to which the relevant frequency bands are already allocated must be taken into account;

f) that the band 31.8-32.3 GHz is currently being used and is planned for continued use by the space research service (deep-space) (space-to-Earth) to support deep-space missions;

g) that there are about thirteen deep-space earth stations worldwide, including those located near Goldstone (United States), Madrid (Spain), Canberra (Australia), ...;

~~*f*~~*h)* that the band 37-37.5 GHz is being planned for use by the space research service (space-to-Earth) to provide moon-to-Earth and planetary communication links;

~~*g*~~*i)* that the band 37-38 GHz is being planned for use by the space research service to provide space based very long baseline interferometry;

~~*h*~~*j)* that the deployment of high-density applications in the fixed service in some bands potentially presents sharing difficulties with other primary services allocated to the same band, e.g. the fixed-satellite service;

~~*i*~~*k)* that operations in the space services, such as in the fixed-satellite service, in those bands used by high-density applications in the fixed service may lead to sharing difficulties;

~~*j*~~*l)* that there is a need for global harmonization of new and existing allocations of radio frequency bands to facilitate coordination between administrations and encourage development of competitive products, through economies of scale, and the worldwide introduction of new telecommunication services, including the provision of reliable global information infrastructure access at an affordable cost,

MOD USA/221/4

resolves

that administrations should take into account that the bands 31.8-33.4 GHz*, 37-40 GHz, 42.0-43.5 GHz, 51.4-52.6 GHz, 55.78-59 GHz and 64-66 GHz are available for high-density applications in the fixed service, when considering allocations or other regulatory provisions in relation to these bands,

MOD USA/221/5

requests ITU-R

1 to undertake studies leading to the identification of system characteristics of high-density systems in the fixed service in ~~the~~certain bands listed in the *resolves*;

2 to ~~undertake~~develop, as a matter of urgency, ~~studies of~~ITU Recommendations addressing technical and operational criteria and of methods to facilitate sharing between high-density systems in the fixed service and other services in the bands listed in the *resolves*,

urges administrations

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

Reasons: Consequential.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

ISTANBUL, 8 MAY – 2 JUNE 2000

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COMMITTEE 5
WORKING GROUP 2
OF THE PLENARY

Germany (Federal Republic of), Australia, United States of America, Italy

PROPOSALS FOR UPDATE TO RESOLUTION 216 (WRC-97)

Add "Germany, Australia and Italy" as co-sponsors to this document.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5
WORKING GROUP 2
OF THE PLENARY

United States of America

PROPOSALS FOR UPDATE TO RESOLUTION 216 (WRC-97)

To consider possible extension of the allocation to the mobile-satellite service (Earth-to-space) on a secondary basis in the band 14.0-14.5 GHz to cover aeronautical applications as stipulated in Resolution [216 (WRC-2000)]

Introduction

A growing demand exists for wideband satellite communications capacity that is available for mobile applications, including communications with aeronautical platforms. Studies have already been initiated on the suitability of extending the allocation to the MSS (Earth-to-space) on a secondary basis in the 14.0-14.5 GHz band to permit aeronautical applications using existing fixed-satellite service networks. It is proposed that these studies be continued and made available for consideration of a secondary allocation by WRC-03.

Background information

The 1997 World Radiocommunication Conference ("WRC-97") adopted Resolution 216, which resolved that WRC-2000 should examine the possibility of broadening the secondary MSS allocation in the 14.0-14.5 GHz band ("14 GHz band") to include aeronautical services, subject to the satisfactory outcome of technical compatibility studies. WRC-97 also resolved to include the issue as agenda item 8.5 on the agenda for WRC-2000 in Resolution 721 (WRC-97) if budgetary resources could be identified. This item was not included in the revised WRC-2000 agenda given in Resolution 1130, due to budgetary constraints. As noted in the Conference Preparatory Meeting Report (Geneva, 1999), at section 8.1.2, ITU commenced studies on all items identified in Resolution 721 and has made progress on these matters.

This proposal considers measures that could be taken to enable existing and future satellite communication networks to serve additional commercial and government customers. A growing portion of commercial and governmental demand for wideband[1] satellite communications capacity involves "mobile" applications, such as transmissions with aircraft, ships, submarines, spacecraft and motor vehicles. In contrast, most satellite networks that are capable of wideband

[1] For purposes of this discussion, wideband refers to satellite networks that are capable of carrying transmissions in excess of 64 kilobits per second.

communications operate in the fixed-satellite service (“FSS”) using geostationary orbit (“GSO”) networks in the 4-8 GHz and 12-18 GHz bands.

The international Table of Frequency Allocations (RR Article S.5) permits FSS networks to carry Earth-to-space communications from mobile platforms on a secondary basis in the 14 GHz FSS band. The frequency table indicates, however, that such mobile transmissions may not originate from airborne transmitters. This limitation exists primarily because technical studies have not been published indicating that airborne communications can be provided in the 14 GHz band without causing unacceptable interference to primary services using the spectrum.

Under experimental authority granted by the FCC, testing of the technology enabling Earth-to-space transmissions from aeronautical platforms in the 14 GHz band is being carried out. The experimental trials are expected to support the feasibility of a new allocation.

The adoption of a secondary AMSS allocation in the 14 GHz FSS band by WRC-03 would enable the aviation community to enjoy the benefits of wideband communication services currently available only to fixed and non-aeronautical mobile users. Continual access to broadband communication services has become a key element to business efficiency and individual productivity. Such services could be used for non-safety-of-flight related functions to improve airline efficiency and give passengers constant access to information and data services. For example, such a capability could be used to monitor aircraft equipment performance, providing operational and technical staff on the ground with real-time access to the data. A broadband AMSS capability could also allow airline passengers and crew to access the Internet during flight using laptop computers.

MOD USA/222/1

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~~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~~results of ITU-R studies demonstrating compliance with the requirements of a secondary allocation,

invites ITU-R

to complete in time for WRC-~~99~~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.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 223-E
16 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

REPORT BY THE CHAIRPERSON OF WORKING GROUP 4B

SECOND REPORT FROM WORKING GROUP 4B TO COMMITTEE 4

(Agenda Item 4)

At its sixth meeting on 16 May 2000, the Working Group reviewed the texts of Resolution 10, Resolution 300 (Rev.Mob-87) and Resolution 644 (WRC-97).

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

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

MOD

RESOLUTION 10 (Rev.WRC-2000)

Relating to the use of ~~radiotelegraph and radiotelephone links~~wireless two-way telecommunications by the ~~Red Cross, Red Crescent, and Red Lion and Sun organizations~~International Red Cross and Red Crescent Movement

The World ~~Administrative~~ Radiocommunication Conference, ~~Geneva, 1979~~(Istanbul, 2000),

considering

a) that the worldwide ~~relief work of~~humanitarian operations carried out by the International Red Cross~~,~~ and Red Crescent~~, and Red Lion and Sun organizations is~~ Movement - composed of the International Committee of the Red Cross, the International Federation of Red Cross and Red Crescent Societies and National Red Cross and Red Crescent Societies - are of ~~increasing~~great importance and often indispensable;

b) that in such circumstances normal communication facilities are frequently overloaded, damaged, completely interrupted or not available;

c) that it is necessary to facilitate by all possible measures the reliable intervention of these national and international organizations;

d) that rapid and independent contact is essential to the intervention of these organizations;

e) that for ~~international relief work of the Red Cross, it is necessary that the national Red Cross, Red Crescent, and Red Lion and Sun organizations be able to communicate with each other as well as with the International Committee of the Red Cross and the League of Red Cross Societies~~the efficient and safe conduct of their humanitarian operations these organizations rely heavily on wireless two-way telecommunication facilities, particularly on an extensive HF and VHF radio network,

~~*decides*~~*resolves to urge administrations*

1 to take account of the possible needs of the International Red Cross~~,~~ and Red Crescent~~, and Red Lion and Sun organizations~~ Movement for wireless two-way telecommunication ~~by radio~~means when normal communication facilities are interrupted or not available;

2 to assign to these organizations the minimum number of necessary working frequencies in accordance with the ~~Table of Frequency Allocations; in the case of fixed circuits between 3 MHz and 30 MHz, the frequencies shall be selected, as far as possible, adjacent to the amateur bands~~Radio Regulations;

3 to take all practicable steps to protect such ~~links~~communications from harmful interference.

MOD

RESOLUTION 300 (Rev.~~Mob-87~~WRC-2000)

Use and notification of the paired frequencies reserved for narrow-band direct-printing telegraphy and data transmission systems in the HF bands allocated on an exclusive basis to the maritime mobile service

(See Appendix **S17** (Part B, Section II)~~/Appendix **32**~~)

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

considering

a) that certain sections of the HF bands allocated to the maritime mobile service have been reserved for narrow-band direct-printing telegraphy and data transmission systems for use on a paired frequency basis only;

b) that Appendix **S17** (Part B, Section II)~~/Appendix **32**~~ contains a channelling arrangement in the maritime mobile HF bands for narrow-band direct-printing telegraphy and data systems (paired frequencies);

~~*c)* that this Conference has made available an increased number of paired frequencies reserved for narrow-band direct-printing telegraphy and data transmission systems for use on a paired basis only, and has modified Appendix **S17** (Part B, Section II)/Appendix **32** accordingly;~~

~~*d)* that WMARC-74 established interim measures for the orderly bringing into use of the paired frequencies;~~

~~*e)* that the~~ WMARC-74 and WARC-Mob-87 established a provisional procedure for the use and notification of paired frequencies for narrow-band direct-printing telegraphy and that the application of this procedure by administrations and by the Radiocommunication Bureau was satisfactory~~,~~;

d) that WRC-95 and WRC-97 have modified the relevant procedures for examination of the frequency assignments in the non-planned bands,

resolves

~~1~~ that paired frequencies in the HF bands reserved for narrow-band direct-printing telegraphy between coast stations and ship stations shall be used by these stations, notified to the Bureau and recorded in the Master International Frequency Register in ~~the following manner:~~accordance with the standard procedures of Article **S11**; as from [3 June 2000],

instructs the Bureau

to review the frequency assignments referred to in this Resolution, which are currently recorded in the Master Register, and to modify their findings so as to reflect the standard examination and recording procedures as stipulated in Article **S11**.

~~1.1 assignments of pairs of frequencies for transmission and reception shall be made solely to coast stations. Ship stations of any nationality shall use by right for their transmissions the receiving frequencies of the coast stations with which they exchange traffic;~~

~~1.2 each administration shall choose the pairs of frequencies for its requirements, if necessary with the assistance of the Bureau;~~

~~1.3 the assignments thus selected shall be notified to the Bureau in notices as shown in Appendix **S4**/**1** and administrations shall supply the basic characteristics listed in Annexes 1A and 1B/Section A or B of that Appendix, as appropriate;~~

~~1.4 whenever practicable, each notice should reach the Bureau before the date on which the assignment is brought into use. It must reach the Bureau not earlier than one year before the date on which it is to be brought into use but in any case not later than 30 days after it is actually brought into use;~~

~~1.5 assignments which are in conformity with the Radio Regulations, and in particular Appendix **S17** (Part B, Section II)/Appendix **32**, shall be examined by the Bureau from the viewpoint of the probability of harmful interference to be caused by or to other existing or proposed uses. The Bureau shall inform the administration concerned of the results of its examination and shall record the notified assignment with reference to this Resolution and without any date in Column 2. The date of receipt of the notice by the Bureau and the date of putting into use of the assignment shall be entered in the Remarks Column. In cases where the Bureau identifies incompatibilities, it shall make suggestions with a view to resolving them;~~

~~1.6 any notice not in conformity with the Radio Regulations shall be returned to the notifying administration by the Bureau, together with any suggestion which the Bureau may be able to submit in this respect;~~

~~1.7 should difficulties arise between administrations using the same channel, or adjacent channels, the matter shall be settled by agreement between the administrations concerned taking into account the information published by the Bureau;~~

~~2 that a future competent conference be invited to review this Resolution and examine any difficulties which may have arisen in its application;~~

~~3 that the entries made in the Master Register under this Resolution shall in no way prejudge any decisions which may be taken by the aforementioned conference,~~

~~*invites the Council*~~

~~to place this Resolution on the agenda of the next competent conference in order to examine any difficulties which may have arisen in its application.~~

MOD

RESOLUTION 644 (~~WRC-97~~Rev.WRC-2000)

Telecommunication resources for disaster mitigation and relief operations

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

considering

a) that ITU, in the same spirit as reflected in Articles 40 and 46 of its Constitution ~~and in Resolution **209 (Mob-87),**~~ has specifically recognized the importance of the international use of radiocommunications in the event of natural disasters, epidemics, famines and similar emergencies;

b) that the Plenipotentiary Conference ~~(Kyoto, 1994)~~of the International Telecommunication Union (Minneapolis, 1998), in endorsing Resolution ~~7~~19 of the World Telecommunication Development Conference (~~Buenos Aires, 1994~~Valetta, 1998), adopted Resolution 36 (Rev.Minneapolis, 1998) ~~on telecommunications for disaster mitigation and disaster relief operations~~in the service of humanitarian assistance;

c) that administrations have been urged to take all practical steps to facilitate the rapid deployment and effective use of telecommunication resources for disaster mitigation and disaster relief operations by reducing and, where possible, removing regulatory barriers and strengthening transborder cooperation between States,

recognizing

a) the potential of modern telecommunication technologies as an essential tool for disaster mitigation and relief operations and the vital role of telecommunications for the safety and security of relief workers in the field;

b) the particular needs of developing countries and the special requirements of the inhabitants of remote areas~~;~~,

~~*c)* the progress made in the implementation of Resolution 36 with respect to the preparation of the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations,~~

noting

~~with appreciation the scheduling of~~ the Intergovernmental Conference on Emergency Telecommunications (ICET-98) from 16 to 18 June 1998 in Tampere, Finland, which ~~is expected to adopt~~adopted the Convention ~~referred to in *recognizing c)* above~~on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (Tampere Convention),

resolves

to invite ~~ITU-R~~the ITU Radiocommunication Sector to continue to study, as a matter of urgency, those aspects of radiocommunications that are relevant to disaster mitigation and relief operations, such as decentralized means of communications that are appropriate and generally available, including amateur radio facilities and mobile and portable satellite terminals,

requests the Director of the Radiocommunication Bureau

to support administrations in their work towards the implementation of Resolution 36 (Rev.Minneapolis 1998),

instructs the Secretary-General

to work closely with the United Nations Emergency Relief Coordinator with a view to further increasing the Union's involvement in, and support to, disaster communications, and ~~to report on the outcome of the Tampere Conference to the 1998 Plenipotentiary Conference so that that Conference or the Council may take any action that it deems necessary,~~ to take any action deemed appropriate to implement the provisions of the Tampere Convention,

invites

the United Nations Emergency Relief Coordinator and the Working Group on Emergency Telecommunications to collaborate closely with ITU in further work towards the implementation of Resolution 36 (Rev.Minneapolis, 1998), and in particular the adoption of the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations,

also invites

regional telecommunication organizations to sensitize administrations to the contents of the Tampere Convention,

urges administrations

to give their full support to the adoption of the said Convention and its national implementation.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Addendum 1 to Document 224-E 29 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 227

COMMITTEE 6

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

Committee 5 has finished its consideration of agenda items 1.12 and 1.14. As a result of these deliberations, it has unanimously adopted, at its second 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 [COM5/1] (WRC-2000)

Use of the frequency band 35.5-35.6 GHz by spaceborne precipitation radar

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the frequency band 35.5-36.0 GHz is allocated to the Earth exploration-satellite (active) service as a primary service with footnote **S5.551A** and allocated to meteorological aids and radiolocation services on a primary basis;

b) that before WRC-97, operation on a primary basis of radars located on spacecraft was allowed in the band 35.5-35.6 GHz;

c) that performance criteria and interference criteria for spaceborne precipitation radar within 35.5-36.0 GHz is included in Recommendation ITU-R SA.1166-2;

d) that spaceborne precipitation radar is very important to measure rain rate globally and study global water circulation;

e) that minimum observable rain rate around 35 GHz is less than 0.2 mm/h;

f) that combination between part of 35.5-35.6 GHz and 13.4-13.75 GHz is very useful to measure rain rate precisely;

g) that studies have shown that sharing between spaceborne active sensors and radiolocation systems in 35.5-36 GHz is feasible as shown in section 5.7.2.1 of Chapter 5 of the CPM-97 Report,

resolves

1 to invite ITU-R to study sharing between the spaceborne precipitation radar and other services in 35.5-35.6 GHz;

2 that WRC-02 would review the results of these studies and consider exclusion of footnote **S5.551A** in 35.5-35.6 GHz used for spaceborne precipitation radar.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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16 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 176 and 195(Rev.1) **COMMITTEE 6**

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

Committee 5 has finished its consideration of agenda items 1.12 and 1.14. As a result of these deliberations, it has unanimously adopted, at its second 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

Annex: 1

ANNEX

MOD

14.25-15.63 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
15.43-15.63	FIXED-SATELLITE ~~(space-to-Earth)~~ (Earth-to-space) MOD S5.511A AERONAUTICAL RADIONAVIGATION S5.511C	

MOD

S5.511A The band 15.43-15.63 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a primary basis. Use of the band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth ~~(see Resolution **123 (WRC-97))**~~ and Earth-to-space) is limited to feeder links of non-geostationary systems in the mobile-satellite service, subject to coordination under No. **S9.11A**. The use of the frequency band 15.43-15.63 GHz by the fixed-satellite service (space-to-Earth) is limited to non-GSO MSS feeder-link systems for which advance publication information has been received by the Bureau prior to 2 June 2000. In the space-to-Earth direction, the minimum earth station elevation angle above and gain towards the local horizontal plane and the minimum coordination distances to protect an earth station from harmful interference shall be in accordance with Recommendation ITU-R S.1341. ~~Also in the space-to-Earth direction, harmful interference shall not be caused to stations of the radio astronomy service using the band 15.35-15.4 GHz. The threshold levels of interference and associated power flux-density limits which are detrimental to the radio astronomy service are given in Recommendation ITU-R RA.769-1. Special measures will need to be employed~~In order to protect the radio astronomy service in the band 15.35-15.4 GHz, the aggregate power flux-density radiated in the 15.35-15.4 GHz band by all the space stations within any non-GSO MSS feeder-link (space-to-Earth) system operating in the 15.43-15.63 GHz band shall not exceed the level of –156 dB(W/m^2) in a 50 MHz bandwidth, which is given in Recommendation ITU-R RA.769-1, into any radio astronomy observatory site for more than 2% of the time.

MOD

S5.541A Feeder links of non-geostationary networks in the mobile-satellite service and geostationary networks in the fixed-satellite service operating in the band 29.1-29.5 GHz (Earth-to-space) shall employ uplink adaptive power control or other methods of fade compensation, such that the earth station transmissions shall be conducted at the power level required to meet the desired link performance while reducing the level of mutual interference between both networks. These methods shall apply to networks for which Appendix **S4** coordination information is considered as having been received by the Bureau after 17 May 1996 and until they are changed by a future competent world radiocommunication conference. Administrations submitting Appendix **S4** information for coordination before this date are encouraged to utilize these techniques to the extent practicable. ~~These methods are also subject to review by ITU-R (see Resolution **121 (Rev.WRC-97))**.~~

MOD

S11.32A *c)* with respect to the probability of harmful interference that may be caused to or by assignments recorded with a favourable finding under Nos. **S11.36** and **S11.37** or **S11.38**, or recorded in application of No. **S11.41**, or published under Nos. **S9.38** or **S9.58** but not yet notified, as appropriate, for those cases for which the notifying administration states that the procedure for coordination under Nos. **S9.7**, **S9.7A**, **S9.7B**, **S9.11**, **S9.12**, **S9.13** or **S9.14,** could not be successfully completed (see also No. **S9.65**);[10] or

MOD

S11.33 *d)* with respect to the probability of harmful interference that may be caused to or by other assignments recorded with a favourable finding in application of Nos. **S11.36** and **S11.37** or **S11.38** or in application of No. **S11.41**, as appropriate, for those cases for which the notifying administration states that the procedure for coordination or prior agreement under Nos. **S9.15**[11], **S9.16**[11], **S9.17**[11], **S9.17A** or **S9.18**[11] could not be successfully completed (see also No. **S9.65**);[12] or

MOD

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[10] **S11.32A.1** The examination of such notices with respect to any other frequency assignment for which a request for coordination under Nos. **S9.7**, **S9.7A**, **S9.7B**, **S9.12** or **S9.13**, as appropriate, has been published under No. **S9.38** but not yet notified shall be effected by the Bureau in the order of their publication under the same number using the most recent information available.

MOD

S11.35 ~~Not used.~~In cases where the Bureau is not in a position to conduct the examination under No. **S11.32A** (**S11.33**), the Bureau shall immediately inform the notifying administration, which may then resubmit its notice under No. **S11.41**, under the assumption that the finding under No. **S11.32A** (**S11.33**) is unfavourable.

SUP

RESOLUTION 121 (Rev.WRC-97)

Continued development of interference criteria and methodologies for fixed-satellite service coordination between feeder links of non-geostationary satellite networks in the mobile-satellite service and geostationary-satellite networks in the fixed-satellite service in the bands 19.3-19.7 GHz and 29.1-29.5 GHz

SUP

RESOLUTION 123 (WRC-97)

Feasibility of implementing feeder links of non-geostationary satellite networks in the mobile-satellite service in the band 15.43-15.63 GHz (space-to-Earth) while taking into account the protection of the radio astronomy service, the Earth exploration-satellite (passive) service and the space research (passive) service in the band 15.35-15.4 GHz

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WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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PLENARY MEETING

Chairperson, Committee 5

CONCLUSIONS RELATING TO AGENDA ITEM 1.11 ON THE CONSIDERATION OF CONSTRAINTS ON EXISTING ALLOCATIONS FOR NON-GEOSTATIONARY MSS BELOW 1 GHz

With regard to agenda item 1.11, following the consideration of the conclusion of ITU-R studies in the CPM Report and the various proposals to this Conference, Committee 5 agreed that there is no need for modification of the constraints on existing allocations for the non-geostationary MSS below 1 GHz. As a result, no changes are proposed to be made to the Radio Regulations in this regard.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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PLENARY MEETING

CHAIRPERSON, COMMITTEE 5

CONCLUSIONS RELATING TO AGENDA ITEM 1.6.2 ON THE GLOBAL RADIO CONTROL CHANNEL FOR IMT-2000

With regard to agenda item 1.6.2, following the consideration of the conclusion of ITU-R studies in the CPM Report (§ 1.1.3.1) and the various proposals to this conference, Committee 5 agreed that there is no need for the identification of a global radio control channel to facilitate multimode terminal operation and worldwide roaming of IMT-2000.

This completes the action on this agenda item.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 2
OF THE PLENARY

NOTE BY THE CHAIRPERSON, COMMITTEE 5

In response to your request, Committee 5 has considered draft Resolutions AAA to DDD contained in Document 20 (Proposals ASP/20/334 to 337). As a result of its considerations, Committee 5 is forwarding to you the text of Resolution [COM5/1], based on proposal ASP/20/336. No action was considered necessary on proposals ASP/20/334, 335 and 337.

Committee 5 will inform you further on proposal ASP/20/338 in due course.

Chris Van DIEPENBEEK
Chairperson, Committee 5

ADD

RESOLUTION [COM5/1] (WRC-2000)

Use of the frequency band 35.5-35.6 GHz by spaceborne precipitation radar

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that the frequency band 35.5-36.0 GHz is allocated to the Earth exploration-satellite (active) service as a primary service with footnote **S5.551A** and allocated to meteorological aids and radiolocation services on a primary basis;

b) that before WRC-97, operation on a primary basis of radars located on spacecraft was allowed in the band 35.5-35.6 GHz;

c) that performance criteria and interference criteria for spaceborne precipitation radar within 35.5-36.0 GHz is included in Recommendation ITU-R SA.1166-2;

d) that spaceborne precipitation radar is very important to measure rain rate globally and study global water circulation;

e) that minimum observable rain rate around 35 GHz is less than 0.2 mm/h;

f) that combination between part of 35.5-35.6 GHz and 13.4-13.75 GHz is very useful to measure rain rate precisely;

g) that studies have shown that sharing between spaceborne active sensors and radiolocation systems in 35.5-36 GHz is feasible as shown in section 5.7.2.1 of Chapter 5 of the CPM-97 Report,

resolves

1 to invite ITU-R to study sharing between the spaceborne precipitation radar and other services in 35.5-35.6 GHz;

2 that WRC-02 would review the results of these studies and consider exclusion of footnote **S5.551A** in 35.5-35.6 GHz used for spaceborne precipitation radar.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 5

Australia, Belarus (Republic of), China (People's Republic of), Japan, Malaysia, Russian Federation, Ukraine, Viet Nam (Socialist Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

CONSIDERATION OF NEW MSS ALLOCATION IN THE BANDS 1 492-1 525 MHz AND 1 675-1 690 MHz

Please add the following countries as co-sponsors to this document:

- China (People's Republic of) and Malaysia.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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COMMITTEE 5

Australia, Belarus (Republic of), Japan, Russian Federation, Ukraine, Viet Nam (Socialist Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

CONSIDERATION OF NEW MSS ALLOCATION IN THE BANDS 1 492-1 525 MHz AND 1 675-1 690 MHz

1 Introduction

Some administrations are proposing to allocate the bands 1 492-1 525 MHz and 1 675-1 690 MHz or parts of these bands to the MSS. However, there are many unresolved issues and difficulties of the proposed allocations. This document addresses those unresolved issues and situations, which will give difficulties to both terrestrial and MSS systems if these frequency bands are allocated to the MSS.

2 Difficulties of sharing between terrestrial systems and MSS systems

2.1 1 492-1 525 MHz (MSS downlink)

– This frequency band is allocated to terrestrial mobile and fixed services, which are being operated in many countries. In many countries, these terrestrial services will give unacceptable interference to MSS systems in the areas and their vicinities where many terrestrial systems are operated. Therefore, worldwide MSS allocation of this band is not appropriate.

– Sharing studies in this band have not been conducted as is obvious in the CPM Report.

– S5.348A provides the coordination threshold of –150 dB (W/m^2), which can be applied to the Japanese territory. Care should be taken that this value is calculated as a single entry value assuming the interference from MSS systems operating in Region 2. Therefore, studies on an aggregate value are needed assuming multiple MSS systems before the allocation of this band to MSS on a worldwide basis.

– The above coordination value is fairly low for introduction of MSS systems and further, some countries are operating aeronautical telemetry systems, which require lower coordination values than –150 dB (W/m^2) in accordance with results of ITU-R studies. These facts clearly show the unfeasibility of MSS operation.

2.2 1 675-1 690 MHz (MSS uplink)

– According to section 2.2.2.2.1 of the CPM Report, co-channel sharing between currently proposed MSS systems and MetAids operated in this band is not feasible. Section 2.2.2.3 states that segmentation of 1 675-1 690 MHz may be a method of providing MSS spectrum in the sub-band 1 683-1 690 MHz where no MetAids operations take place. However, there are many MetAids stations still operated in many countries and, therefore, it is not appropriate to allocate this band to MSS.

– Further, with respect to the sharing between MSS and MetSat, it should be noted that MetSat stations are generally located at unspecified places, and operators of meteorological satellites cannot identify the locations of MetSat stations. Therefore, it is quite difficult to avoid interference to MetSat stations from MSS stations through frequency coordination.

3 Conclusion

It is quite obvious that studies on the sharing and the feasibility of MSS systems in the above-mentioned frequency bands are needed prior to concluding the MSS allocation. Otherwise, many administrations will face many difficulties such as limitation of future developments and operational flexibility of terrestrial systems after introduction of MSS systems.

In conclusion, there is no sufficient technical reason for allocation of the bands 1 492-1 525 MHz and 1 675-1 690 MHz at this Conference.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 229-E
16 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 197, 199 **WORKING GROUP 4B**

NOTE BY THE CHAIRPERSON, COMMITTEE 5

In its second meeting, Committee 5 considered the issues raised in Documents 197 and 199.

With respect to the issues raised in Document 197, please note that the text of No. S5.511A has been modified to include a limit value. Therefore, your question regarding incorporation by reference of Recommendation ITU-R BA.769-1 no longer applies.

The revised text can be found in Document 224.

With respect to the issue raised in Document 199, the reference in the Radio Regulations should now be to Recommendation ITU-R M.1174-1.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

ISTANBUL, 8 MAY – 2 JUNE 2000

Corrigendum 1 to Document 230-E
18 May 2000
Original: English

WORKING GROUP 1 OF THE PLENARY

China (People's Republic of), Korea (Republic of), Indonesia (Republic of), Japan

PROPOSAL FOR THE WORK OF THE CONFERENCE

(AGENDA ITEM 1.19)

Add the name of "Indonesia (Republic of)" to the countries co-sponsoring this document.

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 230-E
16 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 1
OF THE PLENARY

China (People's Republic of), Korea (Republic of), Japan

PROPOSALS FOR THE WORK OF THE CONFERENCE

(AGENDA ITEM 1.19)

Introduction

In accordance with Resolution 532, IRG and GTE have studied for the past two years the feasibility of increasing the minimum BSS channels for countries in Regions 1 and 3. The last IRG has conducted all compatibility analyses on the basis of existing systems and national preferences, not including "Part B Networks". The final version of BR's report to WRC-2000 (presented in Document 34) showed the successful result of the feasibility study on this basis.

Furthermore, any result of the feasibility study for the inclusion of "Part B" networks has not been presented before WRC-2000. Any specific methodology for how to deal with "Part B" networks in the BSS replanning process has not been discussed in details before WRC-2000. Therefore, there is much difficulty in taking those "Part B" networks into consideration of replanning process without reviewing the detailed analysis result with inclusion of these networks which have not been presented for the consideration of the compatibility analysis.

We can foresee that there are many cases of incompatibility due to these "Part B" networks. It could distort fundamental principles of the BSS replanning and could make replanning impossible.

The Republic of Korea, Japan and China (People's Republic of) are very much concerned about the fact that the hasty inclusion of "Part B" networks might negatively impact on the replanning process. Eventually it would make in vain all efforts done for a long time by the IRG and GTE meetings.

Proposals

1) LAOS should first acquire agreements for LSTAR-3B and LSTAR-4B, whose service areas have exceeded its territory, from the concerned administrations. LAOS should remove the test points of those networks over the territories of the concerned administrations.

2) LSTAR-3B is filed at 116º E and covers the territory of the Republic of Korea, but the existing BSS satellite network of the Republic of Korea is also located at 116º E. Therefore, it is not possible to have compatibility between LSTAR-3B and additional channels to the Korean networks in the replanning process. In this particular case, the priority in replanning process shall be given to the additional national assignments of the Republic of Korea and of the other administrations which have the existing networks over LSTAR-3B.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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16 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 4
(REGULATORY AND ASSOCIATED ISSUES)

Friday, 12 May 2000, at 1430 hours

Chairperson: Mr H. RAILTON (RRB)

Subjects discussed		**Documents**
1	Approval of the summary record of the first meeting of Committee 4	172
2	Organization of work (continued)	29, 165, 172
3	Oral report by the Chairperson of Working Group 4A	-
4	Report of the Chairperson of Working Group 4B	180
5	Documents for approval	116

1 Approval of the summary record of the first meeting of Committee 4 (Document 172)

1.2 Document 172 was **approved**.

2 Organization of work (continued) (Documents 29, 165, 172)

2.1 The **Chairperson** drew attention to Document 165, which reflected the organization of the work of Committee 4 as approved at its first meeting.

2.2 Document 165 was **approved**.

2.3 The **Chairperson**, referring to § 3.1 of Document 172 (summary record of Committee 4's first meeting), reported that the Steering Committee had instructed Committee 4 to take up the report of RRB on Resolution 80 (WRC-97), as contained in Document 29. He proposed that it be addressed in Working Group 4A, which dealt with satellite issues.

2.4 It was so **agreed**.

2.5 With regard to § 5.3 of Document 172, the **Chairperson** reported that Committee 5 had agreed to consider Document 46, which had mistakenly been allocated to Committee 4.

3 Oral report by the Chairperson of Working Group 4A

3.1 The **Chairperson of Working Group 4A** reported that all documents related to WRC agenda item 1.3, 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, had been considered, and a Sub-Working Group 4A-1 had been established to draw up a regulatory text on the basis of the discussions. Sub-Working Group 4A-2 had considered the working methods of RRB in response to Resolution 84 (Minneapolis, 1998), and would report to Working Group 4A that afternoon. There had been extensive discussion on administrative due diligence, and in that respect Resolution 49 (WRC-97) would be studied further in order to clear up an ambiguity in *resolves* 3 thereof. Sub-Working Group 4A-3 had been established to review the resolution, although the changes would be kept to a minimum. The same sub-working group would also prepare a draft report to the plenipotentiary conference which would be submitted to Committee 4 for consideration.

3.2 He went on to note that an informal working group, the Informal Correspondence Group on the ITU Satellite Filing process (ICGSF), had prepared a document addressing the request contained in Resolution 86 (Minneapolis, 1998), "to achieve additional simplification and cost savings for the Radiocommunication Bureau and administrations". The Administrations of Tonga and the United Kingdom had asked that Committee 4 request the Director of BR to make the report of that group available as an information document, although that action should not be taken as a precedent.

3.3 The **Chairperson** asked the committee whether it would agree exceptionally to bring in the ICGSF report as an information document, as it would be useful for the work of Working Group 4A.

3.4 It was so **agreed**.

4 Report of the Chairperson of Working Group 4B (Document 180)

4.1 The **Chairperson of Working Group 4B** said that her group had been assigned a number of documents relating to the work of BR and thus far had noted Document 5 and agreed to Document 116. With respect to WRC agenda item 1.2 relating to spurious emissions for space services, three documents had been prepared by Sub-Working Group 4B-1 for submission to the working group. Agenda item 1.8 relating to earth stations located on board vessels, and item 2 on the incorporation of ITU-R recommendations by reference in the Radio Regulations, were being addressed, respectively, by Sub-Working Groups 4B-2 and 4B-3. The progress of Sub-Working Group 4B-3 was reflected in Document DT/24. That sub-working group had agreed, for example, that four ITU-R recommendations that had been incorporated by reference on a mandatory basis but had been omitted from Volume 4 of the Radio Regulations should be restored. Furthermore, one of the recommendations in that volume did not appear to be a mandatory incorporation by reference, and the sub-working group would request that guidance be sought from Committee 5 on the matter. Pursuant to Resolution 28 (WRC-95), two incorporated recommendations had been revised by the Radiocommunication Assembly, and her group would request that the appropriate bodies be consulted as to whether the references should be revised to reflect the new versions. The group had agreed that a mechanism based on that used by WRC-97 and contained in the CPM Report be introduced into the methods of the WRC to ensure efficient incorporation by reference. Sub-Working Group 4B-4 was addressing agenda item 4, on the review of resolutions and recommendations.

4.2 With respect to agenda item 1.1 concerning requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, a number of proposals had been agreed to. The issue of whether country names could be added to existing footnotes had been debated, and the group had concluded that the conference would be required to decide whether to consider such proposals, and whether to consider requests received after the date stipulated in Resolution 26 (Rev.WRC-97). Document 180 addressed that issue.

4.3 The **Chairperson** suggested that the committee agree to allow the working groups to communicate directly with the relevant bodies of the conference to seek the information and approval they required to continue with their work.

4.4 It was so **agreed**.

4.5 The **Chairperson** suggested that Document 180 be submitted to the Plenary for decision.

4.6 The **delegate of Japan** asked whether Document 180 made provision not only for existing footnotes but also for new footnotes.

4.7 The **Chairperson** commented that *further resolves* 1 of Resolution 26 (Rev.WRC-97) referred to both new and existing footnotes, but he would seek the advice of the Plenary on the matter.

4.8 The **delegate of Argentina** supported the Chairperson's suggestion to bring Document 180 to the attention of the Plenary.

4.9 It was so **agreed**.

5 Documents for approval (Document 116)

5.1 The **Chairperson** drew attention to Document 116 and explained that in between WRCs, the Secretary-General was authorized to allocate call signs. Committee 4 was asked to approve the provisional allocations contained in Document 116.

5.2 Document 116 was **approved**.

The meeting rose at 1455 hours.

The Secretary:
P. LUNDBORG

The Chairperson:
H. RAILTON

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 232-E
16 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5B

CHAIRPERSON, SUB-WORKING GROUP 5B-2

WRC-2000 AGENDA ITEM 1.15.3

Sub-Working Group 5B-2 has completed its work concerning WRC-2000 agenda item 1.15.3 and submits the attached text for consideration and approval by Working Group 5B.

Takeshi MIZUIKE
Chairperson, Sub-Working Group 5B-2,
Box 132

ARTICLE S5

Frequency allocations

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) S5.341 MOD S5.355 ADD S5.355A MOD S5.359 ADD S5.359A S5.363	

MOD

S5.355 *Additional allocation:* in Bahrain, Bangladesh, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the bands 1 540-1 559 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, the United Arab Emirates, Eritrea, Ethiopia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the band 1 559-1 610 MHz is also allocated to the fixed service 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 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, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, 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, 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, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, 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, Ukraine, Zambia and Zimbabwe 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.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 233-E*
17 May 2000
Original: Spanish

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

El Salvador (Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

The Administration of El Salvador makes the following proposal for the work of the World Radiocommunication Conference (WRC-2000) under agenda item 1.1 with respect to the footnotes contained in Article S5:

MOD SLV/233/1

S5.480 *Additional allocation:* in Brazil, Costa Rica, <u>El Salvador,</u> Ecuador, Guatemala, Honduras and Mexico, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

MOD SLV/233/2

S5.481 *Additional allocation:* in Germany, Angola, China, <u>El Salvador,</u> Ecuador, Spain, Japan, Morocco, Nigeria, Oman, Democratic People's Republic of Korea, Sweden, Tanzania and Thailand, the band 10.45-10.5 GHz is also allocated to the fixed and mobile services on a primary basis.

* Pursuant to Resolution 26 (Rev.WRC-97) the secretariat notes that this contribution was received on 17 May 2000.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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16 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5D

Drafting Group 5D-2

DRAFT 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 must 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;

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

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5D

Chairperson, Drafting Group 5D-2

DRAFT RESOLUTION [COM5/2] (WRC-2000)

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 such limits;

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

1 that misapplication of single-entry limits shall not be permitted;

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

3 that BR and administrations shall assist in the development of procedures, which shall be applied to all non-GSO FSS systems for which notification information has been received on or after 22 November 1997, so as to verify compliance with the intent of this Resolution;

4 that the procedures shall be submitted to WRC-02/03 for consideration,

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 epfd limits included in Article 22,

instructs the Director of the Radiocommunication Bureau

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*.

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

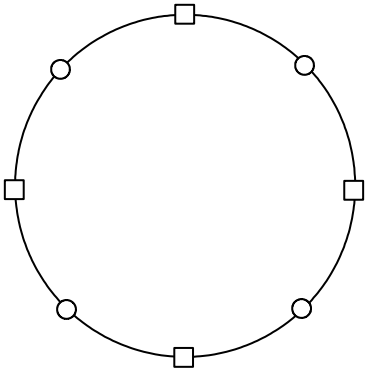
Process to be followed by BR in developing and implementing procedures to avoid misapplication of non-GSO FSS single-entry limits in Article S22 [Rev.WRC-2000]

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.

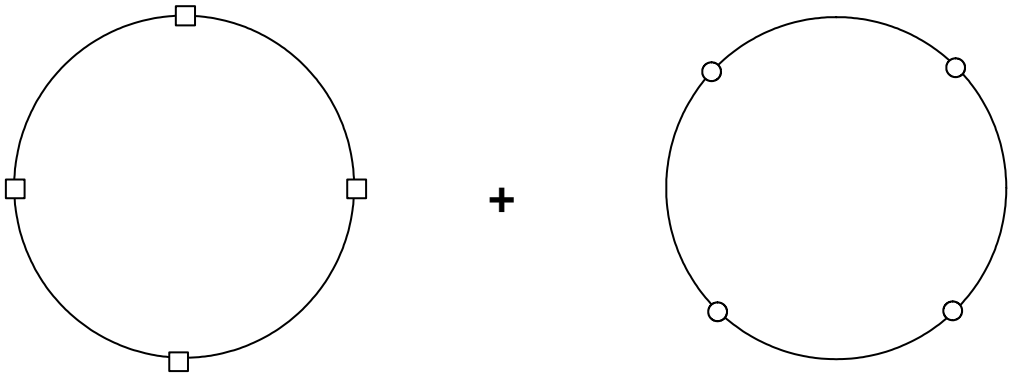
2 For the purpose of determining if misapplication of non-GSO FSS single-entry limits has occurred or will occur, it is necessary that the regulatory solutions focus not just on “the splitting of networks” but “combining of networks” as well. While disallowing “splitting or combining of networks” as 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.

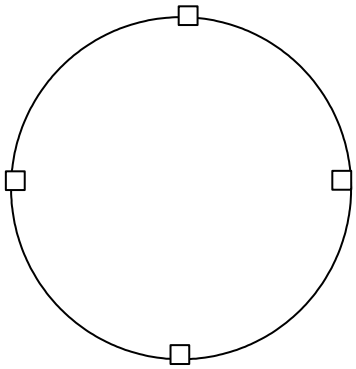


After splitting: When broken into two (or more) parts, each part network meets single-entry limits.

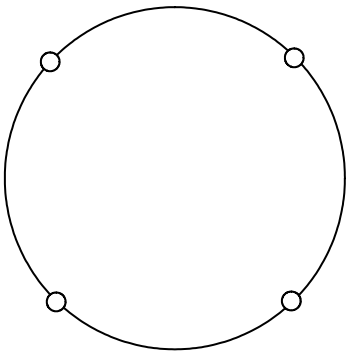


Example of combining

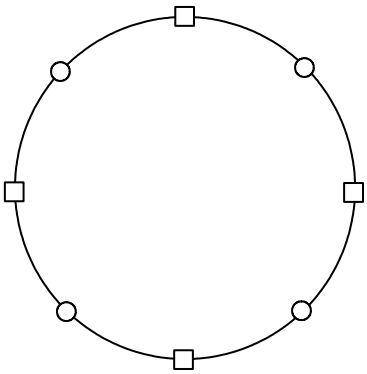
At filing stage (before combining): XYZ Ltd. owns network A. Network A meets single-entry limits.



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).



INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5C

CHAIRPERSON, SUB-WORKING GROUP 5C-3

POWER FLUX-DENSITY (pfd) VALUES FOR SRS IN 37-38 GHz

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°**	
31.0-31.3 GHz 34.7-35.2 GHz (space-to-Earth transmissions referred to in No. **S5.550** on the territories of countries listed in No. **S5.549**)	Fixed-satellite Mobile-satellite Space research	–115 [10]	–115 + 0.5(δ – 5) [10]	–105 [10]	1 MHz
37-38 GHz	Space research non-geostationary-satellite orbit	–120 *	–120 + 0.75(δ – 5) *	–150 *	1 MHz
37-38 GHz	Space research geostationary-satellite orbit	–125 *	–125 + (δ – 5)	–105	1 MHz
37.0-40.5 GHz	Fixed-satellite Mobile-satellite Space research	–115 [10]	–115 + 0.5(δ – 5) [10]	–105 [10]	1 MHz

ADD

* During the launch and near-Earth orbit operational phase of deep-space facilities, non-GSO SRS systems shall not exceed a pfd value of:

–115 dB(W/m^2) if $\delta < 5°$

–115 + 0.5(δ – 5) dB(W/m^2) if $5° < \delta < 25°$

–105 dB(W/m^2) if $\delta > 25°$

in any 1 MHz, where δ is the angle of arrival above the horizontal plane.

Explanation - During their deployment or their near-Earth orbit operation, non-GSO SRS systems require higher pfd limits than those mentioned in the Table S21, thus the footnote.

Olivier MARZOUK
Chairperson of SWG 5C-3
Box 2716

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 1
OF THE PLENARY

Radiocommunication Bureau

NATIONAL PREFERENCES FOR THE BSS REPLANNING PROCESS (WRC-2000 AGENDA ITEM 1.19)

1 National preferences confirmed as of 12 May 2000, 2400 hours, or requested as of 12 May 2000, 1700 hours

The national preferences indicated below for information were not included in the basic technical assumptions described in Document WRC2000/34, its Corrigendum 2 and its Addendum 1.

Following the adoption of Document WRC2000/183 by the second WRC-2000 Plenary Meeting, and in accordance with the third or second paragraphs of that document, these national preferences were either:

– described in Addenda 5 to 16 in Document WRC2000/34 and confirmed to the Radiocommunication Bureau before 12 May 2000, 2400 hours Istanbul time; or

– received by the Radiocommunication Bureau before 12 May 2000, 1700 hours Istanbul time.

1.1 Use of preferred feeder-link beams and channels for AUS at its orbital positions 152° E and 164° E, (see Addendum 13 to Document WRC2000/34)

AUS confirmed its national preferences (12 May 2000, 1700 hours), and clarified that:

– additional feeder-link minimum size beams covering its off-shore territories are grouped with its corresponding mainland feeder-link beams; and

– additional channels 1, 5, 9 at 152° E and 4, 8, 12 at 164° E are assigned in addition to its current channels in the Appendix S30A Plan.

AUS also indicated that its request was made with the understanding that “the coordination status of any existing beams included in the new grouped beams (referred to in the third paragraph of section 3.2) will be maintained”. It is understood that “section 3.2” referred to above is contained in Addendum 13 to Document WRC2000/34.

1.2 Extended national beams for BEL and HOL (see Document WRC2000/159)

In Document WRC2000/159, dated 9 May 2000, BEL and HOL requested the following:

– "to include identical beams for Belgium and the Netherlands jointly covering the territories of these Administrations from the same orbital location."

– "these new identical beams would replace the national beams of these Administrations."

– "the size to be considered for these beams be 1.0°".

It is understood that the test-points associated with these extended beams are those currently defined for the beams of both countries in the Plans of Appendices S30 and S30A. In the absence of complete beam characteristics, the requested beams will be calculated using these test-points, and the major axis and minor axis resulting from the calculation will then be adjusted in order to meet the requested of 1.0°.

1.3 Use of Appendix S30 Plan elliptical downlink beam for feeder link of BUL at the orbital position 1° W (see Addendum 8 to Document WRC2000/34)

At the fourth meeting of GT PLEN-1 (11 May 2000, 1430-1700 hours), BUL confirmed this request.

1.4 Use of elliptical feeder-link beams of Appendix S30A Plan and preferred channels for CHN at its orbital positions 62° E, 92° E and 134° E (see Addendum 7 to Document WRC2000/34 and its Addendum 1)

As indicated in section 2.3 of Document WRC2000/183, dated 11 May 2000, CHN agreed to the option contained in Addendum 1 to Addendum 7 to Document WRC2000/34, which proposes to use the orbital positions 62° E, 92.2° E and 134° E together with grouping of the adjacent channels assigned to this country at these positions.

1.5 Additional or alternative use of the 14 GHz and/or the 17 GHz frequency bands for CHN

As indicated in section 2.10 of Document WRC2000/183, dated 11 May 2000, CHN requested to assign 12 channels in the 14 GHz frequency band to its feeder-link beam CHN19000 at the orbital position 122.0° E.

1.6 Preferred orbital position for CHN/HKG and CHN/MAC

CHN requested (11 May 2000) to use for its beams CHN19000 and MAC00000 at the preferred orbital position 122.0° E and to not apply a ±0.2° orbital position offset to these beams.

1.7 Preferred orbital position, orbital arc and number of channels for CVA

CVA requested (12 May 2000, 1100 hours) to use the preferred orbital position 1° W or an orbital position within the arc 1° W to 25° W for its two beams CVA08500 and CVA08300, and to assign one channel to its beam CVA08500 and 6 channels to its beam CVA08300.

1.8 Extended national beams for CZE, HNG, HRV and SVK (see Addendum 5 to Document WRC2000/34)

In Document WRC2000/151, dated 8 May 2000, CZE, HNG, HRV and SVK confirmed this request.

1.9 Additional or alternative use of the 14 GHz and/or the 17 GHz frequency bands for IND (see Addendum 14 to Document WRC2000/34)

IND confirmed (12 May 2000, 1743 hours) to use only the 17 GHz frequency band for all its feeder-link beams at the orbital positions 56° E and 68° E.

1.10 Additional or alternative use of the 14 GHz and/or the 17 GHz frequency bands for IRN (see Addendum 14 to Document WRC2000/34)

As indicated in section 2.10 of Document WRC2000/183, dated 11 May 2000, IRN requested to use both 14 GHz and 17 GHz frequency bands and to assign 12 channels to its beams in each band.

1.11 Additional or alternative use of the 14 GHz and/or the 17 GHz frequency bands for ISR (see Addendum 14 to Document WRC2000/34)

ISR confirmed (12 May 2000, 1720 hours) to use only the 17 GHz frequency band for its feeder-link channels at the orbital position 4° W.

1.12 Use of 12 channels for J at the orbital positions 109.85° E, in addition to and grouped with its assignments at 109.85° E and 110° E (see Addendum 10 to Document WRC2000/34)

In Document WRC2000/133, dated 28 April 2000, J confirmed this request.

1.13 Use of specific downlink and feeder-link beams for KOR

As indicated in section 1 of Document WRC2000/183, dated 11 May 2000, KOR requested not to recalculate the ellipse characteristics of its downlink and feeder-link national beams as a consequence of the change to its orbital position from 110.0° E to 116.0° E.

1.14 Extended national beams for LTU and LVA at the orbital position 23° E (see Addendum 16 to Document WRC2000/34)

LTU and LVA confirmed this request (12 May 2000, 1900 hours). (See also Document WRC2000/158, dated 9 May 2000.)

1.15 Additional or alternative use of the 14 GHz and/or the 17 GHz frequency bands for MRC (see Addendum 14 to Document WRC2000/34)

At the sixth meeting of GT PLEN-1, MRC confirmed to use for its feeder-link channels the 17 GHz band with a possible orbital position offset of ±0.2º at its preferred orbital position 25° W.

1.16 Preferred downlink and feeder-link channels for NOR

NOR confirmed (12 May 2000, 1115 hours) its request to use the channels 1, 3, 5, 7, 9, 11, 13, 15, 17, 19 with circular polarization CL for the downlink and CR for the feeder link, for its national beam at the orbital position 0.8° W.

1.17 Preferred orbital position for PNG

PNG requested (12 May 2000, 1613 hours) to use the preferred orbital position 134.0° E.

1.18 Additional or alternative use of the 14 GHz and/or the 17 GHz frequency bands for PSE

PSE requested (12 May 2000, 1440 hours) to use only the 17 GHz frequency band for its feeder-link channels.

1.19 Preferred downlink and feeder-link test-points and orbital position for TON

TON requested (12 May 2000, 1525 hours) to use new test-points for both its downlink and feeder-link beams at the new preferred orbital position 170.75° E.

1.20 Use of alternative orbital position within the arc 25° W to 10° E for TUN instead of 30° W (see Addendum 15 to Document WRC2000/34)

TUN confirmed (12 May 2000, 1600 hours) the use of the preferred orbital position 25.0° W or an orbital position in the arc 25.0° W to 10.0° E for its beams TUN15000 and TUN27200. (See also Document WRC2000/192, dated 12 May 2000.)

1.21 Use of separate beams for USA at the orbital positions 170° E and 122° E (see Addendum 9 to Document WRC2000/34)

USA confirmed its request (12 May 2000, 1935 hours).

1.22 Use of specific downlink beam for VTN

As indicated in paragraph 4, section 1 of Document WRC2000/183, dated 11 May 2000, VTN requested to use at its preferred orbital position 107° E the same elliptical beam for both its downlink and feeder link. The ellipse characteristics of this beam are those used in the basic study for the feeder-link beam of VTN. In addition, VTN requested to use normal roll-off antenna patterns for its transmitting space station (i.e. R13TSS) instead of the fast-roll patterns used in the IRG study and the Appendix S30 Plan.

1.23 Extended national beams for JOR, LBN and SYR (see Addendum 6 to Document WRC2000/34)

Confirmed at the sixth meeting of GT PLEN-1.

1.24 Use of a channel bandwidth of 33 MHz for LAO instead of the standard value of 27 MHz (see Addendum 11 to Document WRC2000/34)

Confirmed at the sixth meeting of GT PLEN-1.

1.25 Use of the 14 GHz frequency band in addition to the 17 GHz frequency band for SEY (see Addendum 14 to Document WRC2000/34)

Confirmed at the sixth meeting of GT PLEN-1.

1.26 Preferred channels for S

At the sixth meeting of GT PLEN-1, S requested to use for its national beam “S13800” ten channels among the following ones: 1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14, 15, 17, 18, 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 31, 32, 33, 35, 36, 37, 38 and 39.

It is understood that these channels can be used with either CR or CL polarization.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 2 to Document 238-E 19 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

GT PLEN-1

LIST OF "EXISTING" AND "PART B" SYSTEMS WHICH HAVE BEEN RECEIVED BY THE RADIOCOMMUNICATION BUREAU

1 Please read the last paragraph, last line of page 1 as follows (concerns English version only):

"Consequently, DNK accepted not to maintain its preferred orbital position at 5° E."

2 Please read the date of bringing in use in Column 9, row 2 of Table 3 as follows:

12.02.03

R. ZEITOUN
Chairperson, GT PLEN-1, Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 238-E 18 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

GT PLEN-1
Radiocommunication Bureau

LIST OF "EXISTING" AND "PART B" SYSTEMS WHICH HAVE BEEN RECEIVED BY THE RADIOCOMMUNICATION BUREAU

Attachment 1, Table 3, page 8 (English version), delete rows 14 and 15.

R. ZEITOUN
Chairperson, GT PLEN-1, Box 27

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 238-E
15 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 1
OF THE PLENARY

Radiocommunication Bureau

LIST OF "EXISTING"[1] AND "PART B"[2] SYSTEMS WHICH HAVE BEEN RECEIVED BY THE RADIOCOMMUNICATION BUREAU

Table 1 contains the list of satellite networks which satisfy the conditions of Principle 3 of Annex 1 to Resolution 532 (WRC-97).

Table 2 contains the list of satellite networks included in WRC-97 Plans for which the 8 years regulatory lapsing period does not apply, which were notified under Article 5 of the above-mentioned Appendices S30 and S30A before 12 May 2000 but have not been brought into use.

Table 3 contains the list of satellite networks successfully completed the procedure of Article 4 of Appendices S30 and S30A which were not brought into use before 12 May 2000.

It should be noted that one Administration "A" listed in Table 1 has requested that in application of paragraphs 4.3.15 and 4.2.16 of Appendices S30 and S30A respectively, the assignments of its two "existing" systems be grouped with assignments belonging to networks of five other Administrations "B, C, D, E and F" included in the Appendices S30 and S30A Plans.

The Conference at its second Plenary on Friday 12 May 2000 confirmed that the above-mentioned grouping arrangement is acceptable and to be carried forward (the same grouping arrangement) in the replanning process. However, the Conference considered that if it is possible to find different orbital positions and/or channels to be used as national assignments of any or all of these 5 administrations "B, C, D, E and F" grouped with the subject "existing systems" of administration "A", in that case there is no need to carry forward the above-mentioned grouping. Further information on this issue is provided in the attachment as mentioned.

At the 6th meeting of GT PLEN-1, DNK made a reservation about the grouping arrangement issue. After some consultations with the concerned administrations and the Radiocommunication Bureau, DNK requested to not maintain in the replanning process the grouping of its assignments with those of some "existing" systems described in Attachment 1 to this document. Consequentially, DNK accepted to maintain its preferred orbital position at 5º E.

Attachment 1: List of the systems included in the replanning process.

Attachment 2: Information on the grouping arrangement.

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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.

[2] Satellite systems for which the procedures of Article 4 of Appendices S30 and S30A have been successfully completed.

ATTACHMENT 1

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**		**Status of examination and publication**
				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	20	Examination in progress
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	Included in the Appendices S30 and S30A Plans by WRC-97
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	Examined and published
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	Examined and published
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	Included in the Appendices S30 and S30A Plans by WRC-97
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	--	Examined, yet to be published

[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**		**Status of examination and publication**
				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	--	Examination in progress
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	Examination in progress
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	--	Examined and published
		(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	Examination in progress
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	Included in the Appendices S30 and S30A Plans by WRC-97
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	Included in the Appendices S30 and S30A Plans by WRC-97
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	Included in the Appendices S30 and S30A Plans by WRC-97
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	Included in the Appendices S30 and S30A Plans by 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**		**Status of examination and publication**
				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	47.4	51.9	6	6	Examination in progress
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	--	Examined and published
		(APS30A)		04.05.93 01.07.93	--	22 + Add.1	12.05.00 11:44			--	--	--	40	Examination in progress
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	--	Examined, yet to be published
		(APS30A)			--	47	12.05.00 11:44			--	--	--	40	Examination in progress
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	Included in the Appendices S30 and S30A Plans by WRC-97
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	Examined and published
20	RUS	RST-1	36.0º E	Not applicable	31	28	Not applicable	28.01.99	Not applicable	53.0	53.0	8	8	National assignment. Included in the Appendices S30 and S30A Plans by WRC-97
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	Included in the Appendices S30 and S30A Plans by WRC-97

* Sweden agreed to review the protection situation afforded to the TELE-X network (e.g. by reducing the protection ratios and the dowlink 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**		**Status of examination and publication**
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	Included in the Appendices S30 and S30A Plans by WRC-97
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	Examined and published
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	--	Examination in progress
		SIRIUS-2** (APS30A)			--	61	12.05.00 15:33	21.11.97	30.06.98	--	--	--	16	Examination in progress
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	--	Examination in progress
		SIRIUS-3** (APS30A)				62	12.05.00 15:33			--	--	--	9	Examination in progress

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 specifed 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.

TABLE 2

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 use

1	2	3	4	5	6	7	8	9	10	11	12	13	14
No.	**Adm.**	**Satellite network**	**Orbital Position**	**Request for publication**	**Notification Date of Receipt**	**Date of bringing into use**	**Operational status on 12.05.00 to be confirmed**	**Resolution 49 Due diligence information**	**Downlink e.i.r.p. (dBW)**		**Number of channels**		**Status of examination**
									Min	**Max**	**APS30**	**APS30A**	
1	AUS	AUSSAT C 152E BSS	152.0º E	Not applicable	18.09.97	01.10.00	No	Not applicable	58.2	59.4	18	18	Examination in progress
2	RUS	RST-1	36.0º E	Not applicable	28.04.00	15.05.00	No	Not applicable	53.0	53.0	8	8	Examination in progress
3	RUS	RST-2	56.0º E	Not applicable	28.04.00	15.05.00	No	Not applicable	55.0	55.0	8	8	Examination in progress

TABLE 3

Satellite networks successfully completed the procedure of Article 4 of Appendices S30/S30A which were not brought into use before 12 May 2000

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**		**Date of receipt for publication request[7]**	**Date of bringing into use**	**Date of receipt of due diligence [8] information**	**Downlink e.i.r.p. (dBW)**		**Number of channels**		**Status of examination and publication**
				Part A	**AP30/E**	**AP30A/E**	**Part B**			**Min**	**Max**	**APS30**	**APS30A**	
1	ARS	ARABSAT-BSS1 (Channels 21-40)	26.0º E	08.08.95	73	69	12.05.00 16:47	01.01.02	29.09.98	50	50	20	20	Examination in progress
2	D	EUROPE*STAR-1B	45.0º E	13.02.95	58	54	28.04.00	15.02.03	17.04.00	52.0	52.0	40	40	Examination in progress
3	F	RADIOSAT-5	7.0º W	11.11.94	42	38	03.05.00	10.11.02	11.05.00	51.8	56.0	25	25	Examination in progress
4	F	RADIOSAT-5A (AP30)	7.0º W	12.10.95	76	--	03.05.00	11.10.03	11.05.00	51.8	56.0	15	--	Examination in progress
		(AP30A)			--	72	12.05.00 16:15			--	--	--	14	Examination in progress
5	G	GE-SATCOM E1 (APS30A only)	24.0º W	14.11.95	--	106	28.04.00	10.11.03	28.04.00	--	--	--	40	Examination in progress
6	LAO	LSTAR3B	116.0º E	18.10.95	90	86	03.05.00	30.12.00	08.05.00	52.8	57.9	24	24	Examination in progress
7	LAO	LSTAR4B	126.0º E	18.10.95	91	87	03.05.00	30.06.01	08.05.00	54.8	57.9	24	24	Examination in progress
8	TUR	TURKSAT-BSS	42.0º E	03.03.95	60	56	28.04.00	15.09.00 for ch 1-22 and 15.02.03 for ch 23-40	21.04.00 for ch 1-22 and 25.04.00 for ch 23-40	49.0	54.0	40	40	Examination in progress

[7] 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.

[8] In accordance with Resolution 49 (WRC-97). Details of the administrative due diligence information are available in the BR secretariat (BSS team).

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**		**Date of receipt for publication request[7]**	**Date of bringing into use**	**Date of Receipt of due diligence[8] information**	**Downlink e.i.r.p. (dBW)**		**Number of channels**		**Status of examination and publication**
				Part A	**AP30/E**	**AP30A/E**	**Part B**			**Min**	**Max**	**APS30**	**APS30A**	
9	USA	USASAT29H APS30 only	41.0º E	18.10.95	93	--	27.03.00	17.10.00	05.05.00	55.0	55.0	40	--	Examined, yet to be published.
10	USA	USASAT29M APS30 only	149.0º E	18.10.95	98	--	27.03.00	17.10.00	05.05.00	44.0	53.0	24	--	Examined, yet to be published.
11	USA	USASAT29N APS30 only	164.0º E	18.10.95	99	--	27.03.00	17.10.00	05.05.00	51.5	55.0	24	--	Examined, yet to be published.
12	USA	USASAT29O APS30 only	173.0º E	18.10.95	100	--	27.03.00	17.10.00	05.05.00	55.0	55.0	24	--	Examined, yet to be published.
13	USA	USASAT29R APS30 only	132.0º E	16.11.95	117	--	27.03.00	17.10.00	05.05.00	42.0	55.0	24	--	Examined, yet to be published.
14	USA	USABSS-1[9] USABSS-2[9] USABSS-2A[9] APS30 only	101.2º W 100.8º W 100.85ºW	18.12.95	118	--	20.04.00	18.01.94 01.09.94 24.07.95	07.05.97	Region 2 Plan	Region 2 Plan	16 16 16	-- -- --	Examination in progress
15	USA	USABSS-3[9]	119.2º W	03.06.96	131	131	04.05.00	28.12.95	04.05.00	Region 2 Plan	Region 2 Plan	11	11	Not yet started

9 Region 2 Plan network required to be protected according to the methodology as described in Document WRC2000/34.

ATTACHMENT 2

Grouping arrangement and possible course of actions to be pursued during replanning

1) Grouping administration “A” with administration “B” and administration “A” with administration “C” may lead to the grouping of administration “B” with administration “C” if they (administrations “A”, “B”, “C”) use the same or adjacent channels. This implies that administration “B” should agree to be grouped with administration “C”.

2) Some “existing systems” included in the IRG studies may require more protection than that used in the IRG studies.

3) It may be necessary to split some national Plan beams belonging to other administrations, so that some channels of those beams are grouped and others are not grouped.

Possible measures to overcome difficulties during the replanning process

1) Keep the proposed grouping arrangement. Splitting some national Plan beams may be required in this case.

2) Move some grouped national Plan beams of other administrations outside of the orbital separation limit (±15/±9 degrees from the orbital positions of the “existing” systems) in order to avoid grouping.

3) If some administrations grouped with these “existing”/”Part B” systems want to keep their preferred orbital positions within the defined orbital separation limit (±15/±9 degrees from the orbital positions of the “existing” systems) then, the proposed grouping arrangement with these “existing systems” should be maintained for the administrations, which are kept within the orbital separation limit. Splitting some national Plan beams may be required in this case.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5D

Drafting Group 5D-1

DRAFT 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)**).~~<u>The function X is defined as a function of the number, N, of satellites in the non-GSO FSS constellation as follows:</u>

<u>– for N ≤ 50 $X = 0$ (dB)</u>

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

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

<u>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.</u>

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]

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 –190.00 –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.

ADD

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

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]

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 –145	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 systems.

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]

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	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160.0 + 3.4 (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \leq \lvert \text{Latitude} \rvert \leq 63.75$
–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 BSS antenna diameter 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**.

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**

~~**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 [*]**]**	–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$_{up}$ limit applies to the bands 17.3-18.1 GHz (Regions 1 and 3) and 17.8-18.1 GHz (Region 2). It is also applicable to the frequency band 17.3-17.8 GHz (Region 2), in order to protect BSS feeder links in Region 2 from non-GSO FSS uplinks in Regions 1 and 3.

* 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.[iap/14, b/35]

* This epfd$_{up}$ limit applies to the bands 17.3-18.1 GHz (Regions 1 and 3) and 17.8-18.1 GHz (Region 2). It is proposed that the above-mentioned limit be also applicable to the frequency band 17.3-17.8 GHz (Region 2), in order to protect BSS feeder links in Region 2 from non-GSO FSS uplinks in Regions 1 and 3. See also section 3.2.2.[asp/20/116*bis*]]

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

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~~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**

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.

~~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 **WWW (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 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^2/40 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.] *

* 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

S22.5J 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. **S22.5B** will apply the provisions of Resolution **WWW (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 Annex 1 of Resolution **WWW (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 Annex 1 of Resolution **WWW (WRC-2000)**, the administrations responsible for the non-GSO FSS systems will apply the provisions contained in *resolves* 2 of Resolution **WWW (WRC-2000)**.

NOTE - To be revisited after 5D completes its work on Article **S15**.**]**

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 and the lowest total receiving system noise temperature of 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 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 operating their downlinks co-frequency to any location; and

– the associated latitude range;

b) the minimum height of the space station above the surface of the Earth at which any satellite will be used to provide a service;

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 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.

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 co-frequency from the associated earth stations within a given cell;

b) the average number of associated earth stations operating co-frequency 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 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 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.

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 the provisions of Resolution **130 (WRC-97)** or Resolution **538 (WRC-97)]**, 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	

[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	

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COMMITTEE 5

United Kingdom of Great Britain and Northern Ireland

PROPOSALS FOR THE WORK OF THE CONFERENCE

ADDITIONAL ALLOCATION FOR MSS IN 1-3 GHz RANGE (AGENDA ITEM 1.9)

1 Introduction

The United Kingdom submits the following information for the work of agenda item 1.9.

MSS uplink band, 1 683-1 690 MHz

Proposed usage*	**Other co-primary services**	**Applicable ITU-R Recommendations**	**Applicable RR provisions**
MSS (Earth-space)	MetSat	SA.1158-2 "Sharing of the 1 675-1 710 MHz band between the meteorological-satellite service (space-to-Earth) and the mobile-satellite service (Earth-to-space)"	Article S9 S5.377
	MetAids	SA.1264 "Frequency sharing between the meteorological aids service and the mobile-satellite service (Earth-to-space) in the 1 675-1 700 MHz band"	Article S9 S5.377
	FS	IS.847-1 "Determination of the coordination area of an earth station operating with a geostationary space station and using the same frequency band as a system in a terrestrial service" IS.849-1 "Determination of the coordination area for earth stations operating with a non-geostationary space craft in bands shared with terrestrial services" M.1471 "Guidance to facilitate coordination and use of frequency bands shared between the mobile-satellite service and the fixed services in the frequency range 1-3 GHz" M.1141-1 "Sharing in the 1-3 GHz frequency range between non-geostationary space stations operating in the mobile-satellite service and stations in the fixed service" M.1142-1 "Sharing in the 1-3 GHz frequency range between geostationary space stations operating in the mobile-satellite service and stations in the fixed service" F.699-5 "Reference radiation patterns for line-of-sight radio-relay systems antennas for use in coordination studies and interference assessment in the frequency range from 1 to about 40 GHz"	Article S9

		F.758-2 “Considerations in the development of criteria for sharing between the terrestrial fixed service and other services” F.759 “The use of frequencies in the band 500-3 000 MHz for radio-relay systems” F.1094-1 “Maximum allowable error performance and availability degradations to digital radio-relay systems arising from interference from emissions and radiations from other sources” F.1245-1 “Mathematical model of average radiation patterns for line-of-sight point-to-point radio-relay system antennas for use in certain coordination studies and interference assessment in the frequency range from 1 to about 40 GHz” F.1246 “Reference bandwidth of receiving stations in the fixed service to be used in coordination of frequency assignment with transmitting space stations in the mobile satellite service in the 1-3 GHz range”	
* 1 675-1 710 MHz already allocated to MSS (E-s) in Region 2.			

MSS downlink band, 1 518-1 525 MHz

Proposed usage*	Other co-primary services	Applicable ITU-R Recommendations	Applicable RR provisions
MSS (space-Earth)	FS	M.1471 “Guidance to facilitate coordination and use of frequency bands shared between the mobile-satellite service and the fixed services in the frequency range 1-3 GHz” M.1141 “Sharing in the 1-3 GHz frequency range between non-geostationary space stations operating in the mobile-satellite service and stations in the fixed service” M.1142 “Sharing in the 1-3 GHz frequency range between geostationary space stations operating in the mobile-satellite service and stations in the fixed service” M.1143 “System specific methodology for coordination of non-geostationary space stations (space-to-Earth) operating in the mobile-satellite service with the fixed service” F.758-2 “Considerations in the development of criteria for sharing between the terrestrial fixed service and other services” F.759 “The use of frequencies in the band 500-3 000 MHz for radio-relay systems” F.1094-1 “Maximum allowable error performance and availability degradations to digital radio-relay systems arising from interference from emissions and radiations from other sources” F.1107 “Probabilistic analysis for calculating interference into the fixed service from satellites occupying the geostationary orbit” F.1108 “Determination of the criteria to protect fixed service receivers from the emissions of space stations operating in non-geostationary orbits in shared frequency bands”	Article S9 Appendix S5, Table S5-2

		F.699-5 “Reference radiation patterns for line-of-sight radio-relay systems antennas for use in coordination studies and interference assessment in the frequency range from 1 to about 40 GHz” F.1245 “Mathematical model of average radiation patterns for line-of-sight point-to-point radio-relay system antennas for use in certain coordination studies and interference assessment in the frequency range from 1 to about 40 GHz” F.1246 “Reference bandwidth of receiving stations in the fixed service to be used in coordination of frequency assignment with transmitting space stations in the mobile satellite service in the 1-3 GHz range”	
	MS, including aeronautical telemetry	M.1459 “Protection criteria for telemetry system in the aeronautical mobile service and mitigation techniques to facilitate sharing with geostationary broadcasting-satellite and mobile-satellite service in the frequency band 1 452-1 525 MHz and 2 310-2 360 MHz”	Article S9 S5.342 S5.343 S5.348 S5.348A
* 1 492-1 525 MHz already allocated to MSS (E-s) in Region 2.			

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WORKING GROUP 1
OF THE PLENARY

Note by the Chairperson of Working Group 1 of the Plenary

STRUCTURE OF GT PLEN-1

Attached for your convenience is the structure of GT PLEN-1.

R. ZEITOUN
Chairperson, Working Group 1
of the Plenary

Groups/sub-groups	Subject/agenda items	Identification	Chairperson
GT PLEN-1	1.19, 1.19*bis*, 1.20 and 1.21 BSS replanning and related regulatory issues	PL-1	R. Zeitoun (CAN) Box No. 27 Vice-Chairpersons: – S. Djematene (ALG) Box No. 2219 – A. Frederich (S) Box No. 268
AD HOC-1 OF GT PLEN-1	All technical aspects related to BSS replanning including methodology, criteria and compatibility issues (agenda item 1.19)	PL-1/AH-1	C. Dosch (D) Box No. 751
AD HOC-1A OF GT PLEN-1	Compatibility with other services	PL-1/AH-1A	M.A. Panduro (E) Box No. 2537
SWG 1 OF GT PLEN-1	Regulatory/procedural aspects (agenda items 1.19, 1.19*bis*, 1.20)	PL-1/1	J. Chartier (F) Box No. 2688
Drafting Group 1 of GT PLEN-1	Resolutions	PL-1/DG-1	M. Delahoy (AUS) Box No. 618

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WORKING GROUP 1
OF THE PLENARY

Note by the Chairperson of Working Group 1 of the Plenary

STRUCTURE OF GT PLEN-1

Attached for your convenience is the structure of GT PLEN-1.

R. ZEITOUN
Chairperson, Working Group 1
of the Plenary

Groups/sub-groups	Subject/agenda items	Identification	Chairperson
GT PLEN-1	1.19, 1.19*bis*, 1.20 and 1.21 BSS replanning and related regulatory issues	PL-1	R. Zeitoun (CAN) Box No. 27
AD HOC-1 OF GT PLEN-1	All technical aspects related to BSS replanning including methodology, criteria and compatibility issues (agenda item 1.19)	PL-1/AH-1	C. Dosch (D) Box No. 751
AD HOC-1A OF GT PLEN-1	Compatibility with other services	PL-1/AH-1A	M.A. Panduro (E) Box No. 2537
SWG 1 OF GT PLEN-1	Regulatory/procedural aspects (agenda items 1.19, 1.19*bis*, 1.20)	PL-1/1	J. Chartier (F) Box No. 2688
Drafting Group 1 of GT PLEN-1	Resolutions	PL-1/DG-1	M. Delahoy (AUS) Box No. 618

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COMMITTEE 4

Jordan (Hashemite Kingdom of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

(AGENDA ITEM 1.1)

MOD JOR/242/1

S5.181 *Additional allocation:* in Germany, Austria, Cyprus, Denmark, Egypt, France, Greece, Israel, Italy, Japan, ~~Jordan,~~ Lebanon, Malta, Morocco, Monaco, Norway, Syria, Sweden and Switzerland, the band 74.8-75.2 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **S9.21**.

MOD JOR/242/2

S5.197 *Additional allocation:* in Germany, Austria, Cyprus, Denmark, Egypt, France, Italy, Japan, ~~Jordan,~~ Lebanon, Malta, Morocco, Monaco, Norway, Pakistan, Syria, and Sweden, the band 108-111.975 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedures invoked under No. **S9.21**.

MOD JOR/242/3

S5.259 *Additional allocation:* in Germany, Austria, Cyprus, the Republic of Korea, Denmark, Egypt, Spain, France, Greece, Israel, Italy, Japan, ~~Jordan,~~ Malta, Morocco, Monaco, Norway, the Netherlands, Syria and Sweden, the band 328.6-335.4 MHz is also allocated to the mobile service on a secondary basis, subject to agreement obtained under No. **S9.21**. In order to ensure that harmful interference is not caused to stations of the aeronautical radionavigation service, stations of the mobile service shall not be introduced in the band until it is no longer required for the aeronautical radionavigation service by any administration which may be identified in the application of the procedure invoked under No. **S9.21**.

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COMMITTEE 4
COMMITTEE 5
WORKING GROUP 1
OF THE PLENARY

Niger (Republic of the)

PROPOSALS FOR THE WORK OF THE CONFERENCE

The following proposals represent the contribution of Niger to the work of the World Radiocommunication Conference (WRC-2000).

Agenda item 1.1 - requests from administrations to delete their country footnotes or to have their country name deleted from footnotes, if no longer required, in accordance with Resolution 26 (Rev.WRC-97)

NGR/243/1

Niger maintains its country name in footnote S5.128, as it is situated over 600 km from the coast.

Agenda item 1.2 - to finalize remaining issues in the review of Appendix S3 to the Radio Regulations with respect to spurious emissions for space services, taking into account Recommendation 66 (Rev.WRC-97) and the decisions of WRC-97 on adoption of new values, due to take effect at a future time, of spurious emissions for space services

NGR/243/2

While supporting CPM's conclusions, it is Niger's wish that the regulations should, once the studies have been completed, take into account the resolution of interference problems caused by spurious emissions.

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

NGR/243/3

While supporting CPM's conclusions, Niger is of the view that, among the methods proposed, method 5 (regular updating and dealing with unresolved issues in the near future) is the most appropriate.

Agenda item 1.4 - to consider issues concerning allocations and regulatory aspects related to Resolutions 126 (WRC-97), 128 (WRC-97), 129 (WRC-97), 133 (WRC-97), 134 (WRC-97) and 726 (WRC-97)

NGR/243/4

For this item, Niger supports the CPM proposals.

Agenda item 1.5 - to consider regulatory provisions and possible additional frequency allocations for services using high altitude platform stations, taking into account the results of ITU-R studies conducted in response to Resolution 122 (WRC-97)

NGR/243/5

Given that the studies have not yet been completed, Niger encourages ITU-R to continue with studies for the implementation of HAPS in exclusively allocated bands below 3 GHz, with appropriately-tailored regulatory provisions.

Agenda items 1.6, 1.7, 1.8, 1.9, 1.13, 1.15, 1.18, 1.19, 1.19*bis* and 1.20

NGR/243/6

These items were the subject of a common position adopted by the Africa Group at the Abidjan meeting. Niger therefore adheres to that position.

Agenda item 1.10 - to consider results of ITU-R studies carried out in accordance with Resolution 218 (WRC-97) and take appropriate action on this subject

NGR/243/7

Niger is of the view that sharing with other services is unacceptable and calls upon WRC to maintain the status quo. Given that the studies carried out by ITU-R have shown the need for more work in the area of regulatory and procedural considerations, Niger requests that the conference invite ITU-R to carry out studies on regulatory and procedural considerations, and that the results of those studies be considered by a competent WRC.

Agenda item 1.14 - to review the results of the studies on the feasibility of implementing non-GSO MSS feeder links in the 15.43-15.63 GHz in accordance with Resolution 123 (WRC-97)

NGR/243/8

With respect to this item, Niger supports CPM's conclusions in full, in the interests of existing radio astronomy, space research and other such services being protected vis-à-vis non-GSO MSS.

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COMMITTEE 4

Zimbabwe (Republic of)

PROPOSAL FOR THE WORK OF THE CONFERENCE

REQUEST FOR THE DELETION OF FOOTNOTES
(AGENDA ITEM 1.1)

MOD ZWE/244/1

S5.359 *Additional allocation:* in Germany, Saudi Arabia, Armenia, Austria, Azerbaijan, Belarus, Benin, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, 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, Ukraine~~,~~ and Zambia ~~and Zimbabwe~~ the bands 1 550-1 645.5 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 the bands 1 550-1 555 MHz, 1 610-1 645.5 MHz and 1 646.5-1 660 MHz.

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COMMITTEE 5

Note by the Chairperson of GT PLEN-2 to the Chairperson of COMMITTEE 5

GT PLEN-2 has considered the following items for inclusion to the agenda of the next WRC:

EUR/13/384	review of spectrum and regulatory requirements to facilitate emerging terrestrial wireless interactive multimedia applications in accordance with Resolution **[EUR/13/12] (WRC-2000)**;
EUR/13/384 UAE/142/1	review of the usage of the band 13.75-14 GHz for all services, in accordance with Resolution **[EUR/13/13] (WRC-2000)**, with a view to improve sharing conditions for FSS;
ASP/20/332 INS/60/5	to consider the additional allocations on a worldwide basis for downlinks in the 401-406 MHz to the non-GSO MSS, taking into account the results of ITU-R studies conducted in response to Resolution **219 (WRC-97)**;
ASP/20/332 J/133/64	to review footnote **S5.332** in the frequency band 1 215-1 300 MHz concerning the Earth exploration-satellite (active) service and other services, taking into account Resolution **[BBB] (WRC-2000)**;

It was noted that the draft Resolutions and Resolution **219 (WRC-97)** referred to in these proposals are within the terms of reference of your Committee. The final decision on the above items has therefore been postponed until your Committee has considered these Resolutions.

GT PLEN-2 would appreciate if you could take up this matter as early as possible and communicate the result to GT PLEN-2.

E. GEORGE
Chairperson, GT PLEN-2, Box 134

INTERNATIONAL TELECOMMUNICATION UNION

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COMMITTEE 4

Note by the Chairperson of GT PLEN-2 to the Chairperson of Committee 4

GT PLEN-2 has considered the following item (**EUR/13/384**) for inclusion to the agenda of the next WRC:

"to consider possible changes to the procedures for the advance publication, coordination and notification of satellite networks in response to Resolution **86 (Minneapolis, 1998)**;".

It was noted that Resolution **86 (Minneapolis, 1998)** is included in the terms of reference of your Committee. The final decision on the above item has therefore been postponed until your Committee has taken action on this Resolution.

GT PLEN-2 would appreciate if you could take up this matter as early as possible and communicate the result to GT PLEN-2.

E. GEORGE
Chairperson, GT PLEN-2, Box 134

INTERNATIONAL TELECOMMUNICATION UNION

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COMMITTEE 5

Nigeria (Federal Republic of)

PROPOSAL FOR THE WORK OF THE CONFERENCE

Agenda item 1.6.1

1 It was observed that Resolution 721 (WRC-97) setting out the agenda for WRC-2000, did not include the consideration of the satellite components of IMT-2000, even though it was indicated in Resolution 212 (Rev.WRC-97). That the CPM took the initiative to exhaustively examine the possible candidate bands for the satellite components of IMT-2000 is a commendable effort. The identified candidate bands for the satellite component of IMT-2000: 1 525-1 559/1 626.5-1 660.5 MHz, 1 610-1 625/2 483.5-2 500 MHz and 2 500-2 520/2 670-2 690 MHz are currently being used for various services in Nigeria as per the Radio Regulations. Recommendations ITU-R F.1335 and M.1184 need to provide information on interference protection criteria that would directly address potential IMT-2000 usage especially to sharing. That will be the condition for Nigeria to be assured for protection of the existing terrestrial services.

2 The need to identify additional spectrum to ensure roaming on a worldwide basis is imperative, but the CPM Report on sharing studies on the terrestrial candidate bands with other services appears inconclusive for the following reasons:

a) the allowable geographic separation (e.g. urban/rural) between operations was not defined;

b) if the geographic sharing concept would minimize cost, the economic cost associated with sharing was also not determined, even for the purpose of planning.

Nigeria feels strongly that the issues raised above be tackled by ITU-R while giving sufficient time for the affected systems to migrate to other bands. This position is with respect to the terrestrial candidate bands in the CPM Report: 470-806 MHz, 806-960 MHz, 2 520-2 670 MHz and 2 700-2 900 MHz.

_____

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WORKING GROUP 5D

Note from the Chairperson of Drafting Group 5D-1 to the Chairperson of Working Group 5D

Drafting Group 5D1 held four meetings to review the proposals related to modifications to Articles S21 and S22 of the Radio Regulations and consequential modifications to Articles S9 and S11, as well as Appendices S4 and S5. The drafting group completed most of its work today and has submitted a comprehensive document (Document 239) showing the proposed revisions that were agreed at the drafting group. In addition, we will continue some further discussions regarding changes to Article S9 of the Radio Regulations within two smaller sub-drafting groups. I expect to have this work completed within the next day or two.

There was a general discussion regarding the definition of "GSO networks" and "GSO systems". The drafting group agreed that throughout Article S22, the term "GSO networks" should be used and urges group 5D to adopt a similar position.

There was also a proposal by one administration that the readability of Article S22 would be greatly improved if all text relating to S22.5 were placed ahead of the numerous tables that are included in this provision. Although there was no objection in principle, the drafting group felt that this was a difficult task to perform and was very concerned about information being mishandled in the process. Therefore, this task was not undertaken.

There were some proposals suggesting modifications to Articles S21 relating to the use of the band 11.7-12.2 GHz by geostationary networks but these were deemed to be outside the mandate of this drafting group.

There were also proposals relating to the band 17.3-18.1 GHz and it was felt that it would be prudent to wait the outcome of the deliberations in DG 5D3 before proceeding with this topic. A similar issue was deferred on a proposal relating to aggregate epfd limits.

The delegation of Iran indicated that the development of pfd limits to be applied to non-GSO FSS in the 10.7-11.7 GHz band should take due account of terrestrial systems operating up to 4° elevation angles.

Marc Dupuis
Chairperson, Drafting Group 5D-1
Box 886

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WORKING GROUP 5C

Chairperson, Sub-Working Group 5C-3

RESULTS OF DRAFTING GROUP 5C-3A DELIBERATIONS

1 **MOD**

Section IV – Table of Frequency Allocations

55.78-66 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
55.78-56.2~~69~~	EARTH EXPLORATION-SATELLITE (passive) FIXED ADD S5.XXX INTER-SATELLITE S5.556A MOBILE S5.558 SPACE RESEARCH (passive) S5.547 S5.557	
~~55.78~~56.26-56.9	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE S5.556A MOBILE S5.558 SPACE RESEARCH (passive) S5.547 S5.557	

ADD

S5.XXX In the band 55.78-56.26 GHz, in order to protect stations in the EES (passive) service, the maximum transmitter power density delivered by a transmitter to the antenna of an FS station is limited to –26 dB(W/MHz).

2 Changes needed to Resolution 726 (WRC-97), if maintained, as agreed by the Group.

Attachment: Draft modification of Resolution 726

ATTACHMENT

RESOLUTION 726 (Rev.WRC-~~97~~2000)

Frequency bands above 30 GHz available for high-density applications in the fixed service

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

considering

a) that there is a dramatically increasing demand for high-density applications in the fixed service resulting from the deployment of new mobile networks and from the rapid worldwide deregulation in the provision of local broadband services, including multimedia;

b) that the frequency range from 30 GHz to about 50 GHz is the range preferred to satisfy initial requirements, as indicated in *considering a)*, while the bands above about 50 GHz are preferred for similar applications but which take technical advantage of high atmospheric absorption;

c) that the lower part of the spectrum above 30 GHz has advantages for the fixed service in areas where longer path lengths are necessary;

d) that the 38 GHz band is already heavily used by many administrations for high-density applications in the fixed service;

e) that the needs of other services to which the relevant frequency bands are already allocated must be taken into account;

f) that the band 37-37.5 GHz is being planned for use by the space research service (space-to-Earth) to provide moon-to-Earth and planetary communication links;

g) that the band 37-38 GHz is being planned for use by the space research service to provide space based very long baseline interferometry;

h) that the deployment of high-density applications in the fixed service in some bands potentially presents sharing difficulties with other primary services allocated to the same band, e.g. the fixed-satellite service;

i) that operations in the space services, such as in the fixed-satellite service, in those bands used by high-density applications in the fixed service may lead to sharing difficulties;

j) that there is a need for global harmonization of new and existing allocations of radio frequency bands to facilitate coordination between administrations and encourage development of competitive products, through economies of scale, and the worldwide introduction of new telecommunication services, including the provision of reliable global information infrastructure access at an affordable cost,

resolves

that administrations should take into account that the bands 31.8-33.4 GHz*, 51.4-52.6 GHz, ~~55.78~~56.26-59 GHz and 64-66 GHz are available for high-density applications in the fixed service, when considering allocations or other regulatory provisions in relation to these bands,

requests ITU-R

1 to undertake studies leading to the identification of system characteristics of high-density systems in the fixed service in the bands listed in the *resolves*;

2 to undertake, as a matter of urgency, studies of technical and operational criteria and of methods to facilitate sharing between high-density systems in the fixed service and other services in the bands listed in the *resolves*,

urges administrations

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

* The date of provisional application of this allocation shall be in conformity with Resolution **126 (WRC-97)**.

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WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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LIST OF DOCUMENTS ISSUED
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DOCUMENT NUMBER	***SOURCE***	***TITLE***	***DESTINATION***
201	WG 4B	Note by the Chairperson of Working Group 4B to the Chairperson of Committee 4	C4
202	C2	Summary record of the first meeting of Committee 2 (Credentials)	C2
203	ISR	Proposal for the work of the Conference	C5
204	CAF	Proposals for the work of the Conference	C4
205	G	Proposals for the work of the Conference	C4
206	WG 4B	First Report from Working Group 4B to Committee 4	C4
207	C4	First series of texts submitted by Committee 4 to the Editorial Committee	C6
208 + Rev.1	WG 4B	Note by the Chairperson of Working Group 4B to the Chairperson of GT PLEN-2	WG PLEN-2
209	WG PLEN-1	Terms of reference – Sub-Groups of GT PLEN-1	WG PLEN-1
210	WG 5C	Chairperson, Working Group 5C	C5
211	SWG 5A-2	Conclusions relating to agenda item 1.11 on the consideration of constraints on existing allocations for non-geostationary MSS below 1 GHz	WG 5A
212	Drafting Group 5B-2B	WRC-2000 agenda item 1.15.3	SWG 5B-2
213	SG	Date limit for submission of credentials	PL
214 + Rev.1	SWG 5C-3	Chairperson, Sub-Working Group 5C-3	WG 5C

DOCUMENT NUMBER	*SOURCE*	*TITLE*	*DESTINATION*
215	SG	Transfer of powers - Eritrea - Saudi Arabia (Kingdom of)	PL
216 + Rev.1	SWG 5C-2	Note by the Chairperson, Sub-Working Group 5C-2 - Allocation above 71 GHz	WG 5C
217	WG 4A	Note from the Chairperson of Working Group 4A to the Chairperson of GT PLEN-1	WG PLEN-1
218	CHN	Proposals for the work of the Conference	C5
219	WG 4A	Note from the Chairperson of Working Group 4A to the Chairperson of Working Group 5D	WG 5D
220	C6	**B.1 -** First series of texts submitted by the Editorial Committee to the Plenary Meeting	PL
221	USA	Proposals for the work of the Conference	C5
222 + Corr.1	D/AUS/ USA/I	Proposals for update to Resolution 216 (WRC-97)	C5, WG PLEN-2
223	WG 4B	Second report from Working Group 4B to Committee 4	C4
224	C5	First series of texts submitted by Committee 5 to the Editorial Committee	C6
225	C5	Conclusions relating to agenda item 1.11 on the consideration of constraints on existing allocations for non-geostationary MSS below 1 GHz	C5
226	C5	Conclusions relating to agenda item 1.6.2 on the global radio control channel for IMT-2000	PL
227	C5	Note by the Chairperson of Committee 5	WG PLEN-2
228	AUS/BLR/ J/RUS/ UKR/VTN	Proposals for the work of the Conference	C5
229	C5	Note by the Chairperson of Committee 5	WG 4B
230 + Corr.1	CHN/KOR/ INS/J	Proposal for the work of the Conference	WG PLEN-1
231	C4	Summary record of the second meeting of Committee 4 (Regulatory and associated issues)	C4

DOCUMENT NUMBER	*SOURCE*	*TITLE*	*DESTINATION*
232	SWG 5B-2	WRC-2000 agenda item 1.15.3	WG 5B
233	SLV	Proposals for the work of the Conference	C4
234	Drafting Group 5D-2	Draft Resolution [COM5/3] (WRC-2000)	WG 5D
235	Drafting Group 5D-2	Draft Resolution [COM5/2] (WRC-2000)	WG 5D
236	SWG 5C-3	Power flux density (p.f.d.) values for SRS in 37-38 GHz	WG 5C
237	BR	National preferences for the BSS replanning process (WRC-2000 agenda item 1.19)	WG PLEN-1
238 + Corr.1 + Corr.2	BR WG PLEN-1	List of "existing" and "Part B" systems which have been received by the Radiocommunication Bureau	PL, WG PLEN-1
239	Drafting Group 5D-1	Draft modification to RR S21, RR S22 and relevant footnotes	WG 5D
240	G	Proposals for the work of the Conference	C5
241 + Rev.1	WG PLEN-1	Structure of GT PLEN-1	WG PLEN-1
242	JOR	Proposals for the work of the Conference	C4
243	NGR	Proposals for the work of the Conference	C4, C5, WG PLEN-1
244	ZWE	Proposal for the work of the Conference	C4
245	WG PLEN-2	Note by the Chairperson of GT PLEN-2 to the Chairperson of Committee 5	C5
246	WG PLEN-2	Note by the Chairperson of GT PLEN-2 to the Chairperson of Committee 4	C4
247	NGR	Proposal for the work of the Conference	C5
248	Drafting Group 5D-1	Note from the Chairperson of Drafting Group 5D-1 to the Chairperson of Working Group 5D	WG 5D
249	SWG 5C-3	Results of Drafting Group 5C-3A deliberations	WG 5C
250	BR	List of documents issued (201 - 250)	-

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WORKING GROUP 5C

Chairperson, Sub-Working Group 5C-2

Agenda item 1.17 - worldwide allocation for the Earth exploration-satellite (passive) and space research services in the band 18.6-18.8 GHz

1 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) ~~S5.523~~S5.522B MOBILE except aeronautical mobile ~~Earth exploration-satellite (passive)~~ Space research (passive) ~~S5.522~~ADD S5.522A	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.523~~S5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) ~~S5.522~~ADD S5.522A	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.523~~S5.522B MOBILE except aeronautical mobile ~~Earth exploration-satellite (passive)~~ Space research (passive) ~~S5.522~~ADD S5.522A

2 ADD

S5.522A The emissions of the fixed service and fixed-satellite service in the band 18.6-18.8 GHz are limited to the values given in **S21.5A** and **S21.16.2** respectively.

3 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. Other types of fixed-satellite service systems should not be introduced into the band 18.6-18.8 GHz prior to the establishment of appropriate power limits.

4 SUP

S5.522

5 SUP

S5.523

6 MOD

S21.5 3) The power delivered by a transmitter to the antenna of a station in the fixed or mobile service 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 **S21.5A**.

7 MOD

S21.6 4) The limits given in Nos. **S21.2**, **S21.3**, **S21.4** ~~and~~, **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 service:

8 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**

9 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.

10 MOD

---

[8] **S21.16.2** ~~The band 18.6-18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.~~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.

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WORKING GROUP 5C

Note by the Chairperson, Sub-Working Group 5C-2

MODIFICATION OF BRINGING INTO USE AND ADMINISTRATIVE DUE DILIGENCE REQUIREMENTS AS A CONSEQUENCE OF ALLOCATION CHANGES ABOVE 71 GHz

Agenda item 1.16 for WRC-2000 is "to consider allocation of frequency bands above 71 GHz to the Earth exploration-satellite (passive) and radio astronomy services, taking into account Resolution 723 (WRC-97)". The purpose is to adjust allocations above 71 GHz to satisfy science service requirements and to relieve, to the extent possible, interference from active radio services in the same or adjacent allocations. Section 4.1 of the CPM Report identifies requirements for each of the science services and reports the results of sharing studies between the science services and other active services. Methods to satisfy the agenda item are reflected in the many proposals on this agenda item and require many changes to the allocations for both passive and active radio services.

Many of these modified active bands are satellite bands. Space stations with frequencies in these modified bands for which complete Appendix S4 coordination information or notification information is considered as having been received by the Bureau by the end of WRC-2000 should be given consideration in light of these events in the following manner:

1) responsible administrations should be able to resubmit the relevant Appendix S4 information, while retaining the original date of the receipts;

2) the resubmitted Appendix S4 coordination information or notification information shall be excluded from the cost-recovery procedures;

3) the Bureau should allow sufficient time to the responsible administration for the preparation required to resubmit the Appendix S4 coordination information or notification information.

To accomplish this modification see draft new Resolution [5C2-3].

S. SAYEENATHAN (India)
Chairperson, Sub-Working Group 5C-2
Box 757

Attachment: Draft new Resolution [5C2-3]

RESOLUTION 5C2-3 (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 have caused 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 or 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 may 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 six years (for advance publication information received prior to 22 November 1997) or five 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 [2 June 2000], must adhere to the revised Table of 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 [2 June 2000], the Bureau will extend the notified date of bringing into use under No. **S11.44** up to [2 June 2005] 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 new date of bringing into use for the space station, subject to the requirement that the new date be not later than [2 June 2005];

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 [2 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 [2 June 2000], shall adhere to the revised Table of Allocations resulting from WRC-2000.

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WORKING GROUP 5B

Chairperson, Sub-Working Group 5B-1

MODIFICATIONS TO APPENDIX S18

(AGENDA ITEM 1.18)

The attached modifications to Appendix S18 "Table of transmitting frequencies in the VHF maritime mobile band" have been adopted by Sub-Working Group 5B-1. The text is submitted to Working Group 5B for approval.

Pekka LÄNSMAN
Chairperson, Sub-Working Group 5B-1
Box 872

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 ~~*n*~~*o)* below.

MOD

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public corres-pondence
		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
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			
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		

Channel designator	Notes	Transmitting frequencies (MHz)		Inter-ship	Port operations and ship movement		Public corres-pondence
		Ship stations	Coast stations		Single frequency	Two frequency	
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
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

General notes

NOC

a) to *e)*

Specific notes

NOC

f) to *p)*

MOD

m) These channels ~~(18 and 82 to 86)~~ may be operated as single frequency channels, subject to special arrangement between interested or affected administrations.

NOC

n)

ADD

o) These channels may be used to provide bands for initial testing and the possible future introduction of new technologies, subject to a 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 harmful interference of other stations operating in accordance with Article **S5**.

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WORKING GROUP 5B

Chairperson, Sub-Working Group 5B-1

MODIFICATIONS TO RESOLUTION 342

(AGENDA ITEM 1.18)

The attached modifications to Resolution 342 “Review of new technology to provide improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service” has been unanimously adopted by Sub-Working Group 5B-1. The text is submitted to Working Group 5B for approval.

Pekka LÄNSMAN
Chairperson, Sub-Working Group 5B-1

RESOLUTION 342 (Rev.WRC-~~97~~2000)

Review of new technology to provide improved efficiency in the use of the band 156-174 MHz by stations in the maritime mobile service

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

considering

a) that the agenda of ~~WRC-97~~this Conference included the consideration of the use of new technology for the maritime mobile service in the band 156-174 MHz and the consequential revision of Appendix **S18** to the Radio Regulations ~~in respect of maritime mobile communications and the use of new technology for maritime radiotelephony channels~~;

b) Recommendation **318 (Mob-87)** particularly *noting b)* and *c)*;

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;

~~e~~f) that ITU-R is conducting studies on improving efficiency in the use of this band, and that these studies are still ongoing;

~~f~~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;

~~g~~h) that the congestion on Appendix **S18** frequencies calls for the implementation of efficient new technologies;

~~h~~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 adopted 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 adopted 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

~~that some administrations are considering adopting some of the above changes to their operations within the Appendix **S18** frequencies,~~

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** together with the addition of footnote [*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 technology,

resolves

~~that WRC-99 should consider the use of new technology in the band 156-174 MHz and consequential revision of Appendix **S18**,~~

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 in 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 technology by the maritime mobile service,

invites ITU-R

to ~~continue~~finalize the following studies ~~on the following with a view to providing a report to WRC-99~~:

a) to identify the future requirements of the maritime mobile service;

b) to identify suitable technical characteristics of the system or interoperable systems to replace existing technology;

c) to identify necessary modifications to the frequency plan contained within Appendix **S18**;

d) to recommend a ~~timetable~~transition plan for the introduction of new technology ~~and the necessary changes~~;

e) to ~~study and~~ recommend how new technology can be introduced ~~without harming~~whilst 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.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5D

Drafting Group 5D-2

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. [**S9.10**] 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 Annex 1;

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 Annex 1,

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 Annex 1 to be exceeded [(see No. **S22.5K**)];

2 that, in the event that the aggregate interference levels in Annex 1 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 Annex 1 or to reduce such interference to levels that 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;~~

~~2 to continue its studies 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;~~

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 Annex 1;

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 $epfd_{down}$ 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 Annex 1 are not exceeded by operators of non-GSO FSS systems;]

4 to develop technical measures to identify the interference levels from non-GSO systems in excess of the "aggregate" limits given in Annex 1 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))

This Annex to Resolution [COM5/6] contains tables of interference levels concerning aggregate interference from multiple non-GSO FSS systems, which individually meet the Table **S22-1A** limits, into GSO FSS and GSO BSS systems.

Studies are continuing in order to avoid unnecessary entries in this Table and in order to provide maximum protection for the GSO FSS and GSO BSS.

TABLE **WWW-1A**[1, 3]

Limits to the aggregate $epfd_{down}$ 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**[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 Recommendation ITU-R S.1428
	-190 -190 -166 -160 -160	0 99 99.99 99.998 100	40	10 m Recommendation ITU-R S.1428

[1] For certain 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 this table, the aggregate $epfd_{down}$ limits in Table **WWW-1A'** apply to all antenna sizes greater than 60 cm in the frequency bands listed in this table.

~~TABLE **WWW-1A'**~~

~~**Aggregate epfd$_{down}$ radiated by non-GSO FSS systems at certain latitudes**~~

~~**100% of the time epfd$_{down}$ 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|~~

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

Limits to the aggregate 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**[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.[4/57]
	–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.[4/57]
	–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 [3*bis*] Recommendation ITU-R S.[4/57]
	–190 –190 –166 –160 –160	0 99 99.99 99.998 100	40	10 m [3*bis*] Recommendation ITU-R S.[4/57]

1 For certain 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$_{down}$ limits apply to all antenna sizes greater than 60 cm in the frequency bands listed in Table **COM5/6-1A**.

100% of the time $epfd_{down}$ 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 aggregation methodologies referred to *requests ITU-R* 1.

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TABLE **COM5/6-1B**[1]

Limits to the aggregate $epfd_{down}$ 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**[2]
17.8-18.6	–164 –164 –170 –170	100 99.9 90 0	40	1 m Recommendation ITU-R S.1428
	–150 –150 –156 –156	100 99.9 90 0	1 000	
17.8-18.6	–164 –164 –166 –173 –173	100 99.92 99.9 99.4 0	40	2 m Recommendation ITU-R S.1428
	–150 –150 –152 –159 –159	100 99.92 99.9 99.4 0	1 000	
17.8-18.6	–164 –164 –172 –180 –180	100 99.992 99.8 99.8 0	40	5 m Recommendation ITU-R S.1428
	–150 –150 –158 –166 –166	100 99.992 99.8 99.8 0	1 000	

1 For certain 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.

MOD

TABLE **COM5/6-1C**[1]

Limits to the aggregate $epfd_{down}$ 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[2]
19.7-20.2	–154 –154 –172 –182	100 99.94 90 0	40	70 cm Recommendation ITU-R S.1428
	–140 –140 –158 –168	100 99.94 90 0	1 000	
19.7-20.2	–154 –154 –160 –165 –176 –185	100 99.99 99.8 99.8 91 0	40	90 cm Recommendation ITU-R S.1428
	–140 –140 –146 –151 –162 –171	100 99.99 99.8 99.8 91 0	1 000	
19.7-20.2	–154 –154 –162 –191	100 99.998 99.933 0	40	2.5 m Recommendation ITU-R S.1428
	–140 –140 –148 –177	100 99.998 99.933 0	1 000	
19.7-20.2	–154 –154 –161 –175 –184 –195	100 99.9992 99.984 99.6 90 0	40	5 m Recommendation ITU-R S.1428
	–140 –140 –147 –161 –170 –181	100 99.9992 99.984 99.6 90 0	1 000	

1 For certain 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.

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

Limits to the aggregate $epfd_{down}$ 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[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	–160.400 –160.100 –158.600 –158.600 –158.330 –158.330	0.000 25.000 96.000 98.000 98.000 100.000	40	30 cm DNR 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	–170.000 –167.000 –164.000 –160.750 –160.000 –160.000	0.000 66.000 97.750 99.330 99.950 100.000	40	45 cm DNR 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	–171.000 –168.750 –167.750 –162.000 –161.000 –160.200 –160.000 –160.000	0.000 90.000 97.800 99.600 99.800 99.900 99.990 100.000	40	60 cm DNR 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 –160.000	0.000 33.000 98.000 99.100 99.500 99.800 99.970 100.000	40	90 cm DNR 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	–177.000 –175.250 –173.750 –173.000 –169.500 –167.800 –164.000 –161.900 –161.000 –160.400 –160.000	0.000 90.000 98.900 98.900 99.500 99.700 99.820 99.900 99.965 99.993 100	40	120 cm DNR 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	–179.500 –178.660 –176.250 –163.250 –161.500 –160.350 –160.000 –160.000	0.000 33.000 98.500 99.810 99.910 99.975 99.995 100.000	40	180 cm DNR 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	–182.000 –180.900 –178.000 –164.400 –161.900 –160.500 –160.000 –160.000	0.000 33.000 99.250 99.850 99.940 99.980 99.995 100.000	40	240 cm DNR 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	–186.500 –184.000 –180.500 –173.000 –167.000 –162.000 –160.000 –160.000	0.000 33.000 99.500 99.700 99.830 99.940 99.970 100.000	40	300 cm DNR 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 $epfd_{down}$ limit also applies:

100% of the time $epfd_{down}$ dB(W/(m^2 · 40 kHz))	**Latitude (North or South) (°)**
–160.0	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160.0 + 3.4 * (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \leq \lvert \text{Latitude} \rvert \leq 63.75$
–165.3	$63.75 \leq \lvert \text{Latitude} \rvert$

For BSS antenna diameter 240 cm, in addition to the above aggregate 100% of the time $epfd_{down}$ limit, a –167 dB(W/(m^2 · 40 kHz)) aggregate 100% of the time operational $epfd_{down}$ 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.]*

* This transitional regime would be applicable only if the pfd limits in section 5c of Annex 1 to Appendix **S30** are sufficiently relaxed.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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Drafting Group 5D-2

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 **WWW-1A** through **WWW-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 **WWW-1A** through **WWW-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 **WWW-1A** through **WWW-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. [**S9.10**] 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 Annex 1;

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 Annex 1,

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 Annex 1 to be exceeded [(see No. **S22.5K**)];

2 that, in the event that the aggregate interference levels in Annex 1 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 Annex 1 or to reduce such interference to levels that 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;

2 to continue its studies 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;

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 Annex 1 are not exceeded by operators of non-GSO FSS systems;]

4 to develop technical measures to identify the interference levels from non-GSO systems in excess of the “aggregate” limits given in Annex 1 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))

This Annex to Resolution [COM5/6] contains tables of interference levels concerning aggregate interference from multiple non-GSO FSS systems, which individually meet the Table **S22-1A** limits, into GSO FSS and GSO BSS systems.

Studies are continuing in order to avoid unnecessary entries in this Table and in order to provide maximum protection for the GSO FSS and GSO BSS.

TABLE **WWW-1A**[1, 3]

Limits to the aggregate $epfd_{down}$ 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[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 Recommendation ITU-R S.1428

	–190 –190 –166 –160 –160	0 99 99.99 99.998 100	40	10 m Recommendation ITU-R S.1428

1 For certain 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 this table, the aggregate $epfd_{down}$ limits in Table **WWW-1A'** apply to all antenna sizes greater than 60 cm in the frequency bands listed in this table.

TABLE **WWW-1A'**

Aggregate $epfd_{down}$ radiated by non-GSO FSS systems at certain latitudes

100% of the time $epfd_{down}$ 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|

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TABLE **WWW-1B**[1]

Limits to the aggregate $epfd_{down}$ 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[2]**
17.8-18.6	–164 –164 –170 –170	100 99.9 90 0	40	1 m Recommendation ITU-R S.1428
	–150 –150 –156 –156	100 99.9 90 0	1 000	
17.8-18.6	–164 –164 –166 –173 –173	100 99.92 99.9 99.4 0	40	2 m Recommendation ITU-R S.1428
	–150 –150 –152 –159 –159	100 99.92 99.9 99.4 0	1 000	

17.8-18.6	–164 –164 –172 –180 –180	100 99.992 99.8 99.8 0	40	5 m Recommendation ITU-R S.1428
	–150 –150 –158 –166 –166	100 99.992 99.8 99.8 0	1 000	

1 For certain 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.

MOD

TABLE **WWW-1C**[1]

Limits to the aggregate $epfd_{down}$ 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[2]**
19.7-20.2	–154 –154 –172 –182	100 99.94 90 0	40	70 cm Recommendation ITU-R S.1428
	–140 –140 –158 –168	100 99.94 90 0	1 000	
19.7-20.2	–154 –154 –160 –165 –176 –185	100 99.99 99.8 99.8 91 0	40	90 cm Recommendation ITU-R S.1428
	–140 –140 –146 –151 –162 –171	100 99.99 99.8 99.8 91 0	1 000	
19.7-20.2	–154 –154 –162 –191	100 99.998 99.933 0	40	2.5 m Recommendation ITU-R S.1428
	–140 –140 –148 –177	100 99.998 99.933 0	1 000	

19.7-20.2	–154 –154 –161 –175 –184 –195	100 99.9992 99.984 99.6 90 0	40	5 m Recommendation ITU-R S.1428
	–140 –140 –147 –161 –170 –181	100 99.9992 99.984 99.6 90 0	1 000	

1 For certain 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.

TABLE **WWW-1D**[2]

Limits to the aggregate $epfd_{down}$ 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[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	–160.400 –160.100 –158.600 –158.600 –158.330 –158.330	0.000 25.000 96.000 98.000 98.000 100.000	40	30 cm DNR 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	–170.000 –167.000 –164.000 –160.750 –160.000 –160.000	0.000 66.000 97.750 99.330 99.950 100.000	40	45 cm DNR 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	–171.000 –168.750 –167.750 –162.000 –161.000 –160.200 –160.000 –160.000	0.000 90.000 97.800 99.600 99.800 99.900 99.990 100.000	40	60 cm DNR 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 –160.000	0.000 33.000 98.000 99.100 99.500 99.800 99.970 100.000	40	90 cm DNR 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	–177.000 –175.250 –173.750 –173.000 –169.500 –167.800 –164.000 –161.900 –161.000 –160.400 –160.000	0.000 90.000 98.900 98.900 99.500 99.700 99.820 99.900 99.965 99.993 100	40	120 cm DNR 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	–179.500 –178.660 –176.250 –163.250 –161.500 –160.350 –160.000 –160.000	0.000 33.000 98.500 99.810 99.910 99.975 99.995 100.000	40	180 cm DNR 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	–182.000 –180.900 –178.000 –164.400 –161.900 –160.500 –160.000 –160.000	0.000 33.000 99.250 99.850 99.940 99.980 99.995 100.000	40	240 cm DNR 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	–186.500 –184.000 –180.500 –173.000 –167.000 –162.000 –160.000 –160.000	0.000 33.000 99.500 99.700 99.830 99.940 99.970 100.000	40	300 cm DNR 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 **WWW-1D**, the following aggregate 100% of the time $epfd_{down}$ limit also applies:

100% of the time $epfd_{down}$ dB(W/(m^2 · 40 kHz))	**Latitude (North or South) (°)**
–160.0	$0 \leq \lvert \text{Latitude} \rvert \leq 57.5$
$-160.0 + 3.4 * (57.5 - \lvert \text{Latitude} \rvert)/4$	$57.5 \leq \lvert \text{Latitude} \rvert \leq 63.75$
–165.3	$63.75 \leq \lvert \text{Latitude} \rvert$

For BSS antenna diameter 240 cm, in addition to the above aggregate 100% of the time $epfd_{down}$ limit, a –167 dB(W/(m^2 · 40 kHz)) aggregate 100% of the time operational $epfd_{down}$ 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.]*

_____

* This transitional regime would be applicable only if the pfd limits in section 5c of Annex 1 to Appendix **S30** are sufficiently relaxed.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 256-E
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ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 206 and 223 **COMMITTEE 6**

SECOND SERIES OF TEXTS SUBMITTED BY COMMITTEE 4 TO THE EDITORIAL COMMITTEE

Committee 4 has finished its consideration of agenda item 1.2 and parts of agenda item 4. As a result of these deliberations, it has unanimously adopted, at its third 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

APPENDIX S3

Table of maximum permitted spurious emission power levels

(See Article **S3**)

NOC

1 to 5

Section I – Spurious emission limits for transmitters installed on or before 1 January 2003 (valid until 1 January 2012)

MOD

6 ~~The measurement methods for radar systems should be guided by Recommendation ITU-R M.1177. For those radar systems for which acceptable methods of measurement do not exist, the lowest practicable power of spurious emission should be achieved.~~Radar systems are exempt from spurious emission limits under this section. This lowest practicable power of spurious emission should be achieved.

NOC

TABLE I

Section II – Spurious emission limits for transmitters installed after 1 January 2003 and for all transmitters after 1 January 2012

NOC

7

MOD

8 Guidance regarding the methods of measuring spurious emissions is given in the most recent version of Recommendation ITU-R SM.329. The e.i.r.p. method specified in that Recommendation should be used when it is not possible to accurately measure the power supplied to the antenna transmission line, for example radars, or for specific applications where the antenna is designed to provide significant attenuation at the spurious frequencies. Additionally, the e.i.r.p. method may need some modification for special cases, e.g. beam forming radars.

NOC

9 to 11

ADD

11*bis* As an emitted signal becomes more and more narrow (to the limiting case of an unmodulated carrier with theoretical necessary bandwidth of zero), the application of the term "necessary bandwidth" as used in determining the region where spurious emission limits apply to space services, becomes more and more difficult. In the limit, ±250% of necessary bandwidth (recognized in many cases as establishing the region beyond which spurious emissions are defined), approaches zero. Beacons and other unmodulated signals, such as those used in uplink and downlink circuits in control and tracking of satellites, are examples of a case where it is difficult to practically apply the term "necessary bandwidth" in determining where out-of-band emissions end, and spurious emissions begin. Pending further studies and definitive action by a

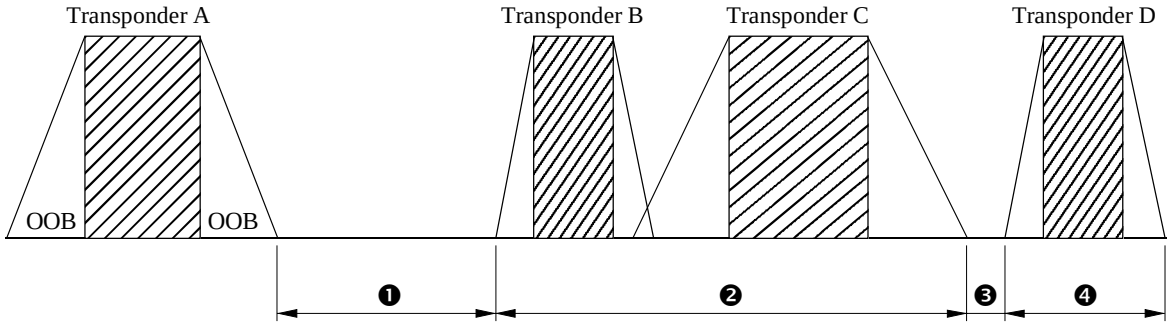
future world radiocommunication conference, in calculating the region where spurious emission limits apply for transmitters using amplifiers to pass essentially an unmodulated signal (or a signal with very small bandwidth), the amplifier bandwidth is taken to be the necessary bandwidth.

ADD

11*ter* For the case of a single satellite operating more than one transponder into the same service area, and when considering the limits for spurious emissions as indicated by Headnote 11 to Appendix **S3**, spurious emissions from one transponder may fall on a frequency at which a companion, second transponder is transmitting. In these situations, the level of spurious emissions from the first transponder is well exceeded by the fundamental or out of band emissions of the second transponder. Therefore, the limits of Appendix **S3** should not apply to those spurious emissions of a satellite that fall either within the necessary bandwidth or out-of-band region of another transponder on the same satellite, into the same service area (see Figure 1).

FIGURE 1

Example of the applicability of spurious emission limits to a satellite transponder



CMR-2000/256-01

Transponders A, B, C and D are operating on the same satellite into the same service area. Transponder A is exempted from spurious emission limits in frequency ranges ❷ and ❹, but is required to meet spurious emission limits in frequency ranges ❶ and ❸.

NOC

12

MOD

TABLE II

Attenuation values used to calculate maximum permitted spurious emission power levels for use with radio equipment

Service category in accordance with Article S1, or equipment type [15]	**Attenuation (dB) below the power supplied to the antenna transmission line**
All services except those services quoted below:	43 + 10 log (*P*), or 70 dBc, whichever is less stringent
Space services (earth stations) [10, ~~14~~16]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Space services (space stations) [10, ~~14~~17]	43 + 10 log (*P*), or 60 dBc, whichever is less stringent
Radiodetermination [14]	43 + 10 log (*PEP*), or 60 dB, whichever is less stringent
Broadcast television [11]	46 + 10 log (*P*), or 60 dBc, whichever is less stringent, without exceeding the absolute mean power level of 1 mW for VHF stations or 12 mW for UHF stations. However, greater attenuation may be necessary on a case by case basis.
Broadcast FM	46 + 10 log (*P*), or 70 dBc, whichever is less stringent; the absolute mean power level of 1 mW should not be exceeded
Broadcasting at MF/HF	50 dBc; the absolute mean power level of 50 mW should not be exceeded
SSB from mobile stations [12]	43 dB below *PEP*
Amateur services operating below 30 MHz (including ~~with~~those using SSB) [~~12~~16]	43 + 10 log (*PEP*), or 50 dB, whichever is less stringent
Services operating below 30 MHz, except space, radiodetermination, broadcast, those using SSB from mobile stations, and amateur [12]	43 + 10 log (*X*), or 60 dBc, whichever is less stringent, where $X = PEP$ for SSB modulation, and $X = P$ for other modulation

TABLE II (*end*)

Service category in accordance with Article S1, or equipment type[15]	**Attenuation (dB) below the power supplied to the antenna transmission line**
Low-power device radio equipment[13]	56 + 10 log (*P*), or 40 dBc, whichever is less stringent
Emergency transmitters[18] ~~Emergency position-indicating radio beacon~~ ~~Emergency locator transmitter~~ ~~Personal location beacon~~ ~~Search and rescue transponder~~ ~~Ship emergency, lifeboat and survival craft transmitters~~ ~~Land, aeronautical or maritime transmitters when used in emergency~~	No limit

NOC

P, PEP and dBc

NOC

[10] to [13]

MOD

[14] ~~These values are "design objectives". This note will not be applicable after WRC-99.~~ Radiodetermination (Radar as defined by No. S1.100) system spurious emission dB attenuation shall be determined for radiated emission levels, not at the antenna transmission line. The measurement methods for determining the radiated spurious emission levels from the radar systems should be guided by Recommendation ITU-R M.1177.

NOC

[15]

ADD

[16] Amateur earth stations operating below 30 MHz are in the service category "Amateur services operating below 30 MHz (including those using SSB)".

ADD

[17] Space stations in the space research service intended for operation in deep space as defined by No. **S1.177**, are exempt from spurious emission limits.

ADD

[18] "Emergency position-indicating radio beacon", "emergency locator transmitters", "personal location beacons", "search and rescue transponders", "ship emergency lifeboat and survival craft transmitters", "emergency land, aeronautical or maritime transmitters".

MOD

RECOMMENDATION 66 (Rev.WRC-~~97~~2000)

Studies of the maximum permitted levels of unwanted emissions

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

considering

a) that Appendix **S3** specifies the maximum permitted levels of spurious emissions, in terms of the mean power level of any spurious component supplied by a transmitter to the antenna transmission line;

b) that the principal objective of Appendix **S3** is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;

c) that excessive levels of unwanted emissions may give rise to harmful interference;

d) that while out-of-band emissions can also give rise to harmful interference, the Radio Regulations do not provide general limits for these emissions;

e) that while Appendix **S3** applies generally to the mean power of a transmitter and its spurious emissions, it also takes account of a variety of emissions where interpretation of the term "mean power", and thus its measurement, would be difficult, particularly in the cases of digital modulation broadband systems, pulsed modulation and narrow-band high-power transmitters;

~~*f)* that while Appendix **S3** covers spurious emissions for all radio services, those listed for space services are included only as design objectives;~~

~~*g*~~*f)* that unwanted emissions from transmitters operating in space stations may cause harmful interference, particularly emissions from wideband amplifiers which cannot be adjusted after launch;

~~*h*~~*g)* that unwanted emissions may cause harmful interference to safety services and radio astronomy and space services using passive sensors;

~~*i*~~*h)* that, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** may be required to protect specific services, such as safety services and passive services in specific bands or situations;

~~*j*~~*i)* that broadband digital modulation may cause unwanted emissions at frequencies far from the carrier frequency,

noting

a) that safety services and passive services have in many cases been allocated frequencies adjacent or close to those of services employing high-power transmitters;

b) that some administrations have adopted more stringent limits for spurious emissions than those specified in Appendix **S3**~~,~~;

c) that at this time in response to Resolution 722 (WRC-97) 2.3.2, ITU-R determined to recommend not placing general out-of-band limits in the Radio Regulations,

recommends that ITU-R

~~1 study, as a matter of urgency, the question of spurious emissions resulting from space service transmissions, and, on the basis of those studies, develop Recommendations for maximum permitted levels of spurious emissions in terms of mean power of spurious components supplied by the transmitter to the antenna transmission line;~~

~~2 submit a report to WRC-99 on the results of its studies with a view to reviewing and including spurious emission limits for space services in Appendix **S3**;~~

~~3~~1 continue the study of spurious emission levels in all frequency bands, emphasizing the study of those frequency bands, services and modulation techniques not presently covered by Appendix **S3**;

~~4~~2 study the question of unwanted emissions resulting from transmitters of all services and all modulation methods, and, on the basis of those studies, develop a Recommendation or Recommendations for maximum permitted levels of spurious emissions and out-of-band emissions;

~~5~~3 establish appropriate measurement techniques for unwanted emissions, where those techniques do not currently exist, including the determination of reference levels for wideband transmissions as well as the applicability of reference measurement bandwidths;

~~6~~4 study the reasonable boundary of spurious emissions and out-of-band emissions with a view to defining such a boundary in Article **S1**;

~~7~~5 study those frequency bands and instances where, for technical or operational reasons, more stringent spurious emission limits than the general limits in Appendix **S3** 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;

~~8~~6 study those frequency bands and instances where, for technical or operational reasons, out-of-band 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;

7 study the matter of reference bandwidth in the space services and the option of modifying Appendix **S3**, Table II by separately identifying individual space services;

~~9 report to a future competent world radiocommunication conference the results of studies under *recommends that ITU-R* 3, 4 and 5 above, with a view to recommending whether or not it is appropriate to include general limits for out-of-band emissions in the Radio Regulations;~~

~~1~~08 report the results of studies ~~under *recommends that ITU-R* 6, 7 and 8 above~~ to a competent world radiocommunication conference(s).

SUP

RECOMMENDATION 507

Relating to spurious emissions in the broadcasting-satellite service[1]

MOD

RESOLUTION 10 (Rev.WRC-2000)

Relating to the use of ~~radiotelegraph and radiotelephone links~~wireless two-way telecommunications by the ~~Red Cross, Red Crescent, and Red Lion and Sun organizations~~International Red Cross and Red Crescent Movement

The World ~~Administrative~~ Radiocommunication Conference, ~~Geneva, 1979~~(Istanbul, 2000),

considering

a) that the worldwide ~~relief work of~~humanitarian operations carried out by the International Red Cross~~,~~ and Red Crescent~~, and Red Lion and Sun organizations is~~ Movement - composed of the International Committee of the Red Cross, the International Federation of Red Cross and Red Crescent Societies and National Red Cross and Red Crescent Societies - are of ~~increasing~~great importance and often indispensable;

b) that in such circumstances normal communication facilities are frequently overloaded, damaged, completely interrupted or not available;

c) that it is necessary to facilitate by all possible measures the reliable intervention of these national and international organizations;

d) that rapid and independent contact is essential to the intervention of these organizations;

e) that for ~~international relief work of the Red Cross, it is necessary that the national Red Cross, Red Crescent, and Red Lion and Sun organizations be able to communicate with each other as well as with the International Committee of the Red Cross and the League of Red Cross Societies~~the efficient and safe conduct of their humanitarian operations these organizations rely heavily on wireless two-way telecommunication facilities, particularly on an extensive HF and VHF radio network,

~~*decides*~~*resolves to urge administrations*

1 to take account of the possible needs of the International Red Cross~~,~~ and Red Crescent~~, and Red Lion and Sun organizations~~ Movement for wireless two-way telecommunication ~~by radio~~means when normal communication facilities are interrupted or not available;

2 to assign to these organizations the minimum number of necessary working frequencies in accordance with the ~~Table of Frequency Allocations; in the case of fixed circuits between 3 MHz and 30 MHz, the frequencies shall be selected, as far as possible, adjacent to the amateur bands~~Radio Regulations;

3 to take all practicable steps to protect such ~~links~~communications from harmful interference.

MOD

RESOLUTION 300 (Rev.~~Mob-87~~WRC-2000)

Use and notification of the paired frequencies reserved for narrow-band direct-printing telegraphy and data transmission systems in the HF bands allocated on an exclusive basis to the maritime mobile service

(See Appendix **S17** (Part B, Section II)~~/Appendix 32~~)

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

considering

a) that certain sections of the HF bands allocated to the maritime mobile service have been reserved for narrow-band direct-printing telegraphy and data transmission systems for use on a paired frequency basis only;

b) that Appendix **S17** (Part B, Section II)~~/Appendix 32~~ contains a channelling arrangement in the maritime mobile HF bands for narrow-band direct-printing telegraphy and data systems (paired frequencies);

~~*c)* that this Conference has made available an increased number of paired frequencies reserved for narrow-band direct-printing telegraphy and data transmission systems for use on a paired basis only, and has modified Appendix S17 (Part B, Section II)/Appendix 32 accordingly;~~

~~*d)* that WMARC-74 established interim measures for the orderly bringing into use of the paired frequencies;~~

~~*e)* that the~~ WMARC-74 and WARC-Mob-87 established a provisional procedure for the use and notification of paired frequencies for narrow-band direct-printing telegraphy and that the application of this procedure by administrations and by the Radiocommunication Bureau was satisfactory~~,~~;

d) that WRC-95 and WRC-97 have modified the relevant procedures for examination of the frequency assignments in the non-planned bands,

resolves

~~1~~ that paired frequencies in the HF bands reserved for narrow-band direct-printing telegraphy between coast stations and ship stations shall be used by these stations, notified to the Bureau and recorded in the Master International Frequency Register in ~~the following manner:~~accordance with the standard procedures of Article **S11**; as from 3 June 2000,

instructs the Bureau

to review the frequency assignments referred to in this Resolution, which are currently recorded in the Master Register, and to modify their findings so as to reflect the standard examination and recording procedures as stipulated in Article **S11**.

~~1.1 assignments of pairs of frequencies for transmission and reception shall be made solely to coast stations. Ship stations of any nationality shall use by right for their transmissions the receiving frequencies of the coast stations with which they exchange traffic;~~

1.2 each administration shall choose the pairs of frequencies for its requirements, if necessary with the assistance of the Bureau;

1.3 the assignments thus selected shall be notified to the Bureau in notices as shown in Appendix **S4/1** and administrations shall supply the basic characteristics listed in Annexes 1A and 1B/Section A or B of that Appendix, as appropriate;

1.4 whenever practicable, each notice should reach the Bureau before the date on which the assignment is brought into use. It must reach the Bureau not earlier than one year before the date on which it is to be brought into use but in any case not later than 30 days after it is actually brought into use;

1.5 assignments which are in conformity with the Radio Regulations, and in particular Appendix **S17** (Part B, Section II)/Appendix **32**, shall be examined by the Bureau from the viewpoint of the probability of harmful interference to be caused by or to other existing or proposed uses. The Bureau shall inform the administration concerned of the results of its examination and shall record the notified assignment with reference to this Resolution and without any date in Column 2. The date of receipt of the notice by the Bureau and the date of putting into use of the assignment shall be entered in the Remarks Column. In cases where the Bureau identifies incompatibilities, it shall make suggestions with a view to resolving them;

1.6 any notice not in conformity with the Radio Regulations shall be returned to the notifying administration by the Bureau, together with any suggestion which the Bureau may be able to submit in this respect;

1.7 should difficulties arise between administrations using the same channel, or adjacent channels, the matter shall be settled by agreement between the administrations concerned taking into account the information published by the Bureau;

2 that a future competent conference be invited to review this Resolution and examine any difficulties which may have arisen in its application;

3 that the entries made in the Master Register under this Resolution shall in no way prejudge any decisions which may be taken by the aforementioned conference,

invites the Council

to place this Resolution on the agenda of the next competent conference in order to examine any difficulties which may have arisen in its application.

MOD

RESOLUTION 644 (~~WRC-97~~Rev.WRC-2000)

Telecommunication resources for disaster mitigation and relief operations

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

considering

a) that ITU, in the same spirit as reflected in Articles 40 and 46 of its Constitution ~~and in Resolution **209 (Mob-87),**~~ has specifically recognized the importance of the international use of radiocommunications in the event of natural disasters, epidemics, famines and similar emergencies;

b) that the Plenipotentiary Conference ~~(Kyoto, 1994)~~of the International Telecommunication Union (Minneapolis, 1998), in endorsing Resolution ~~7~~19 of the World Telecommunication Development Conference (~~Buenos Aires, 1994~~Valetta, 1998), adopted Resolution 36 (Rev.Minneapolis, 1998) ~~on telecommunications for disaster mitigation and disaster relief operations~~in the service of humanitarian assistance;

c) that administrations have been urged to take all practical steps to facilitate the rapid deployment and effective use of telecommunication resources for disaster mitigation and disaster relief operations by reducing and, where possible, removing regulatory barriers and strengthening transborder cooperation between States,

recognizing

a) the potential of modern telecommunication technologies as an essential tool for disaster mitigation and relief operations and the vital role of telecommunications for the safety and security of relief workers in the field;

b) the particular needs of developing countries and the special requirements of the inhabitants of remote areas~~;~~,

~~*c)* the progress made in the implementation of Resolution 36 with respect to the preparation of the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations,~~

noting

~~with appreciation the scheduling of~~ the Intergovernmental Conference on Emergency Telecommunications (ICET-98) from 16 to 18 June 1998 in Tampere, Finland, which ~~is expected to adopt~~adopted the Convention ~~referred to in *recognizing c)* above~~on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations (Tampere Convention),

resolves

to invite ~~ITU-R~~the ITU Radiocommunication Sector to continue to study, as a matter of urgency, those aspects of radiocommunications that are relevant to disaster mitigation and relief operations, such as decentralized means of communications that are appropriate and generally available, including amateur radio facilities and mobile and portable satellite terminals,

requests the Director of the Radiocommunication Bureau

to support administrations in their work towards the implementation of Resolution 36 (Rev.Minneapolis, 1998) and the Tampere Convention.~~,~~

~~*instructs the Secretary-General*~~

~~to work closely with the United Nations Emergency Relief Coordinator with a view to further increasing the Union's involvement in, and support to, disaster communications, and to report on the outcome of the Tampere Conference to the 1998 Plenipotentiary Conference so that that Conference or the Council may take any action that it deems necessary,~~

~~*invites*~~

~~the United Nations Emergency Relief Coordinator and the Working Group on Emergency Telecommunications to collaborate closely with ITU in further work towards the implementation of Resolution 36, and in particular the adoption of the Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations,~~

~~*urges administrations*~~

~~to give their full support to the adoption of the said Convention and its national implementation.~~

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 257(Rev.1)-E
19 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Documents 214(Rev.1) and 236 **COMMITTEE 5**

Chairperson, Working Group 5C

1 Additions to Table S21-4

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

ADD

[16] **S21.16.10** During the launch and near Earth operational phase of deep space facilities, non GSO SRS systems shall not exceed a pfd value of:

-115 dB(W/m^2) if $\delta < 5°$

$-115 + 0.5\,(\delta - 5)$ dB(W/m^2) if $5° < \delta < 25°$

-105 dB(W/m^2) if $\delta > 25°$

in any 1 MHz, where δ is the angle of arrival above the horizontal plane.

2 Revision of footnote S5.547A

29.9-34~~,~~.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
31.8-32	FIXED MOD S5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~S5.547~~ S5.547B S5.548	
32-32.3	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~S5.547~~ S5.547C S5.548	
32.3-33	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION ~~S5.547~~ S5.547D S5.548	
33-33.4	FIXED MOD S5.547A RADIONAVIGATION ~~S5.547~~ S5.547E	

MOD

S5.547A ~~Use of the band 31.8-33.4 GHz by the fixed service shall be in accordance with Resolution **126 (WRC-97)**.~~Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems.

3 Suppression of Resolution 126

SUP

RESOLUTION 126 (WRC-97)

Use of the frequency band 31.8-33.4 GHz for high-density systems in the fixed service

_____

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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Chairperson, Working Group 5C

1 Additions to Table S21-4

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[16]	–125 + (δ – 5)[16]	–150[16]	1 MHz

ADD

[16] **S21.16.10** During the launch and near Earth operational phase of deep space facilities, non GSO SRS systems shall not exceed a pfd value of:

-115 dB(W/m^2) if $\delta < 5°$

$-115 + 0.5\,(\delta - 5)$ dB(W/m^2) if $5° < \delta < 25°$

-105 dB(W/m^2) if $\delta > 25°$

in any 1 MHz, where δ is the angle of arrival above the horizontal plane.

2 Revision of footnote S5.547A

29.9-34~~,~~.2 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
31.8-32	FIXED MOD S5.547A RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~S5.547~~ S5.547B S5.548	
32-32.3	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~S5.547~~ S5.547C S5.548	
32.3-33	FIXED MOD S5.547A INTER-SATELLITE RADIONAVIGATION ~~S5.547~~ S5.547D S5.548	
33-33.4	FIXED MOD S5.547A RADIONAVIGATION ~~S5.547~~ S5.547E	

MOD

S5.547A ~~Use of the band 31.8-33.4 GHz by the fixed service shall be in accordance with Resolution **126 (WRC-97).**~~Administrations should take practical measures to minimize the potential interference between stations in the fixed service and airborne stations in the radionavigation service in the 31.8-33.4 GHz band, taking into account the operational needs of the airborne radar systems.

3 Suppression of Resolution 126

SUP

RESOLUTION 126 (WRC-97)

Use of the frequency band 31.8-33.4 GHz for high-density systems in the fixed service

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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18 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note by the Chairperson of Committee 5

PROPOSALS RELATING TO AGENDA ITEM 1.14

Subsequent to its consideration of Agenda item 1.14 Committee 5 has adopted MOD S5.511A.

This text can be found in Document 224. Committee 4 is requested to review this text in order that the necessary data elements can be included in Appendix S4.

Chris Van DIEPENBEEK
Chairperson, Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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19 May 2000
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WORKING GROUP 5D

Chairperson, Drafting Group 5D-2

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) $epfd_{down}$ 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 in frequency bands where operational $epfd_{down}$ limits and/or additional 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 limits referred to in *considering b)*;

g) that an administration with assignments to a non-geostationary system in the fixed-satellite service, that have been brought into use in the frequency bands where operational $epfd_{down}$ limits and/or additional operational $epfd_{down}$ limits have been established, require reliable means of ascertaining the validity of assertions from administrations with overlapping frequency assignments to geostationary networks in the fixed-satellite service and/or broadcasting-satellite service brought into use and that this particular non-geostationary system in the fixed-satellite service is not in compliance with the limits referred 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 the 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,~~

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 geostationary networks in the fixed-satellite service that have been brought into use, as well as administrations with assignments to non-geostationary systems in the fixed-satellite service in frequency bands where additional operational $epfd_{down}$ limits have been established, require reliable means of ascertaining whether a particular non-geostationary system in the fixed-satellite service is or would be in compliance with the single-entry additional operational limits referred to in *considering b)*,

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recognizing further

~~[*a)* that No. **S22.5[F]** provides that non-geostationary fixed-satellite service system 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 Article **S22,** as adopted by WRC-2000;~~

~~*b)* that pursuant to No. **S22.5[G]** of the Radio Regulations, any exceedance of the operational epfd$_{down}$ limits or additional operational epfd$_{down}$ limits by a non-geostationary fixed-satellite service system to which the limits apply is a violation of No. **S22.2** of the Radio Regulations;~~

~~*c)* that, taking into account **S22.5[F]** and **S22.5[G]**, 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,]~~

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 WRC-02/03, an appropriate recommendation on a format for administrations operating 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 additional operational limits;]~~

2 to develop, with the aim of completion by 2003, an appropriate Recommendation or Recommendations describing three 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; the first format should indicate which items of data, including ephemeris data, are needed to identify the non-geostationary-satellite system generating particular epfd$_{down}$ peak levels, and to facilitate measurement of those peak levels for accurate comparison with the operational limits; the second format should list all parameters of a non-geostationary system required by, and to be made available only to, the administration notifying that system, to facilitate computations to enable a commitment to be made to ITU-R that the system meets and/or will meet the additional operational limits in Article **S22**; the third format should, for any non-geostationary system in the FSS, list a set of parameters which avoid the need for disclosure of commercially-sensitive information but are adequate to be used by administrations other than the notifying administration to make computations to satisfy themselves that the additional operational limits are unlikely to be significantly transgressed.

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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,

requests the Director of the Radiocommunication Bureau

to assist in the aforementioned studies.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5D

Chairperson, Drafting Group 5D-2

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) $epfd_{down}$ 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 in frequency bands where operational $epfd_{down}$ limits and/or additional 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 limits referred to in *considering b)*;

g) that an administration with assignments to a non-geostationary system in the fixed-satellite service, that have been brought into use in the frequency bands where operational $epfd_{down}$ limits and/or additional operational $epfd_{down}$ limits have been established, require reliable means of ascertaining the validity of assertions from administrations with overlapping frequency assignments to geostationary networks in the fixed-satellite service and/or broadcasting-satellite service brought into use and that this particular non-geostationary system in the fixed-satellite service is not in compliance with the limits referred 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 the 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

[*a)* that No. **S22.5[F]** provides that non-geostationary fixed-satellite service system 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 Article **S22,** as adopted by WRC-2000;

b) that pursuant to No. **S22.5[G]** of the Radio Regulations, any exceedance of the operational $epfd_{down}$ limits or additional operational $epfd_{down}$ limits by a non-geostationary fixed-satellite service system to which the limits apply is a violation of No. **S22.2** of the Radio Regulations;

c) that, taking into account **S22.5[F]** and **S22.5[G]**, 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,]

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 WRC-02/03, an appropriate recommendation on a format for administrations operating 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 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,

requests the Director of the Radiocommunication Bureau

to assist in the aforementioned studies.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5D

Note from the Chairperson of Drafting Group 5D-3 to the Chairperson of Working Group 5D

Drafting Group 5D-3 held two meetings to review the proposals related to Resolution 538, footnote S5.516 and footnote S5.520.

The drafting group agreed on a proposed approach for Resolution 538: see Annex 1 for the proposed additions to the "omnibus Resolution" of WRC-2000.

Annex 2 gives the proposed approach for footnote S5.520.

After further discussions between the administrations involved, draft text was produced for S5.516.

The drafting group noted that:

a) provisions are required to make it mandatory for non-GSO networks field between WRC-97 and WRC-2000 to supply the supplementary information necessary for BR to review its findings;

b) it is extremely important to ensure that there are no gaps in the coverage of the regulatory provisions of WRC-97 and WRC-2000.

The drafting group concluded that Resolution 538 could now be suppressed.

ANNEX 1

MOD

resolves

1.~~2~~1 that ~~such a system shall, as of the end WRC-99,~~a non-GSO FSS system filed after 22 November 1997 with assignments in the frequency bands covered by Appendices **30** and **30A** shall comply with the limits specified in Article **S22**, as revised~~, if appropriate~~, by WRC-~~99~~2000, ~~irrespective of the date of receipt of the complete notification information~~ relating to the non-GSO FSS system (in the bands covered by Appendices **30** and **30A**, 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);

MOD

instructs the Radiocommunication Bureau

as of the end of WRC-~~99~~2000, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22** of a non-GSO FSS system for which complete coordination or notification information, as appropriate, has been received between 22 November 1997 and the end of WRC-~~99~~2000. This review shall be based on the ~~values~~limits in Article **S22**, as revised~~, if appropriate~~, by WRC-~~99~~2000.

ANNEX 2

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 ~~provisions of Resolution **538 (WRC-97)**~~ application of the provisions of No. **S9.X** for the coordination with other non-geostationary-satellite systems in the fixed-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.

* In the absence of ITU-R studies, some administrations believed that NOC was appropriate.

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

ANNEX 3

RESOLUTION [COM5/17]

Possible identification of spectrum for non-GSO FSS (Earth-to-space) gateway type operations

considering

a) that WRC-2000 adopted $epfd_{up}$ 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 existing and planned operations, non-GSO FSS (Earth-to-space) operations are not allowed in Region 2 in this band;

c) that non-GSO FSS systems may need additional spectrum in the Earth-to-space direction for gateway type operations that would employ minimum antenna diameters of 4.5 m,

resolves to instruct ITU-R

to study the necessity and suitability of frequency bands outside those bands allocated to the non-GSO FSS and subject to **S9.11A**, for non-GSO FSS (Earth-to-space) gateway operations 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.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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18 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5D

Note from the Chairperson of Drafting Group 5D-3 to the Chairperson of Working Group 5D

Drafting Group 5D-3 held two meetings to review the proposals related to Resolution 538, footnote S5.516 and footnote S5.520.

The drafting group agreed on a proposed approach for Resolution 538: see Annex 1 for the proposed additions to the "omnibus Resolution" of WRC-2000.

Annex 2 gives the proposed approach for footnote S5.520.

The drafting group deferred consideration of S5.516 pending further discussions between the administrations.

The drafting group noted that:

a) provisions are required to make it mandatory for non-GSO networks field between WRC-97 and WRC-2000 to supply the supplementary information necessary for the BR to review its findings;

b) it is extremely important to ensure that there are no gaps in the coverage of the regulatory provisions of WRC-97 and WRC-2000.

ANNEX 1

MOD USA/12/168

resolves

1.~~2~~1 that ~~such a system shall, as of the end WRC-99,~~a non-GSO FSS system with assignments in the frequency bands covered by Appendices **30** and **30A** shall comply with the limits specified in Article **S22**, as revised~~, if appropriate~~, by WRC-~~99~~2000, [irrespective of the date of receipt of the complete coordination or notification information, as appropriate,] relating to the non-GSO FSS system;

MOD USA/12/180

Instructs the Radiocommunication Bureau

as of the end of WRC-~~99~~2000, to review and, if appropriate, revise, any finding previously made on the compliance with the limits contained in Article **S22** of a non-GSO FSS system for which complete coordination or notification information, as appropriate, has been received between 22 November 1997 and the end of WRC-~~99~~2000. This review shall be based on the ~~values~~limits in Article **S22**, as revised~~, if appropriate~~, by WRC-~~99~~2000.

ANNEX 2

MOD USA/12/197

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. (*)

(*) In the absence of ITU-R studies, some Administrations believed that NOC was appropriate.

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

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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18 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 2
OF THE PLENARY

Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 2 of the Plenary

In the examination of Document 16, paragraphs 3.6 and 3.8, Working Group 4B noted that Resolution 344 (WRC-97) and Resolution 537 (WRC-97) address subjects within the terms of reference of Working Group GT PLEN-2.

Working Group 4B concluded that these Resolutions should be considered by Working Group GT PLEN-2 with a view to including them in the agenda of the next WRC.

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

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 1
OF THE PLENARY

Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 1 of the Plenary

In its consideration of Documents 16, 36, and 36(Add.1), Working Group 4B observed that sections of these documents concern issues under consideration by GT PLEN-1. Accordingly, the following items are recommended to GT PLEN-1 for its attention and possible action:

- Document 16, Section 3.3 (Resolution 73 (WRC-97));
- Document 36, Section 3.2, Table 2, 4th row (Annex 2 of Appendix S30/30A in relation to Annex 2B of Appendix S4); and
- Document 36(Add.1), Section 2 and Attachment 1 (same).

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

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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20 May 2000
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WORKING GROUP 5D

Drafting Group 5D-1

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 these revised $epfd_{down}$ limits and associated percentages of time adopted by WRC-2000 do not adequately protect 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)*~~station antennas associated with the coordination of GSO FSS networks~~ 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 ~~meeting the coordination criteria established by WRC-2000~~ 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 GSO FSS networks and non-GSO FSS systems referred to in *considering h)* and *i)*,

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. **S9.7~~B~~A** shall be applied to ~~non-GSO FSS systems~~ specific earth stations for which complete coordination or notification information, as appropriate, ~~has been received by the Bureau prior to 3 June 2000~~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. **S9.7~~A~~B** 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, ~~No. **S22.2** applies but~~ the requirement for coordination under No. **S9.7~~A~~B** 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 **S9.7B** 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** ~~for any non-GSO FSS systems for which coordination or notification information has been received between 22 November 1997 and the end of WRC-2000 or for any specific GSO FSS receive earth station for which coordination or notification information has been received between 22 November 1997 and the end of WRC-2000~~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

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5D

Drafting Group 5D-1

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 these revised $epfd_{down}$ limits and associated percentages of time adopted by WRC-2000 do not adequately protect 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 station antennas associated with the coordination of GSO FSS networks 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 meeting the coordination criteria established by WRC-2000 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 GSO FSS networks and non-GSO FSS systems referred to in *considering h)* and *i)*,

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. **S9.7B** shall be applied to non-GSO FSS systems for which complete coordination or notification information, as appropriate, has 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. **S9.7A** 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, No. **S22.2** applies but the requirement for coordination under No. **S9.7A** 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;

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** for any non-GSO FSS systems for which coordination or notification information has been received between 22 November 1997 and the end of WRC-2000 or for any specific GSO FSS receive earth station for which coordination or notification information has been received between 22 November 1997 and the end of WRC-2000.

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

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WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5D

Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 5D

In consideration of Document 16, Working Group 4B observed that section 2.1 of the document pertains to issues (S5.488 and S5.491) within the purview of Working Group 5D. Accordingly, this item is referred to Working Group 5D for its attention and possible action, as appropriate.

A. ALLISON
Chairperson of Working Group 4B
Box 68

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 2 OF THE PLENARY

China (People's Republic of)

PROPOSAL FOR THE WORK OF THE CONFERENCE

(AGENDA ITEM 7.2)

WRC-2000 agenda item 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

Introduction

According to the Table of Frequency Allocations in the Radio Regulations (Article S5), the band 1 610-1 626.5 MHz is allocated on a primary basis to the radiodetermination-satellite service in Region 2 and to the radiodetermination-satellite service on a secondary basis in Region 3. The footnote S5.371 specifies the allocation of this band to the radiodetermination-satellite service on a secondary basis in Region 1, and the footnote S5.369 specifies the allocation of this band to the radiodetermination-satellite service on a primary basis in 25 countries of Region 1 and Region 3 (including Angola, Australia, Burundi, China, Côte d'Ivoire, Eritrea, Ethiopia, India, the Islamic Republic of Iran, Israel, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, Senegal, Sudan, Swaziland, Togo and Zambia).

The band 2 483.5-2 500 MHz is allocated on a primary basis to the radiodetermination-satellite service in Region 2 and to the radiodetermination-satellite service on a secondary basis in Region 3. The footnote S5.371 specifies the allocation of this band to the radiodetermination-satellite service on a secondary basis in Region 1, and the footnote S5.400 specifies the allocation of this band to the radiodetermination-satellite service on a primary basis in 23 countries of Region 1 and Region 3 (including Angola, Australia, Bangladesh, Burundi, China, Eritrea, Ethiopia, India, the Islamic Republic of Iran, Jordan, Lebanon, Liberia, Libya, Madagascar, Mali, Pakistan, Papua New Guinea, Dem. Rep. of the Congo, Syria, Sudan, Swaziland, Togo and Zambia).

CHN/265/1

One agenda item for WRC-[03]: to consider possible worldwide primary allocation for the radiodetermination-satellite service in the band 1 610-1 626.5 MHz and 2 483.5-2 500 MHz taking into account the results of ITU-R studies.

Reasons: At present, the allocation to the radiodetermination-satellite service in the band 1 610-1 626.5 MHz and 2 483.5-2 500 MHz is not on a worldwide basis, leading to difficulties in the worldwide application. The proposal will help form a worldwide allocation to meet this requirement.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5D

Report of the Chairperson of Drafting Group 5D ad hoc to the Chairperson of WG 5D

ISSUES RELATED TO THE SHARING SITUATION IN THE FREQUENCY BAND 13.75-14 GHz

After several meetings of the drafting groups of WG 5D the following conclusions were reached.

Footnote S5.502

The proposed revision of footnote S5.502 is shown in Annex 1.

Some administrations were of the view that the minimum FSS earth station antenna diameter of 4.5 m should not be a mandatory requirement.

Based on the sharing studies conducted by ITU-R between non-GSO FSS systems and radionavigation and radiolocation systems, there were some proposals to extend the restriction of averaged e.i.r.p. of radars to the whole space. The agreement on the last sentence of S5.502 is subject to the decision made on the average e.i.r.p. of radars in the second sentence, as it conditions the balance of constraints between the different services.

It may be appropriate to add a reference to the proposed new Resolution [COM5/10].

Footnote S5.503

The proposed revision of footnote S5.503 is shown in Annex 1.

One administration proposed NOC to footnote S5.503.

New Resolution [COM5/10]

Annex 2 gives the proposed text for new Resolution [COM5/10].

Annexes: 2

ANNEX 1

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. Assignments for 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.

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.

ANNEX 2

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 with the aim of completion in 2003 to consider 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 2003 possible alternative sharing conditions to those stated in footnotes Nos. **S5.502** and **S5.503**.

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WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 5D

Note from the Chairperson of Drafting Group 5D-1 to the Chairperson of Working Group 5D

Drafting Group 5D-1 formed a smaller sub-drafting group to study proposals for changes to certain provisions of Article S9, specifically S9.12 and S9.13, to reflect the required modifications for the implementation of provisions relevant to Resolutions 130 and 538. In the general review of these provisions the sub-drafting group felt that changes would be required to all provisions under S9.11A. The following text describes these changes.

A draft version of this document was also discussed with the Chairperson of Sub-Working Group 4A-4 which was also tasked with reviewing certain provisions in Article S9. The issue is also treated in Documents WRC2000/DT/41 and WRC2000/DT/53 which are being considered by Working Group 4A. Since this issue is being debated at this time in groups of Committee 4, it needs to be treated with some urgency by Working Group 5D. Therefore, this document is being forwarded to that group without having the benefit of further discussions within Drafting Group 5D-1. However, it has been discussed at some length with many participants of Drafting Group 5D-1.

A second subgroup considered the requirements for publication of the results of BR examination of filings for non-GSO systems. The subgroup proposed addition of a new Article S9.35A; see attached proposal.

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 in a footnote of the Table of Frequency Allocations or 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 in a footnote of the Table of Frequency Allocations or 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 in a footnote of the Table of Frequency Allocations or 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 in a footnote of the Table of Frequency Allocations or 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 in a footnote of the Table of Frequency Allocations or 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 in a footnote of the Table of Frequency Allocations or 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 in a footnote of the Table of Frequency Allocations or 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	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 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~~[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 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~~[See modifications by 4A]	Condition: bandwidths overlap	Check by using the assigned frequencies and bandwidths	

Publication of results of examinations

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**;

S9.35A *abis)* 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;**

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.

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[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.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 268-E 30 May 2000 Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

MINUTES

OF THE

SECOND PLENARY MEETING

Friday, 12 May 2000, at 1610 hours

Chairperson: Mr F.M. YURDAL (Turkey)

Add the following paragraph 1.10 on page 3:

1.10 Following a brief discussion on whether to proceed directly with the consideration of the agenda item on basic elements for BSS replanning, and at the proposal of the **delegate of Andorra**, it was **agreed** that the order of the agenda as contained in Document OJ/38 should be maintained.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 268-E
18 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

PLENARY MEETING

MINUTES

OF THE

SECOND PLENARY MEETING

Friday, 12 May 2000, at 1610 hours

Chairperson: Mr F.M. YURDAL (Turkey)

Subjects discussed		**Documents**
1	Oral reports by the chairpersons of committees and working groups of the Plenary	-
2	Schedule for WRC-2000	177
3	Participation requests submitted by international organizations (continued)	114
4	Request by Spain to maintain HISPASAT-2 frequency assignments in the Appendices S30 and S30A Plans	178
5	Basic elements for BSS replanning	183 + Corr.1 + Add.1
6	Existing and Part B systems for BSS replanning	154, 181, 184 + Add.1, 185
7	Organization of work	180
8	Request for BSS allocation for East Timor	-

1 Oral reports by the chairpersons of committees and working groups of the Plenary

1.1 The **Chairperson of Committee 2** said that Committee 2 had held one meeting at which it had taken note of its terms of reference and examined the credentials deposited with the secretariat thus far. It had found 66 sets of credentials to be in order and had noted that two Member States had given the delegation of another Member State powers to vote and sign on their behalf. The deadline for the submission of credentials would be established to enable the committee to make its final report on 29 May 2000, and he urged all delegations that had not yet submitted their credentials to do so as soon as possible.

1.2 The **delegate of Greece** said that he wished to express his Government's reservations concerning the credentials of one State, and would reserve the right to raise the issue at a subsequent meeting of Committee 2.

1.3 The **Chairperson of Committee 3** reported that Committee 3 had held one meeting at which it had noted its terms of reference and considered issues including the financial responsibilities of conferences, the budget for WRC-2000 and the contribution of organizations of an international character and Sector Members to defraying the expenses of the conference. The committee would be cooperating closely with Working Group 2 of the Plenary, and a Joint Working Group COM3/PLEN-2 would be established to expedite the transmission of information concerning the financial implications of decisions taken at the conference. Potential agenda items that could proceed within existing budgetary credits and those for which additional credits were required would also be identified.

1.4 The **delegate of Syria** said that he would require more time to establish criteria in order to distinguish between agenda items which were firm and those which were not, and he would reserve the right to return to that issue at a later stage.

1.5 The **Chairperson of Committee 4** said that Committee 4 had already held two meetings and had established two working groups in order to expedite its work. Working Group 4A had set up three sub-working groups and was carrying out work on agenda item 1.3, and on Resolutions 84, 85, 86, 87 and 88 (Minneapolis, 1998). Resolution 80 (Minneapolis, 1998) on the WRC process, which the committee had originally been allocated, did not pertain to regulatory issues and he had requested that it be referred to Committee 3 and Working Group 2 of the Plenary (Document 175). Working Group 4B had set up four sub-working groups, and was considering agenda items 1.1, 1.2, 1.8, 2 and 4. Some requests concerning country footnotes received from administrations under item 1.1 of the agenda lay outside the scope of *further resolves* 1a), b) and c) of Resolution 26 (Rev.WRC-97) and others had not been submitted as stipulated in No. 316 of the Convention (Geneva, 1992), in accordance with *further resolves* 3 of Resolution 26. For those reasons, the committee had decided to seek guidance from the Plenary as to how Resolution 26 was to be applied (Document 180). Lastly, Committee 4 had approved Document 116 on changes in the allocation of call signs between WRC-97 and WRC-2000, which would be submitted to Committee 6. Document 46, on coordination and notification procedures for satellite networks, which had originally been allocated to Committee 4, had been referred to Committee 5 for consideration.

1.6 The **Chairperson of Committee 5** reported that, at its first meeting, Committee 5 had organized its work by establishing four working groups. Working Group 5A was responsible for agenda items 1.6, 1.10 and 1.11, and had set up two sub-working groups. It had already completed its work on sub-item 1.6.2 relating to the identification of a global radio control channel to facilitate roaming for IMT-2000. Working Group 5B was dealing with agenda items 1.7, 1.9, 1.15 and 1.18, and good progress had been made on item 1.7 concerning the review of the use of the HF bands by

the aeronautical mobile and maritime mobile services. However, no progress had yet been made on agenda item 1.9 relating to the feasibility of an allocation in the space-to-Earth direction to the mobile-satellite service in a portion of the 1 559-1 567 MHz frequency range; different interpretations existed as to whether Resolution 213 (Rev.WRC-95) permitted alternative allocations in that range. Working Group 5C on the high-density fixed service was dealing with agenda items 1.4, 1.5, 1.16 and 1.17, and had established three sub-working groups. Working Group 5D, responsible for agenda items 1.12, 1.13 and 1.14, had held three meetings, and work had almost been completed on item 1.12, concerning sharing between feeder links of non-GSO MSS networks and GSO FSS networks, and item 1.14, relating to the feasibility of implementing non-GSO MSS feeder links in the band 15.43-15.63 GHz.

1.7 The **Chairperson of Committee 6** said that Committee 6 had held one meeting and had noted its terms of reference. Its work would begin in earnest the following week, and the committee would do its best to ensure that the documents it received were submitted to the Plenary for first reading as soon as possible.

1.8 The **Chairperson of Working Group 1 of the Plenary** said that the working group had attached priority to the work necessary to begin the planning process. An ad hoc group had been established to consider the basic elements required for planning, and its conclusions had formed the basis of Document 183 which would be taken up later by the Plenary. Another ad hoc group had been established to examine interservice and interregional compatibility criteria; the results of its work would also be useful in the planning process.

1.9 The **Chairperson of Working Group 2 of the Plenary** said that the working group had held two meetings. It had already considered the report of the Director of BR on the activities of the Radiocommunication Sector (Document 41+Corr.1) and would propose that report's approval. A number of regulatory issues that did not relate directly to the working group had been identified and drawn to the attention of Committee 4. The working group had not yet considered the report from the Radiocommunication Assembly, but had begun a detailed discussion of items for inclusion in the draft agenda of the next WRC.

2 Schedule for WRC-2000 (Document 177)

2.1 The **Chairperson**, introducing Document 177, said that if the Steering Committee considered it necessary, more plenary meetings would be scheduled during the forthcoming two weeks.

2.2 On that understanding, Document 177 was **noted**.

3 Participation requests submitted by international organizations (continued) (Document 114)

3.1 The **Secretary-General**, clarifying his earlier remarks on the item, sought the Plenary's endorsement of the request by the Agency for the Safety of Air Navigation in Africa and Madagascar (ASECNA) to take part in the work of the conference as an observer, as contained in Document 114.

3.2 The request by ASECNA was **approved**.

4 Request by Spain to maintain HISPASAT-2 frequency assignments in the Appendices S30 and S30A Plans (Document 178)

4.1 The **Chairperson of Working Group 1 of the Plenary**, introducing Document 178, said that a decision needed to be made on the request by Spain to maintain HISPASAT-2 frequency assignments in the Appendices S30 and S30A Plans. Describing the background to the request by Spain, as outlined in section A of the document, he said that there had been differences in the interpretation of Resolution 533 (WRC-97) by the BR and RRB on the one hand and the Administration of Spain on the other, owing to ambiguity between the text of *resolves* 2 of Resolution 533 and that contained in sections 11.1 and 9A.1 of Articles 11 and 9A of Appendices S30 and S30A, respectively. Working Group 1 of the Plenary therefore recommended that two actions be taken: first, that Spain's request be approved by the present meeting, and second that, in order to remove the ambiguity and avoid further difficulty in the future, Resolution 533 be amended. The working group was not yet ready to suggest an amendment but would do so at a later stage.

4.2 The **delegate of Morocco** proposed that the request by Spain should be approved, and that the revised version of Resolution 533 should be made available prior to approval.

4.3 It was so **agreed**.

4.4 The **delegate of Spain** expressed his gratitude to all those who had supported his request.

5 Basic elements for BSS replanning (Document 183 and Corrigendum 1 and Addendum 1)

5.1 The **Chairperson of Working Group 1 of the Plenary**, introducing Document 183, together with its Corrigendum 1 and Addendum 1, stressed its importance for the work of the conference. Approval of the document at the present meeting was necessary to start replanning and to allow for the process to be completed by the end of WRC-2000. Corrigendum 1 contained a recommendation that the Plenary decide that WRC-2000 should undertake BSS replanning. Section 1 of Document 183 described the methodology, technical assumptions and criteria for replanning, in line with the report of the Inter-conference Representative Group (IRG), as contained in Document 34. Section 2 contained a list of additional BSS-to-BSS studies requested by some administrations at the last IRG meeting and since that meeting. Working Group 1 of the Plenary recommended setting the deadline for the receipt of such requests at 1700 hours Istanbul time on 12 May 2000, although Greece had proposed that the deadline be set two hours after the close of the Plenary Meeting. Section 3 of the document described issues for which further WRC decisions were required for replanning and outlined compatibility analyses being carried out by the Bureau that were not included in the IRG report. Addendum 1 to Document 183, comprising an addition to section 3, was the result of discussion on interregional sharing issues and reflected the general desire to reach agreement.

5.2 The **Chairperson** said that there was broad consensus on the principle of including BSS replanning in the work of WRC-2000 and stressed the importance of approving the document under consideration in order for the replanning to proceed. If the replanning process were to go ahead, the Bureau would obviously endeavour to accommodate everyone's needs.

5.3 The **delegate of Greece** questioned the legality of proceeding with replanning at WRC-2000. In his view, the present conference was not authorized to do so, since replanning did not appear as such on the conference agenda (Document 1). Agenda item 1.19 expressly stated that WRC-2000 was to determine the basis for replanning by the next conference. While CS 89 allowed a WRC to deal with any question of a worldwide character within its competence and related to its agenda, to proceed with replanning would be tantamount to modifying the agenda, and there was, to his knowledge, no legal basis upon which the agenda could be modified in that way. In his view, Corrigendum 1 to Document 183 contradicted ITU's basic legal framework. ITU did not have the right to impose decisions on sovereign States and this had not hitherto been ITU practice. He therefore questioned whether the provisions of the Convention and Constitution were being duly respected. He could not approve the replanning process at WRC-2000, since, according to the Final Acts of WARC-77, Greece had a right to maintain its current orbital positions. It would be an intolerable negation of sovereign rights to change those orbital positions without Greece's consent

5.4 In reply to the **delegate of Norway**, the **representative of the Radiocommunication Bureau** confirmed that Norway's national preferences, along with all others received prior to the deadline, would be listed in a document and taken into consideration during the replanning process.

5.5 The **delegate of the Republic of Korea** said that he was not aware of any systems submitted to BR under section 3 of Document 183 but the list in Document 184 included a system that might jeopardize one of his country's systems. He requested that his country's concern should be taken into account during the replanning process.

5.6 The **Chairperson** urged participants to coordinate with the Bureau directly on such matters.

5.7 The **delegate of Morocco**, speaking on behalf of the members of the League of Arab States, said that he supported Document 183 in principle, but it should be amended as follows: the sentence appearing at the end of the third paragraph of section 2 ("The following requests will be taken into account if they do not constrain the planning and the Bureau will report on the matter") should also apply to the third and fourth paragraphs of section 1 and to the whole of section 3. Furthermore, Corrigendum 1 was lacking some of the basic elements required for replanning and he proposed that it should be replaced by the following text, which reflected the positions of the countries of Africa, Europe and the Arab Group: "The Conference decides to proceed with the planning of the BSS and FSS bands of Appendices S30 and S30A for Regions 1 and 3 in order to adopt the plans for these two Regions, ensuring 10 channels per coverage area for Region 1, representing a continuous band of 400 MHz, and 12 channels per coverage area for Region 3, representing a continuous band of 500 MHz. The Plans shall be limited to national coverage with the exceptions listed in Document 183. The other systems taken into account in the planning process in accordance with the conference decisions shall be included in a list annexed to the Master International Frequency Register."

5.8 The **Chairperson** suggested that those with objections to that text should meet informally with a view to preparing a revised version.

5.9 The **delegate of Syria** asked which countries supported the text.

5.10 The **delegate of Greece** proposed that consideration of the amendment be deferred pending its circulation in writing.

5.11 The **Chairperson** said that it was his understanding that Working Group 1 of the Plenary had brought the matter to the present Plenary meeting with a view to enabling replanning to proceed at WRC-2000. A decision was needed as to whether the replanning process could proceed. He recognized that the documents needed to be revised, but that work could take place after the basic agreement to proceed with replanning had been reached.

5.12 The **delegate of Syria** recalled that, during the discussion in the Plenary of the agenda and terms of reference of Working Group 1 of the Plenary, his Administration had proposed the deletion of "by the next conference" from agenda item 1.19 and at that time there had been no objection. The Convention stipulated that the conference was to adopt its own agenda. It was therefore his understanding that the decision to undertake the replanning process at WRC-2000 had already been made.

5.13 The **Chairperson** said that the legal aspects of the conference agenda were not the point at issue, although the comments made in that regard by Greece would be noted.

5.14 The **delegate of Syria** endorsed the entire Document 183 with the inclusion of all national preferences submitted prior to the deadline.

5.15 The **delegate of Bulgaria**, referring to Resolution 532 (WRC-97), said that the studies carried out by the Bureau since WRC-97 had merely identified problems and questions which required further studies or decisions before replanning could take place. She drew particular attention to the fact that, given the respective requirements of the APT countries on one hand and the Region 1 countries on the other, only 24º remained available for replanning.

5.16 The **delegate of Turkey**, referring to the footnote to § 3.1 b) of Document 183, suggested that, rather than removing networks, they should be brought into conformity with the Plan. He therefore proposed that the second sentence of the footnote should be amended to read: "If the results cannot be favourable in any way in spite of all necessary efforts, the corresponding network will be removed …".

5.17 The **delegate of Egypt** endorsed that view, adding that there was sufficient expertise within the Bureau to achieve the necessary conformity.

5.18 The **delegate of the Netherlands** said that he would be prepared to support replanning on the understanding that his Administration's objection, as reflected in Document 159, would be taken into account, together with the first amendment proposed by the delegate of Morocco.

5.19 The **delegate of France** supported Document 183 as amended by the delegate of Morocco, and subject to an editorial correction of the French text.

5.20 The **delegate of Germany** supported the document, on the understanding that there would be further consideration of the points raised.

5.21 The **delegate of Russia**, expressing support in principle for replanning at WRC-2000, said that he was prepared to approve Document 183. He could also support the first amendment proposed by Morocco; the planning principles proposed by Morocco would, however, require further discussion. The **delegate of Kyrgyzstan** endorsed those comments.

5.22 The **delegate of Norway** said that he could support Document 183 on the understanding that his country's national preferences would be taken into account in the replanning exercise.

5.23 The **Chairperson** suggested that exceptionally, in order to expedite BR's work, Document 183 might be approved at the present meeting on the understanding that it could be amended at a subsequent Plenary meeting.

5.24 The **Chairperson of Working Group 1 of the Plenary** said that BR's work would not be facilitated if Document 183 was left open to amendment; the basic elements contained in the document had to be approved before the planning process could begin.

5.25 The **representative the Radiocommunication Bureau** emphasized that it would not be possible for the Bureau to complete the BSS-to-BSS compatibility analysis in time, and for the replanning process to begin, unless national preferences and choices between the basic technical assumptions were provided by administrations before the prescribed deadline.

5.26 The **delegate of the United States** said that the additional text proposed by the delegate of Morocco had not been considered in Working Group 1 of the Plenary, and it would be inappropriate to approve such an extensive amendment in Plenary. She therefore supported the document under consideration without amendment.

5.27 The **delegate of Algeria** expressed support for the additional text suggested by the delegate of Morocco, which would provide important additional introductory information.

5.28 The **delegates of Sweden, Japan, India, Israel** and **China** said that they could agree to replanning at WRC-2000 and would support Document 183 without amendment.

5.29 The **delegate of Mali**, having expressed support for replanning at WRC-2000 and the document under consideration, said that in principle he could agree to the amendment proposed by Morocco, subject to further clarification.

5.30 The **delegate of Greece** requested clarification as to which deadline was to be applied for the submission of new national preferences: 1700 hours or 2 hours after the close of the Plenary meeting. It was his understanding that if an administration did not submit a national preference, its current orbital position would remain valid.

5.31 The **Chairperson** replied that the consensus of the meeting appeared to be that the deadline for submission of new national preferences should be 1700 hours Istanbul time on 12 May 2000.

5.32 It was so **agreed**.

5.33 The **delegate of Morocco** said that the aim of his proposed amendment to Corrigendum 1 to Document 183 had been to provide the secretariat with all the elements it needed to proceed with replanning at WRC-2000. However, he had noted the objections from administrations and, in order not to delay a decision, was prepared to withdraw his proposal provided that the resulting treaty document related only to national coverage and that none of the new national preferences constrained the replanning process. The **delegate of Saudi Arabia** supported that view.

5.34 The **delegate of South Africa** supported the approval of Document 183 but requested clarification as to whether there were to be any amendments. She had no objection to the inclusion of new national preferences received by the Radiocommunication Bureau, provided that they did not constrain the replanning process.

5.35 The **delegate of Senegal** strongly supported approval of the document, with or without amendment.

5.36 The **delegate of the Republic of Korea** expressed his support for Document 183 with the exception of § 3.1 b), implementation of which might lead to conflict with national interests and constrain the replanning exercise. He suggested that whenever such conflicts arose, new networks should receive a lower priority than existing national systems.

5.37 The **Chairperson** pointed out that the second paragraph of section 2 clearly indicated that all national preferences submitted prior to the deadline would be considered by the Radiocommunication Bureau. That would seem to meet the concerns of most administrations and he therefore urged delegates to approve Document 183, together with its Corrigendum 1 and Addendum 1.

5.38 The **delegate of Sweden** said that he could not accept any amendment to section 3. The priorities to be given to the various systems during replanning were clearly set out in Document 34, which had been prepared following extensive studies by the IRG. It was not appropriate to re-open debate on those matters at the present meeting.

5.39 The **representative of the Republic of Korea** commented that although the IRG had held extensive discussions, some of the networks submitted to ITU just prior to the start of WRC-2000 had the potential to conflict with national interests and thus to constrain the replanning process. It was essential for the conference to provide the Bureau with the necessary guidance to deal with any problems that might arise.

5.40 The **delegate of Morocco** said that he was willing to accept section 3 without amendment. However, the provision that national preferences should not constrain the planning process should apply to section 1 as well as section 2.

5.41 The **delegate of Uzbekistan** expressed concern at the consequences of the limitation on the number of orbital positions to be used by BSS in Region 1 in the arc east of 34° E in the band 12.2-12.5 GHz, as set out in Addendum 1 to Document 183. The principle of limitation had given rise to a number of objections in Working Group 1 of the Plenary which were not adequately reflected in the document. Moreover, the easterly limit of the restriction was not clearly stated. The limitation on use of the arc was fundamental to the replanning process and must be explicit. He suggested that it should be given further consideration by the working group prior to its incorporation in the replanning process.

5.42 The **Chairperson of Working Group 1 of the Plenary** explained that the planning considerations set out in Addendum 1 to Document 183 had become necessary to meet the concerns of a number of administrations in Regions 1 and 3. The working group had discussed the matter extensively, and the proposed text represented a careful balance that had received general agreement.

5.43 The **Chairperson** assured delegates that all their comments would be taken into account during the replanning exercise.

5.44 Document 183, together with its Corrigendum 1 and Addendum 1, was **approved**, on the understanding that the provisions set out in the last sentence of the third paragraph of section 2 of Document 183 would also apply to section 1 of that Document, and that there would be an opportunity to consider further the points raised in the discussion.

5.45 The **Chairperson** paid tribute to those delegates who had modified their positions in the process of reaching a consensus that would enable the replanning exercise to go ahead.

6 Existing and Part B systems for BSS replanning (Documents 154, 181, 184 and Addendum 1, 185)

6.1 The **representative of the Radiocommunication Bureau** introduced Document 184 together with its Addendum 1, which provided a list of existing and Part B systems that had been received by the Bureau and which had been prepared at the request of Working Group 1 of the Plenary. The annex to the document contained two tables: Table 1 provided a list of satellite networks that satisfied the conditions of Principle 3 of Annex 1 to Resolution 532 (WRC-97); Table 2 contained a list of satellite networks submitted under § 4.3.14 and § 4.2.15 of Appendices S30 and/or S30A, respectively, to be published under § 4.3.17 and/or § 4.2.18 of those appendices. The documents required a number of minor editorial amendments and a revised version would be circulated in due course. The conference was requested to approve the regrouping proposals outlined in the third paragraph of the annex to Document 184. Current procedures did not specifically provide for such arrangements, although they did not exclude them. Should the conference approve the proposals, the arrangements would be carried forward into the replanning process.

6.2 In reply to the **delegates of Egypt** and **Spain**, the **representative of the Radiocommunication Bureau** said that the revised document would contain all submissions received prior to the agreed deadline.

6.3 The **delegate of Croatia** said that he reserved the right to comment at a later meeting, once the revised document had been made available and there had been time to study the data provided. He would be interested to learn the details of the due diligence information provided to the Radiocommunication Bureau.

6.4 The **delegate of Russia** supported the document in principle but requested clarification of the inclusion of network No. 6 in Table 2 of the annex to Document 184, since it had been brought into use in 1994.

6.5 In reply to concerns expressed by the **delegates of China** and **Japan** regarding the lack of coordination data for certain specific applications listed in Table 2 of the annex to Document 184, the **representative of the Radiocommunication Bureau** explained that the lists provided did not reflect all the information submitted to the Bureau. All submissions would be carefully examined by the Bureau teams undertaking the replanning exercise and compatibility analyses. Any submission that did not fulfill all the appropriate technical requirements would not be retained in the list. In reply to a comment by the **delegate of Sweden** regarding the proposed grouping arrangements, he explained that should it prove possible to find different orbital positions and/or channels for the national assignments concerned, grouping would not be required. The technical details of the submissions listed in the document under consideration were extremely complex and he would be happy to provide further clarifications outside the meeting.

6.6 The **delegate of France**, supported by the **delegate of Viet Nam**, proposed that Document 184 together with its Addendum 1 should be noted, on the understanding that a revised version would be submitted for approval at a later meeting. The **delegate of Syria** suggested that the revised document should contain the results of the Bureau's examination of the eligibility of submissions.

6.7 The **Chairperson** took it that, subject to the conditions just outlined, the meeting was prepared to note Document 184 along with its Addendum 1, and that there was no objection to the proposed grouping arrangements.

6.8 It was so **agreed**.

6.9 The **delegate of Australia** introduced Document 185 which set out a list, drawn up by the APT countries, of the elements that they considered should be taken into account in reaching agreement on BSS replanning at WRC-2000. He noted that the delegate of Japan wished to have the opportunity to expand further on the views set out in the document when it was considered by Working Group 1 of the Plenary. He drew attention to § 10, indicating that the APT countries could not accept a package that tied together particular solutions for BSS planning with issues related to other conference agenda items, including IMT-2000 and radionavigation satellite services. It was for WRC-2000 to find a compromise in due course. Nevertheless, he expressed appreciation to the CEPT countries and the Arab States for setting out their views in Document 154. The APT countries would prefer the merits of the various proposals to be considered separately by the appropriate committees. He noted that the exercise of drawing up the list of elements to be considered in order to reach an agreement on BSS replanning at WRC-2000 had shown the value of regional cooperation and should facilitate the work of the conference. APT and Region 3 countries would be submitting joint proposals on other issues before the conference in due course.

6.10 The **delegate of Brazil** said that CITEL had expressed its views on BSS replanning in its proposals for the work of the conference, as set out in Document 14. In that document, CITEL expressed its support for replanning for Regions 1 and 3 provided that principles 7 and 8 in Annex 1 to Resolution 532 (WRC-97) were met and Region 2 services were protected. However, early discussions at the conference had included ideas that were not consistent with those conditions. Document 181 presented some CITEL administrations' further views on the subject in the expectation that they would be considered by Working Group 1 of the Plenary. A list of other CITEL administrations that also endorsed Document 181 would be issued in a corrigendum to the document.

6.11 The **delegate of Uruguay** supported Document 181.

6.12 The **delegate of Morocco**, supported by the **delegate of Syria**, said that since the elements proposed by the CEPT countries and the Arab States in Document 154 for consideration on reaching agreement to BSS replanning at WRC-2000 had not been taken into account during the consideration of Document 183, he would prefer to introduce Document 154 when those elements were considered in detail by the Plenary. Speaking on behalf of the CEPT countries and the Arab States, he stated that it had not been their intention to submit Document 154 as a package of proposals and he would be prepared to amend the document to avoid such a misinterpretation.

6.13 The **delegate of France**, supported by the **delegate of the Netherlands**, added that, as indicated in the introductory paragraph, Document 154 drew together the proposals on which the CEPT countries and the Arab States had reached agreement. Those countries fully understood the need to protect FSS systems in Regions 2 and 3 from interference from BSS systems in Regions 1 and 3 and stood ready to hold discussions to resolve related problems, while at the same time allowing replanning to go ahead. Indeed, informal consultations for that purpose had already been scheduled.

6.14 The **delegate of Australia** acknowledged the assurances given in response to his earlier comments.

7 Organization of work (Document 180)

7.1 The **Chairperson of Committee 4** suggested that consideration of Document 180, on the application of Resolution 26 (WRC-97), should be deferred pending further consideration of the way forward by the Steering Committee.

7.2 It was so **agreed**.

8 Request for BSS allocation for East Timor

8.1 The **representative of the Radiocommunication Bureau** said that, in response to a request from the United Nations Transitional Administration in East Timor (UNTAET), Working Group 1 of the Plenary proposed that provision of a beam of the smallest size for East Timor should be included in the BSS replanning exercise.

8.2 It was so **agreed**.

The meeting rose at 1920 hours.

The Secretary:
Y. UTSUMI

The Chairperson:
F.M. YURDAL

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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18 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 1
OF THE PLENARY

Japan

PROPOSALS FOR THE WORK OF THE CONFERENCE

(AGENDA ITEM 1.19)

Introduction

Basic elements for BSS replanning have been approved by WRC-2000 (see Document WRC2000/183). Therefore, the replanning process has been initiated. However, there is ambiguity on how the existing systems as defined and shown in Document WRC2000/DT/39 would be treated after the replan. Regarding the assignments, for which the current procedure of Article 4 of APS30 has been successfully completed and due diligence information has been received, there is a proposal as given in section 4.1 of Document WRC2000/154.

Therefore, we propose how the existing systems are treated after WRC-2000:

Proposals

J/269/1

Existing systems, which are currently in the Plan with national coverage, shall be retained in the new Plan and be grouped with the digital national beams assigned by WRC-2000, provided that the existing system and the newly assigned beams are located at the same orbital position.

J/269/2

The protection ratios described in the current Annex 5 of APS30 and Annex 3 of APS30A should be applied to these existing systems, which satisfy the above conditions. The new protection ratios which have been approved by WRC-2000 as used in the replanning should be applied to the grouped new digital assignments after WRC-2000.

Reasons: Japanese existing BSS systems have over 13 million subscribers and use the characteristics according to the current Plan. Therefore, the integrity for such existing systems should be respected after the replan.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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COMMITTEE 4

Costa Rica

PROPOSAL FOR THE WORK OF THE CONFERENCE

The Administration of Costa Rica makes the following proposal for the work of the World Radiocommunication Conference (WRC-2000) under agenda item 1.1 in respect of the footnote contained in Article S5.

MOD CTR/270/1

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

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* Pursuant to Resolution 26 (Rev.WRC-97) the secretariat notes that this contribution was received on 18 May 2000.

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COMMITTEE 4

Venezuela (Bolivarian Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

The Administration of Venezuela submits the following proposals for the work of the World Radiocommunication Conference (WRC-2000) under agenda item 1.1 concerning the following footnotes contained in Article S5 of the Radio Regulations.

MOD VEN/271/1

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 VEN/271/2

S5.480 *Additional allocation:* in Brazil, Costa Rica, Ecuador, Guatemala, Honduras, ~~and~~ Mexico~~,~~ and Venezuela, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

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* Pursuant to Resolution 26 (Rev.WRC-97) the secretariat notes that this contribution was received on 18 May 2000.

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COMMITTEE 4

Argentine Republic

PROPOSALS FOR THE WORK OF THE CONFERENCE

The Administration of Argentina makes the following proposals for the work of the World Radiocommunication Conference (WRC-2000) under agenda item 1.1 in respect of the footnotes contained in Article S5.

MOD ARG/272/1

S5.480 *Additional allocation:* in Argentina, Brazil, Costa Rica, Ecuador, Guatemala, Honduras and Mexico, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

ADD ARG/272/2

S5.293A *Different category of service:* in Argentina, 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**.

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* Pursuant to Resolution 26 (Rev.WRC-97) the secretariat notes that this contribution was received on 18 May 2000.

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WORKING GROUP 5B

Sub-Working Group 5B-2

SPACE-TO-SPACE ALLOCATION FOR THE RADIONAVIGATION-SATELLITE SERVICE

(AGENDA ITEM 1.15.2)

Sub-Working Group 5B-2 has prepared the attached text concerning space-to-space allocation to the radionavigation-satellite service and is submitting it to Working Group 5B for consideration and approval.

Takeshi MIZUIKE
Chairperson, Sub-Working Group 5B-2
Box 132

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

S5.329A [The radionavigation-satellite service (space-to-space) in frequency bands 1 215-1 260 MHz and 1 559-1 610 MHz is not considered a safety service as defined in No. **S9.59** and the provisions of No. **S5.10** do not apply.] Use of systems in the radionavigation-satellite service (space-to-space) operating in the bands 1 215-1 260 MHz and 1 559-1 610 MHz shall not impose any additional constraints on other systems or services operating in accordance with the Table of Frequency Allocations.

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COMMITTEE 5

Working Group 5D

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.

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COMMITTEE 5

Working Group 5D

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)

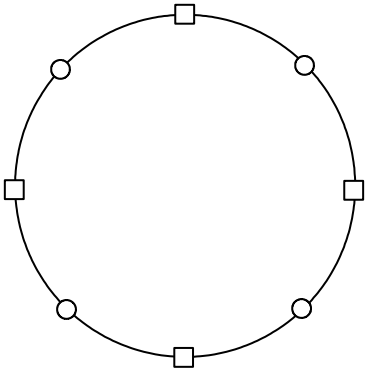
Process to be followed by BR in developing and implementing procedures to avoid misapplication of non-GSO FSS single-entry limits in Article S22 [Rev.WRC-2000]

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.

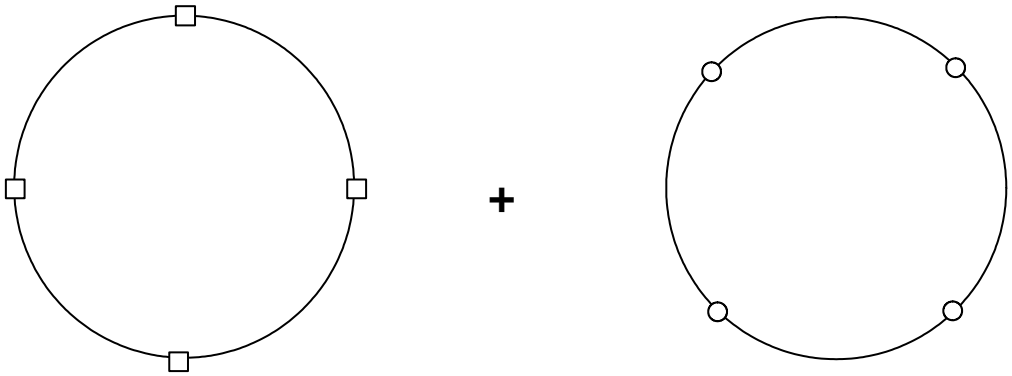
2 For the purpose of determining if misapplication of non-GSO FSS single-entry limits has occurred or will occur, it is necessary that the regulatory solutions focus not just on “the splitting of networks” but “combining of networks” as well. While disallowing “splitting or combining of networks” as 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.

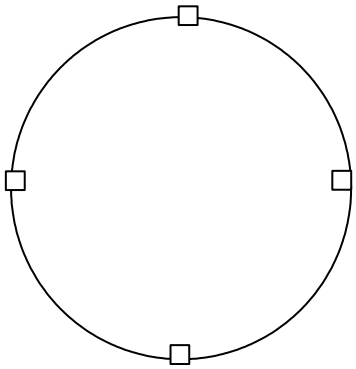


After splitting: When broken into two (or more) parts, each part network meets single-entry limits.

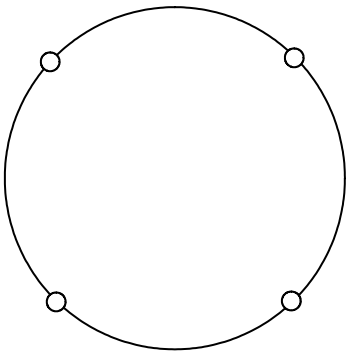


Example of combining

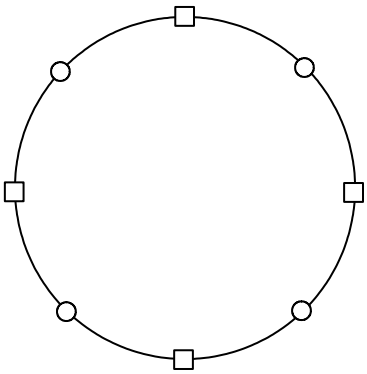
At filing stage (before combining): XYZ Ltd. owns network A. Network A meets single-entry limits.



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).



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WORKING GROUP 5C

Chairperson, Sub-Working Group 5C-1

DRAFT REVISION OF RESOLUTION 122 (WRC-97)

RESOLUTION 122 (~~WRC-97~~Rev.WRC-2000)

Use of the bands 47.2-47.5 GHz and 47.9-48.2 GHz by high altitude platform stations in the fixed service and by other services and the potential use of bands below 47 GHz by HAPS in the fixed service

The World Radiocommunication Conference (~~Geneva, 1997~~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 ~~this Conference has~~WRC-97 made provision for operation of high altitude platform stations, 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 Constitution of the ITU (Geneva, 1992));

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;

~~*e)*~~*f)* that high altitude platform systems are in an advanced stage of development, and some countries have notified such systems to ITU in the 47.2 GHz and 47.9-48.2 GHz bands;

~~*f)*~~*g)* that WRC-97 adopted a definition of high altitude platform stations in Article **S1**, modified No. **S11.24** and added No. **S11.26** in the Radio Regulations providing for notices relating to assignments for high altitude platform stations 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;

~~*g*~~*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;

~~*h*~~*j)* that technical studies ~~are required in order to ascertain the extent to which sharing of the~~have been undertaken on the characteristics of a HAPS system in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz ~~is feasible between systems using high altitude platforms in the fixed service and systems in the fixed, fixed-satellite and mobile services, and to ascertain the requirements to protect radio astronomy services in adjacent bands from spurious emissions~~and on the coordination and sharing requirements between HAPS systems and systems in the conventional fixed service and in other services, but that further studies are still in progress on the potential for interference between such systems;

~~*i*~~*k)* that the radio astronomy service has primary allocations in the bands 42.5-43.5 GHz and 48.94-49.04 GHz;

~~*j) that ITU-R studies are already under way on the preferred characteristics of systems using high altitude platforms and the feasibility of sharing between these systems and systems of other services and between these systems and other systems in the fixed service (Questions ITU-R 212/9, ITU-R 218/9 and ITU-R 251/4);~~

l) that ITU-R study results have been presented which indicate that in WRC-97 designated bands at 47.2-47.5/47.9-48.2 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;

~~*k*~~*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 ~~preliminary~~ ITU-R studies indicate that high altitude platform stations in the fixed service may share with broadcasting-satellite feeder links;

~~*l) that the development of services using high altitude platform stations in these bands requires major investment and that manufacturers and operators should be given the confidence to make the necessary investment in these applications,~~

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 FSS could be feasible under certain limitations, such as geographical separation between HAPS-based systems and FSS earth stations;

o) that since 47 GHz bands are more susceptible to the rain attenuation in certain areas of Region 3, the range 18-32 GHz has been proposed 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 this Conference has made provision for operation of HAPS within the fixed service in the bands 27.5-28.35 GHz and 31.0-31.3 GHz on a non-interference, non-protected basis for certain Region 3 countries in order to address issues of rain attenuation associated with the 300 MHz referenced in *considering b)* above;

r) that technical, sharing, and regulatory issues should be studied in order to determine criteria for operation of HAPS in Region 3 in the band in *considering q)* above;

s) that the radio astronomy, EESS (passive), and space research (passive) services are allocated to the 31.3-31.8 GHz band and the space research (deep space) band is allocated to the 31.8-32.3 GHz band, and that there is a need to appropriately protect these services from unwanted emissions,

resolves

1 to urge administrations to facilitate coordination between high altitude platform stations 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 high altitude platform systems in the 47.2-47.5 GHz and 47.9-48.2 GHz bands;

3 to request ITU-R to study the regulatory provisions that might be needed to address those cases where the deployment of HAPS in the territory of one administration may affect neighbouring administrations;

~~3~~4 to request ITU-R to continue to carry out ~~urgently~~ studies on the appropriate technical sharing criteria for the situations referred to in *considering ~~h~~j)~~, with priority given to the sharing with other systems in the fixed and fixed-satellite services, in particular the determination of the appropriate geographical separation from feeder links in the broadcasting-satellite service~~*;

5 to request ITU-R, taking into account the requirements of other fixed-service systems and other services, to urgently conduct studies on the feasibility of identifying 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 27.5-28.35 GHz and 31.0-31.3 GHz frequencies;

~~4~~6 that WRC-~~99~~03 should review the results of these studies and consider refinement of the regulatory provisions that might facilitate a broader application of these high altitude platform technologies,

instructs the Director of the Radiocommunication Bureau

1 that notices concerning high altitude platform stations 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 ~~h~~j)* and review of the notification process by WRC-99, the Bureau shall accept notices in the bands 47.2-47.5 GHz and 47.9-48.2 GHz only for high altitude platform stations 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~~.~~;

3 that from 3 June 2000 notices concerning HAPS in the bands 27.5-28.35 GHz and 31.0-31.3 GHz should be on a non-interference, non-protected basis to primary services allocated in the band.

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COMMITTEE 4

Working Group 4B

MOD

RESOLUTION 5 (Rev.WRC-2000)

Relating to technical cooperation with the developing countries in the study of propagation in tropical areas[1]

The World ~~Administrative~~ Radiocommunication Conference~~, Geneva, 1979~~ (Istanbul, 2000),

having noted

that the assistance provided for the developing countries by the Union in cooperation with other United Nations specialized agencies, such as the United Nations Development Programme (UNDP), in the field of telecommunication augurs well for the future,

being aware

a) of the fact that the developing countries, particularly those in tropical areas, require adequate knowledge of radio wave propagation in their territories in order to make rational and economical use of the radio spectrum;

b) of the importance of propagation in radiocommunications;

c) of the importance of the work of 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,

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

resolves to invite the Secretary-General

1 to offer the assistance of the Union to developing countries in the tropical areas which endeavour to carry out national propagation studies in order to improve and develop their radiocommunications;

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 ~~Postal and~~ Telecommunication~~s~~ Union (A~~P~~TU)~~, the Panafrican Telecommunication Union (PATU)~~ and the Union of National Radio and Television Organizations of Africa (URTNA) which may be concerned, in carrying out national propagation measurement programmes, including collecting appropriate meteorological data, on the basis of ITU-R Recommendations and Questions in order to improve the use of the radio spectrum;

3 to arrange funds and resources for this purpose from the UNDP or other sources in order to enable the Union to provide the countries concerned with adequate and effective technical assistance for the purpose of this Resolution,

urges administrations

to submit the results of these propagation measurements to the ITU-R for consideration in its studies,

invites the Council

to follow the progress made in carrying out programmes of propagation measurements and the results achieved, and to take any action that it considers necessary.

MOD

RESOLUTION 20 (~~Mob-87~~Rev.WRC-2000)

Technical cooperation with developing countries in the field of aeronautical telecommunications

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

considering

a) that the allocations of the frequency bands and the provisions concerning ~~the~~various aeronautical mobile services have been revised several times by recent conferences;

b) that some of these frequency bands and provisions ~~are intended for~~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 ~~these new systems will employ more advanced techniques, such as satellite communications, in combination with modern information transmission media~~;

d) that as a consequence of *a)*, *b)* and *c)*,~~this~~ technological modernization ~~should serve~~ will be necessary 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 technical cooperation with developing countries in the field of aeronautical telecommunications that has been undertaken by the International Civil Aviation Organization,

instructs 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 inform ICAO that this Conference has recognized the valuable cooperation provided by that organization to developing countries in its technical assistance programmes;~~

~~4~~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 124 (Rev.WRC-~~97~~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 (~~Geneva, 1997~~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 ~~this Conference~~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 ~~the administrations identified by No. **S5.462A** have~~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 ~~have~~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 has 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 2000 Radiocommunication Assembly recommends the power flux-density limits different from those in No. **S5.462A**,

resolves

~~to invite ITU-R to study, as matter of urgency, the required power flux-density limits to be applied to space stations of geostationary-satellite systems in the Earth exploration-satellite service (space-to-Earth) in the frequency band 8 025-8 400 MHz where geostationary orbital avoidance has not been implemented by the fixed service sharing the band,~~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.

~~*urges administrations*~~

~~to provide ITU-R with the necessary technical parameters of fixed-service links requiring protection in this frequency band.~~

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WORKING GROUP 5C

Note from the Chairperson of Working Group 4A to the Chairperson of Working Group 5C

Working Group 4A adopted one modification to Resolution 712 relevant to agenda item 1.3. However, Working Group 4A recognizes that revision of this resolution is principally dealt with by Working Group 5C. The proposed modification is attached and forwarded to Working Group 5C for inclusion in your revision.

N. KISRAWI
Chairperson of Working Group 4A

RESOLUTION 712 (Rev.WRC-~~95~~2000)

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

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

considering

a) that the agenda of WARC-92 called for the development of new Recommendations and Resolutions relating to allocations to space services which were not placed on the agenda of that Conference;

b) that Recommendation ITU-R SA.363-5 recommends that frequencies below 1 GHz are technically suitable for telecommand of satellites operating below an altitude of 2 000 km;

c) that the United Nations Conference on Environment and Development (UNCED) (Rio de Janeiro, 1992) identified an urgent need for systematic observations of forest cover, and that such observations can best be performed using frequencies in the range 420-470 MHz;

d) that Resolution 35 of the Plenipotentiary Conference (Kyoto, 1994) considered that application of the latest telecommunication and information technologies, especially those associated with space systems, can be extremely useful in implementing and conducting environment protection activities such as monitoring air, river, harbour and sea pollution, remote sensing, wildlife studies, forestry development, and others;

e) that the status of existing allocations available for use by active space-based sensors between 1 and 25 GHz, in frequency bands shared with radiolocation or radionavigation systems, needs to be reviewed in order to facilitate worldwide usage by active space-based sensors;

f) that the allocations to the Earth exploration-satellite service in the frequency bands 8.025-8.4 GHz and 18.6-18.8 GHz are complex and not uniform worldwide, and that the band 18.6-18.8 GHz is vital for passive sensing of ecologically important data;

g) that the allocation of the frequency band 13.75-14 GHz to the fixed-satellite service by WARC-92 reduced the total bandwidth available for active space-based sensors in the frequency range 13-14 GHz, which is important for wideband sensor instruments, e.g. radar altimeters, scatterometers;

h) that future active Earth sensing requirements for monitoring environmental data in the 35 GHz and 95 GHz ranges have been identified;

i) that ITU-R has agreed to certain important technical parameters required for coordination of the space services under Appendix **S7**,

resolves

that, based on proposals from administrations and taking into account the results of studies in the Radiocommunication Study Groups and the 1997 Conference Preparatory Meeting (CPM-97), WRC-97 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 operation services in the frequency range between 100 MHz and 1 GHz;

2 provision of up to 3.5 MHz of frequency spectrum to the Earth exploration-satellite service (active sensors) in the frequency range 420-470 MHz;

3 use of existing allocations by space-based active sensors operating in the Earth exploration-satellite and space research services in frequency bands shared with the radiolocation or radionavigation services, between 1 GHz and 25 GHz, with a view to the possibility of establishing common worldwide primary allocations;

4 use of existing allocations in the frequency range from 7 GHz to 20 GHz to the Earth exploration-satellite, meteorological-satellite, space research and space operation services, with a view to the possibility of establishing common worldwide primary allocations to these services in appropriate bands, taking into account Recommendation **706**;

5 provision of up to 500 MHz of frequency spectrum around 35 GHz and up to 1 GHz of frequency spectrum around 95 GHz for use by space-based active Earth sensors;

6 inclusion of ITU-R approved technical coordination parameters in Appendix **S7**, taking into account Resolution ~~**60** and Recommendation **711**~~**[ZZZ]**,

invites the Radiocommunication Study Groups

to carry out the necessary studies, taking into account the present uses 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

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5C

Chairperson, Sub-Working Group 5C-1

COUNTRY FOOTNOTE FOR USE OF HAPS IN FIXED SERVICE IN THE BANDS 27.5-28.35 GHz AND 31.0-31.3 GHz

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 For Region 3 in [Bhutan, Indonesia, Islamic Republic of Iran, Japan, Maldives, Myanmar, Pakistan, Dem. People's Rep. of Korea, Sri Lanka and Viet Nam], [and in Mongolia], 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 the operation in the high altitude platform station to ground direction and shall not cause harmful interference to or claim protection from other types of fixed service systems or other co-primary services.

ADD

S5.5RRR For Region 3 in [Bhutan, Indonesia, Islamic Republic of Iran, Japan, Maldives, Myanmar, Pakistan, Dem. People's Rep. of Korea, Sri Lanka and Viet Nam], [and in Mongolia], 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 of ground to high altitude platform station. The use of the band 31.0-31.3 GHz by high altitude platforms shall not cause harmful interference to or claim protection from other types of fixed service systems or other co-primary services.

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COMMITTEE 5

Working Group 5B

WRC-2000 AGENDA ITEM 1.15.3

Working Group 5B has completed its work concerning WRC-2000 agenda item 1.15.3 and submits the attached text for consideration and approval by Committee 5.

Committee 5 is also requested to take into account the following notes:

NOTE 1 - Saudi Arabia (on behalf of Arab countries in the footnotes), supported by Jordan and Syria, made a reservation at the Working Group 5B meeting in favour of continuation of the fixed service in the band concerned.

NOTE 2 - Removal of country names from footnotes is being considered by Committee 4 under the Conference agenda item 1.1. Working Group 5B is aware that some administrations have made such requests concerning the footnotes in this submission. Country names in the footnotes should correctly reflect the outcome of agenda item 1.1. It is the understanding of Working Group 5B that this task will be undertaken by the Editorial Committee.

Takeshi MIZUIKE
Chairperson, Working Group 5B
Box 132

ARTICLE S5

Frequency allocations

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) S5.341 MOD S5.355 ADD S5.355A MOD S5.359 ADD S5.359A S5.363	

MOD

S5.355 *Additional allocation:* in Bahrain, Bangladesh, the Congo, Egypt, the United Arab Emirates, Eritrea, Ethiopia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the bands 1 540-1 559 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, the United Arab Emirates, Eritrea, Ethiopia, the Islamic Republic of Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Togo, Yemen and Zambia, the band 1 559-1 610 MHz is also allocated to the fixed service 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 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, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, 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, 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, Bulgaria, Cameroon, Spain, France, Gabon, Georgia, Greece, Guinea, Guinea-Bissau, Hungary, Jordan, Kazakstan, Kuwait, Latvia, Libya, 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, Ukraine, Zambia and Zimbabwe 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.

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Chairperson, Working Group 5C

DRAFT REVISION OF RESOLUTION 122 (WRC-97)

MOD

RESOLUTION 122 (Rev.WRC-~~97~~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 (~~Geneva, 1997~~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 ~~this Conference has~~WRC-97 made provision for operation of high altitude platform stations, 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 Constitution of the ITU (Geneva, 1992));

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;

~~*e*~~*f)* that high altitude platform systems are in an advanced stage of development and some countries have notified such systems to ITU in the band 47.2-47.5 GHz and 47.9-48.2 GHz;

~~f~~g) that WRC-97 adopted a definition of high altitude platform stations in Article **S1**, modified No. **S11.24** and added No. **S11.26** in the Radio Regulations providing for notices relating to assignments for high altitude platform stations 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;

~~g~~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;

~~h~~j) that technical studies ~~are required in order to ascertain the extent to which sharing of the~~ have been undertaken on the characteristics of a HAPS system in the frequency bands 47.2-47.5 GHz and 47.9-48.2 GHz ~~is feasible between systems using high altitude platforms in the fixed service and systems in the fixed, fixed-satellite and mobile services, and to ascertain the requirements to protect radio astronomy services in adjacent bands from spurious emissions~~and on the coordination and sharing requirements between HAPS systems 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;

~~i~~k) that the radio astronomy service has primary allocations in the bands 42.5-43.5 GHz and 48.94-49.04 GHz;

~~*j) that ITU-R studies are already under way on the preferred characteristics of systems using high altitude platforms and the feasibility of sharing between these systems and systems of other services and between these systems and other systems in the fixed service (Questions ITU-R 212/9, ITU-R 218/9 and ITU-R 251/4);*~~

l) that ITU-R study results have been presented which indicate that in WRC-97 designated bands at 47.2-47.5/47.9-48.2 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;

~~k~~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 ~~preliminary~~ ITU-R studies indicate that high altitude platform stations in the fixed service may share with broadcasting-satellite feeder links;

~~*l) that the development of services using high altitude platform stations in these bands requires major investment and that manufacturers and operators should be given the confidence to make the necessary investment in these applications,*~~

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 FSS could be feasible under certain limitations, such as geographical separation between HAPS-based systems and FSS earth stations;

o) that since 47 GHz bands are more susceptible to the rain attenuation in certain areas of Region 3, the range 18-32 GHz has been proposed 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 footnote numbers **S5.5SSS** and **S5.5RRR** permit the use of HAPS in the fixed service within the bands 27.5-28.35 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 band referenced in *considering b)* above;

r) that technical, sharing and regulatory issues should be studied in order to determine criteria for operation of HAPS in the band in *considering q)* above;

s) that the radio astronomy, EESS (passive) and space research (passive) services are allocated to the 31.3-31.8 GHz band and the space research (deep space) band is allocated to the 31.8-32.3 GHz band, and that there is a need to appropriately protect these services from unwanted emissions taking into account **S5.340** and the interference criteria in Recommendations ITU-R SA.1209 and ITU-R RA.769,

resolves

1 to urge administrations to facilitate coordination between high altitude platform stations 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 high altitude platform systems in the bands 47.2-47.5 GHz and 47.9-48.2 GHz;

3 to request ITU-R to study the regulatory provisions that might be needed to address those cases where the deployment of HAPS in the territory of one administration may affect neighbouring administrations;

~~3~~4 to request ITU-R to continue to carry out ~~urgently~~ studies on the appropriate technical sharing criteria for the situations referred to in *considering ~~h~~j)~~, with priority given to the sharing with other systems in the fixed and fixed-satellite services, in particular the determination of the appropriate geographical separation from feeder links in the broadcasting-satellite service~~*;

5 to request ITU-R, taking into account the requirements of other fixed-service systems and other services, to urgently conduct studies 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;

~~4~~6 that WRC-~~99~~03 should review the results of these studies and consider refinement of the regulatory provisions that might facilitate a broader application of these high altitude platform technologies,

instructs the Director of the Radiocommunication Bureau

1 that notices concerning high altitude platform stations 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 ~~h~~j)* and review of the notification process by WRC-~~99~~03, the Bureau shall accept notices in the bands 47.2-47.5 GHz and 47.9-48.2 GHz only for high altitude platform stations 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.

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Chairperson, Sub-Working Group 5C-1

COUNTRY FOOTNOTE FOR USE OF HAPS IN THE FIXED SERVICE IN THE BANDS 27.5-28.35 GHz AND 31.0-31.3 GHz

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 For Region 3 in Bhutan, Indonesia, the Islamic Republic of Iran, Japan, Maldives, Myanmar, Pakistan, Democratic People's Republic of Korea, Sri Lanka, [Thailand] and Viet Nam, and in Mongolia, 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 For Region 3 in Bhutan, Indonesia, the Islamic Republic of Iran, Japan, Maldives, Myanmar, Pakistan, Democratic People's Republic of Korea, Sri Lanka, [Thailand] and Viet Nam, and in Mongolia, 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.

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COMMITTEE 5

Working Group 5C

ALLOCATION ABOVE 71 GHz (AGENDA ITEM 1.16)

Attachment: Annex 1

ANNEX 1

Modified allocation table and footnotes above 71 GHz

~~66~~71-86 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
71-74	FIXED FIXED-SATELLITE (~~Earth-to-space~~space-to-Earth) MOBILE MOBILE-SATELLITE (~~Earth-to-space~~space-to-Earth) ~~S5.149 S5.556~~	
74-75.5	BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (~~Earth-to-space~~space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561	
75.5-76	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ BROADCASTING-SATELLITE FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Space research (space-to-Earth) MOD S5.561 ADD S5.EEE	
76-~~81~~77.5	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) MOD S5.149~~S5.560~~	
~~76-81~~77.5-78	AMATEUR AMATEUR-SATELLITE ~~RADIOLOCATION~~ ~~Amateur~~ ~~Amateur-satellite~~ Radio astronomy Space research (space-to-Earth) ~~S5.560~~MOD S5.149	
~~76-81~~78-79	RADIOLOCATION Amateur Amateur-satellite Radio astronomy Space research (space-to-Earth) MOD S5.149 S5.560	

~~76~~79-81	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite Space research (space-to-Earth) MOD S5.149~~S5.560~~
81-84	FIXED FIXED-SATELLITE (~~space to~~ Earth-to-space) MOBILE MOBILE-SATELLITE (~~space to~~ Earth-to-space) RADIO ASTRONOMY Space research (space-to-Earth) MOD S5.149 ADD S5.DDD
84-86	FIXED FIXED-SATELLITE (Earth-to-space) ADD S5.PPP MOBILE BROADCASTING ~~BROADCASTING-SATELLITE~~ RADIO ASTRONOMY MOD S5.149~~S5.561~~

86-119.98 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
86-92	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	
92-94	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149 ~~S5.556~~	
94-94.1	EARTH EXPLORATION-SATELLITE (active) RADIOLOCATION SPACE RESEARCH (active) Radio astronomy S5.562 ADD S5.FFF	
94.1-95	FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149	
95-100	FIXED MOBILE ~~S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~Radiolocation~~ MOD S5.149 MOD S5.554 ~~S5.555~~	
100-102	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341	
102-105	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	

105-~~116~~109.5	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149~~S5.340~~ S5.341
~~105-116~~109.5-111.8	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341
~~105-116~~111.8-114.25	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149~~S5.340~~ S5.341
~~105~~114.25-116	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341
116-119.98	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.341

119.98-158 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
119.98-120.02	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~Amateur~~ S5.341	
120.02-122.25~~6~~	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.XXX ~~MOBILE S5.558~~ SPACE RESEARCH (passive) S5.138	
~~120.02-126~~122.25-123	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ Amateur S5.138	
~~120.02~~123-126	~~EARTH EXPLORATION-SATELLITE (passive)~~ ~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~INTER-SATELLITE~~ ~~MOBILE S5.558~~ MOBILE-SATELLITE (space-to-Earth) RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~SPACE RESEARCH (passive)~~ Radio astronomy ~~S5.138~~MOD S5.554	
126-~~134~~130	~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~INTER-SATELLITE~~ ~~MOBILE S5.558~~ MOBILE-SATELLITE (space-to-Earth) ~~RADIOLOCATION S5.559~~ RADIONAVIGATION RADIONAVIGATION-SATELLITE Radio astronomy ADD S5.QQQ MOD S5.149 MOD S5.554	

~~126~~130-134	EARTH EXPLORATION-SATELLITE (active) ADD S5.LLL FIXED INTER-SATELLITE MOBILE MOD S5.558 RADIO ASTRONOMY ~~RADIOLOCATION S5.559~~ MOD S5.149 ADD S5.FFF
134-~~142~~136	AMATEUR AMATEUR-SATELLITE ~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Radio astronomy ~~Radiolocation~~ ~~S5.149 S5.340 S5.554 S5.555~~
136-141~~134-142~~	~~MOBILE S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ Amateur Amateur-satellite ~~Radiolocation~~ MOD S5.149~~ S5.340 S5.554 S5.555~~
~~134~~141-142	FIXED MOBILE~~ S5.553~~ ~~MOBILE-SATELLITE~~ RADIO ASTRONOMY RADIOLOCATION ~~RADIONAVIGATION~~ ~~RADIONAVIGATION-SATELLITE~~ ~~Radiolocation~~ MOD S5.149~~ S5.340 S5.554 S5.555~~
142-144	~~AMATEUR~~ ~~AMATEUR-SATELLITE~~ FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149

144-149~~8~~.5	FIXED MOBILE RADIO ASTRONOMY RADIOLOCATION ~~Amateur~~ ~~Amateur-satellite~~ MOD S5.149~~ S5.555~~
~~144~~148.5-149	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY ~~RADIOLOCATION~~ SPACE RESEARCH (passive) ~~Amateur~~ ~~Amateur-satellite~~ ~~S5.149~~ MOD S5.340~~ S5.555~~
149-150	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340
150-151	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~S5.149~~ MOD S5.340~~S5.385~~
151-15~~6~~1.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340
151.5-15~~6~~5.5	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY RADIOLOCATION MOD S5.149
~~151~~155.5-156	EARTH EXPLORATION-SATELLITE (passive) ADD S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) S5.CCC MOD S5.149 ADD S5.BBB

156-158	EARTH EXPLORATION-SATELLITE (passive) ADD S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149 ADD S5.BBB

158-202 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
158-1~~64~~58.5	EARTH EXPLORATION-SATELLITE (passive) ADD S5.AAA FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149 ADD S5.BBB	
158.5-164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
164-168~~7~~	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340	
164~~7~~-168	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 ~~RADIO ASTRONOMY~~ ~~SPACE RESEARCH (passive)~~	
168-170	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 MOD S5.149	
170-174.5	FIXED FIXED-SATELLITE (space-to-Earth) INTER-SATELLITE MOBILE MOD S5.558 MOD S5.149 ADD S5.QQQ~~S5.385~~	
174.5-17~~4.8~~6.5	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED INTER-SATELLITE MOBILE MOD S5.558 ~~SPACE RESEARCH (passive)~~ ~~S5.149 S5.385~~	
174.5~~8~~- 176.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~	

176.5-182	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~
182-185	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.563
185-190	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ INTER-SATELLITE ADD S5.YYY ~~MOBILE S5.558~~ SPACE RESEARCH (passive) ~~S5.149 S5.385~~
190-~~200~~191.8	EARTH EXPLORATION-SATELLITE (passive) ~~MOBILE S5.553~~ ~~MOBILE SATELLITE~~ ~~RADIONAVIGATION~~ ~~RADIONAVIGATION SATELLITE~~ SPACE RESEARCH (passive) ~~S5.341 S5.554~~MOD S5.340
191.8~~0~~-200	FIXED INTER-SATELLITE MOBILE ~~S5.553~~MOD S5.558 MOBILE-SATELLITE RADIONAVIGATION RADIONAVIGATION-SATELLITE MOD S5.149 S5.341 MOD S5.554
200-202	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341 ADD S5.RRR

202-~~400~~1 000 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
202-2~~17~~09	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (Earth-to-space)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 S5.341 ADD S5.RRR	
~~202~~209-217	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149 S5.341	
217-~~231~~226	~~EARTH EXPLORATION-SATELLITE (passive)~~ FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY SPACE RESEARCH (passive) ADD S5.CCC MOD S5.149~~S5.340~~ S5.341	
~~217~~226-231	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) MOD S5.340 ~~S5.341~~	
231-~~235~~231.5	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ RADIO ASTRONOMY SPACE RESEARCH (passive) ~~Radiolocation~~ MOD S5.340	
231.5-23~~5~~2	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE Radiolocation	
~~231~~232-235	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Radiolocation	
235-238	EARTH EXPLORATION-SATELLITE (passive) ~~FIXED~~ FIXED-SATELLITE (space-to-Earth) ~~MOBILE~~ SPACE RESEARCH (passive) ADD S5.RRR ADD S5.NNN	

238-~~241~~240	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE RADIOLOCATION RADIONAVIGATION RADIONAVIGATION-SATELLITE ~~Radiolocation~~
~~238~~240-241	FIXED ~~FIXED-SATELLITE (space-to-Earth)~~ MOBILE RADIOLOCATION ~~Radiolocation~~
241-248	RADIO ASTRONOMY RADIOLOCATION Amateur Amateur-satellite S5.138 MOD S5.149
248-250	AMATEUR AMATEUR-SATELLITE Radio astronomy MOD S5.149
250-252	EARTH EXPLORATION-SATELLITE (passive) RADIO ASTRONOMY SPACE RESEARCH (passive) ~~S5.149 S5.555~~MOD S5.340 ADD S5.RRR
252-265	FIXED MOBILE S5.553 MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY RADIONAVIGATION RADIONAVIGATION-SATELLITE MOD S5.149~~ S5.385~~ S5.554~~ S5.555 S5.564~~
265-275	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE RADIO ASTRONOMY MOD S5.149 ADD S5.RRR
275-~~400~~1 000	(Not allocated) MOD S5.565

NOC 5C2/S5.138

S5.138 The following bands:

6 765-6 795 kHz	(centre frequency 6 780 kHz),
433.05-434.79 MHz	(centre frequency 433.92 MHz) in Region 1 except in the countries mentioned in No. **S5.280**,
61-61.5 GHz	(centre frequency 61.25 GHz),
122-123 GHz	(centre frequency 122.5 GHz), and
244-246 GHz	(centre frequency 245 GHz)

are designated for industrial, scientific and medical (ISM) applications. The use of these frequency bands for ISM applications shall be subject to special authorization by the administration concerned, in agreement with other administrations whose radiocommunication services might be affected. In applying this provision, administrations shall have due regard to the latest relevant ITU-R Recommendations.

MOD 5C2/S5.149

S5.149 In making assignments to stations of other services to which the bands:

13 360-13 410 kHz,	23.07-23.12 GHz~~*~~,	~~150-151 GHz*,~~
25 550-25 670 kHz,	31.2-31.3 GHz,	151.5-158.5 GHz,
37.5-38.25 MHz,	31.5-31.8 GHz in Regions 1 and 3,	168.59-168.93 GHz,
73-74.6 MHz in Regions 1 and 3,	36.43-36.5 GHz~~*~~,	171.11-171.45 GHz,
150.05-153 MHz in Region 1,	42.5-43.5 GHz,	172.31-172.65 GHz,
322-328.6 MHz~~*~~,	42.77-42.87 GHz~~*~~,	173.52-173.85 GHz,
406.1-410 MHz,	43.07-43.17 GHz~~*~~,	~~174.42-175.02 GHz*,~~
608-614 MHz in Regions 1 and 3,	43.37-43.47 GHz~~*~~,	~~177-177.4 GHz*,~~
1 330-1 400 MHz~~*~~,	48.94-49.04 GHz~~*~~,	~~178.2-178.6 GHz*,~~
1 610.6-1 613.8 MHz~~*~~,	~~72.77-72.91 GHz*,~~	~~181-181.46 GHz*,~~
1 660-1 670 MHz,	76-86 GHz,	~~186.2-186.6 GHz*,~~
1 718.8-1 722.2 MHz~~*~~,	~~93.07-93.27 GHz*,~~	195.75-196.15 GHz,
2 655-2 690 MHz,	92-94 GHz,	209-226 GHz,
3 260-3 267 MHz~~*~~,	94.1-100 GHz,	241-250 GHz,
3 332-3 339 MHz~~*~~,	~~97.88-98.08 GHz*,~~	~~250-251 GHz*,~~
3 345.8-3 352.5 MHz~~*~~,	102-109.5 GHz,	252-275 GHz
4 825-4 835 MHz~~*~~,	111.8-114.25 GHz,	~~257.5-258 GHz*,~~
4 950-4 990 MHz,	128.33-128.59 GHz,	~~261-265 GHz,~~
4 990-5 000 MHz,	129.23-129.49 GHz,	~~262.24-262.76 GHz*,~~
6 650-6 675.2 MHz~~*~~,	130-134 GHz,	~~265-275 GHz,~~
10.6-10.68 GHz,	136-148.5 GHz,	~~265.64-266.16 GHz*,~~
14.47-14.5 GHz~~*~~,	~~140.69-140.98 GHz*,~~	~~267.34-267.86 GHz*,~~
22.01-22.21 GHz~~*~~,	~~144.68-144.98 GHz*,~~	~~271.74-272.26 GHz*~~
22.21-22.5 GHz,	~~145.45-145.75 GHz*,~~	
22.81-22.86 GHz~~*~~,	~~146.82-147.12 GHz*,~~	

are allocated ~~(* indicates radio astronomy use for spectral line observations)~~, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from spaceborne or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. **S4.5** and **S4.6** and Article **S29**).

MOD 5C2/S5.340

S5.340 All emissions are prohibited in the following bands:

1 400-1 427 MHz,	
2 690-2 700 MHz,	except those provided for by Nos. **S5.421** and **S5.422**,
10.68-10.7 GHz,	except those provided for by No. **S5.483**,
15.35-15.4 GHz,	except those provided for by No. **S5.511**,
23.6-24 GHz,	
31.3-31.5 GHz,	
31.5-31.8 GHz,	in Region 2,
48.94-49.04 GHz,	from airborne stations,
50.2-50.4 GHz~~2~~,	except those provided for by No. **S5.555A**,
52.6-54.25 GHz,	
86-92 GHz,	
100-102 GHz,	
~~105-116 GHz,~~	
109.5-111.8 GHz,	
114.25-116 GHz	
~~140.69-140.98 GHz,~~	~~from airborne stations and from space stations in the space-to-Earth direction,~~
148.5-151.5 GHz,	
164-167 GHz,	
182-185 GHz,	except those provided for by No. **S5.563**,
190-191.8 GHz,	
200-209 GHz,	
~~217-231 GHz.~~	
226-231.5 GHz,	
250-252 GHz.	

NOC 5C2/S5.341

S5.341 In the bands 1 400-1 727 MHz, 101-120 GHz and 197-220 GHz, passive research is being conducted by some countries in a programme for the search for intentional emissions of extraterrestrial origin.

MOD 5C2/S5.385

S5.385 *Additional allocation:* the band~~s~~ 1 718.8-1 722.2 MHz~~, 150-151 GHz, 174.42-175.02 GHz, 177-177.4 GHz, 178.2-178.6 GHz, 181-181.46 GHz, 186.2-186.6 GHz and 257.5-258 GHz are~~ is also allocated to the radio astronomy service on a secondary basis for spectral line observations.

MOD 5C2/S5.553

S5.553 In the bands 43.5-47 GHz~~,~~ and 66-71 GHz~~, 95-100 GHz, 134-142 GHz, 190-200 GHz and 252-265 GHz,~~ stations in the land mobile service may be operated subject to not causing harmful interference to the space radiocommunication services to which these bands are allocated (see No. **S5.43**).

MOD 5C2/S5.554

S5.554 In the bands 43.5-47 GHz, 66-71 GHz, 95-100 GHz, 123-130 GHz, ~~134-142 GHz, 190~~191.8-200 GHz and 252-265 GHz, satellite links connecting land stations at specified fixed points are also authorized when used in conjunction with the mobile-satellite service or the radionavigation-satellite service.

MOD 5C2/S5.555

S5.555 *Additional allocation:* the band~~s~~ 48.94-49.04 GHz~~, 97.88-98.08 GHz, 140.69-140.98 GHz, 144.68-144.98 GHz, 145.45-145.75 GHz, 146.82-147.12 GHz, 250-251 GHz and 262.24-262.76 GHz are~~ is also allocated to the radio astronomy service on a primary basis.

MOD 5C2/S5.556

S5.556 In the bands 51.4-54.25 GHz, 58.2-59 GHz~~,~~ and 64-65 GHz~~, 72.77-72.91 GHz and 93.07-93.27 GHz~~, radio astronomy observations may be carried out under national arrangements.

MOD 5C2/S5.558

S5.558 In the bands 55.78-58.2 GHz, 59-64 GHz, 66-71 GHz, ~~116-134 GHz,~~ 122.25-123 GHz, 130-134 GHz, ~~170-182 GHz and~~ 167-174.8 GHz ~~185-190 GHz~~ and 191.8-200 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

MOD 5C2/S5.559

S5.559 In the band~~s~~ 59-64 GHz ~~and 126-134 GHz~~, airborne radars in the radiolocation service may be operated subject to not causing harmful interference to the inter-satellite service (see No. **S5.43**).

NOC 5C2/S5.560

S5.560 In the band 78-79 GHz radars located on space stations may be operated on a primary basis in the Earth exploration-satellite service and in the space research service.

MOD 5C2/S5.561

S5.561 In the band ~~84-86~~74-76 GHz, stations in the fixed~~,~~ and mobile ~~and broadcasting~~ services shall not cause harmful interference to stations of the fixed-satellite service or stations of the broadcasting-satellite stations operating in accordance with the decisions of the appropriate frequency assignment planning conference for the broadcasting-satellite service.

NOC 5C2/S5.562

S5.562 The use of the band 94-94.1 GHz by the Earth exploration-satellite (active) and space research (active) services is limited to spaceborne cloud radars.

SUP 5C2/S5.564

~~**S5.564** *Additional allocation:* in Germany, Argentina, Spain, Finland, France, India, Italy and the Netherlands, the band 261-265 GHz is also allocated to the radio astronomy service on a primary basis.~~

MOD 5C2/S5.565

S5.565 The frequency band 275-~~400~~1 000 GHz may be used by administrations for experimentation with, and development of, various active and passive services. In this band a need has been identified for the following spectral line measurements for passive services:

– radio astronomy service: ~~278-280 GHz and 343-348 GHz;~~ 275-323 GHz, 327-371 GHz, 388-424 GHz, 426-442 GHz, 453-510 GHz, 623-711 GHz, 795-909 GHz and 926-945 GHz;

– Earth exploration-satellite service (passive) and space research service (passive): 275-277 GHz, ~~300-302 GHz, 324-326 GHz, 345-347 GHz, 363-365 GHz and 379-381 GHz.~~ 294-306 GHz, 316-334 GHz, 342-349 GHz, 363-365 GHz, 371-389 GHz, 416-434 GHz, 442-444 GHz, 496-506 GHz, 546-568 GHz, 624-629 GHz, 634-654 GHz, 659-661 GHz, 684-692 GHz, 730-732 GHz, 851-853 GHz and 951-956 GHz.

Future research in this largely unexplored spectral region may yield additional spectral lines and continuum bands of interest to the passive services. Administrations are urged to take all practicable steps to protect these passive services from harmful interference until the ~~next competent world radiocommunication conference~~ date when the allocation table is established in the frequency band mentioned above.

ADD 5C2/S5.AAA

S5.AAA In the band 155.5-158.5 GHz, the allocation to the Earth exploration-satellite (passive) and space research (passive) services shall terminate on 1 January 2018.

ADD 5C2/S5.BBB

S5.BBB The date of entry for the allocation to the fixed and mobile services in the band 155.5-158.5 GHz shall be 1 January 2018.

ADD 5C2/S5.CCC

S5.CCC Use of this allocation is limited to space-based radio astronomy only.

ADD 5C2/S5.DDD

S5.DDD The 81-81.5 GHz band is also allocated to the amateur and amateur-satellite services on a secondary basis.

ADD 5C2/S5.EEE

S5.EEE The band 75.5-76 GHz is also allocated to the amateur and amateur-satellite services on a primary basis until the year 2006.

ADD 5C2/S5.FFF

S5.FFF Transmission from space stations of the EESS (active) that are directed into the main beam of a radio astronomy antenna have the potential to damage some radio astronomy receivers. Space agencies operating the transmitters and the concerned radio astronomy stations should mutually plan their operations to avoid, to the maximum extent possible, such occurrences.

ADD 5C2/S5.LLL

S5.LLL The allocation to the Earth exploration-satellite service (active) is limited to the band 133.5-134 GHz.

ADD 5C2/S5.NNN

S5.NNN The frequency band 237.9-238 GHz is also allocated to the Earth exploration-satellite service (active) and the space research service (active) for spaceborne cloud radars only.

ADD 5C2/S5.PPP

S5.PPP In Japan, use of the band 84-86 GHz, as the fixed-satellite service (Earth-to-space) is limited to the feeder link by the broadcasting-satellite service in the geostationary satellite.

ADD 5C2/S5.QQQ

S5.QQQ *Additional allocation*: In Korea (Republic of), the bands 128-130 GHz, 171-171.6 GHz, 172.2-172.8 GHz and 173.3-174 GHz are allocated to the radio astronomy service in a primary basis until 2015.

ADD 5C2/S5.RRR

S5.RRR In the bands 200-209 GHz, 235-238 GHz, 250-252 GHz and 265-275 GHz, ground-based passive atmospheric sensing is carried out to monitor atmospheric constituents.

ADD 5C2/S5.XXX

S5.XXX Use of the bands 116-122.25 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –148 dBW/m^2/MHz for all angles of arrival.

ADD 5C2/S5.YYY

S5.YYY Use of the bands 174.8-182 GHz and 185-190 GHz by the inter-satellite service is limited to satellites in the geostationary-satellite orbit. The single-entry power flux-density, at all altitudes from 0 km to 1 000 km above the Earth's surface and in the vicinity of all geostationary orbital positions occupied by passive sensors, produced by a station in the inter-satellite service, for all conditions and for all methods of modulation, shall not exceed –144 dBW/m^2/MHz for all angles of arrival.

ADD 5C2/RES1

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 allocations by WRC-2000 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. These requirements are reflected in the changes made to the table of allocations by WRC-2000;

c) that several bands above 71 GHz are already used by EESS (passive) and SR (passive) because they are unique bands to measure specific atmospheric parameters;

d) that currently there is 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 for the frequency bands above 71 GHz;

f) that in the future, there should be accommodation of alternative spectrum needs of the active and passive services when the new technologies become available;

g) that, following the revisions to the table of allocations by WRC-2000, 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 within 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, WRC-2000 avoided co-allocations of active and passive services in some bands such as 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, to prevent potential sharing problems,

recognizing

that to the extent practicable, the burden of sharing among active and passive services should be equitably distributed amongst the allocated services,

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,

resolves

that a future competent conference should consider the results of ITU-R studies with a view to revise as appropriate the Radio Regulations in order to accommodate the emerging requirements of the active services taking into account the requirements of the passive services, in bands above 71 GHz;

instructs the Secretary-General

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

ADD 5C2/RES2

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 WRC-2000 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 WRC-2000;

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 fulfill the spectrum requirements for active services for which the technology is 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 a basis for a review of active service allocations above 71 GHz at a future competent conference, if necessary,

requests 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 5C2/S4.XXX

S4.XXX Regarding frequency bands above 71 GHz, administrations should consider Resolutions **COM5/4** and **COM5/5** in the development of domestic policies and regulations which would permit the use of specific bands by an allocated radio service. Administrations should note the possibility of changes to Article **S5** to accommodate emerging requirements of active services, as indicated in Resolutions **COM5/4** and **COM5/5**.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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19 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5C

Chairperson, ad hoc 1 of Working Group 5C

LIAISON STATEMENT TO WORKING GROUP 4A FROM WORKING GROUP 5C

Ad hoc 1 of Working Group 5C noted with interest draft Resolution [COM4/1]. It relates very closely to an issue concerning the determination of coordination areas for an SRS deep space receiving earth station and high-density applications of the fixed service, which is being considered within this ad hoc Group. We considered that the current text of the draft Resolution [COM4/1] outlined the procedure for continuing the update of Appendix S7, but did not specifically cover this issue.

We therefore request your opinion on whether or not the attached draft Resolution should be combined with draft Resolution [COM4/1].

Ms K. MEDLEY
Chairperson, ad hoc 1, Working Group 5C
Box 113

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5C

Chairperson, ad hoc 1 of Working Group 5C

DRAFT NEW RESOLUTION [COM5/11]

Development of the technical basis for determining the coordination area for a deep space receiving earth station in the space research service (SRS), with transmitting high-density applications 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 SRS for deep space only; the band 37-38 GHz is allocated to the space research service (deep space) (space-to-Earth); and both bands are allocated to the fixed service for the use of high density applications and 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 the SRS earth stations operating in the band employ very high-gain antennas and very low-noise amplifiers to receive weak signals from deep space;

d) that FS 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 (on the order of 0.001% of the time, commensurate with the protection criteria given in Recommendation ITU-R SA.1396 and 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 associated with an SRS (deep space) earth station and a single urban area may be on the order of 250 km;

g) that there are currently three SRS deep-space earth stations operational 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 draft Resolution [COM4/1]* provides a mechanism to update Appendix S7 as required,

resolves to request ITU-R

to develop, as a matter of urgency, the technical basis for determining the coordination area of a SRS (deep space) receiving earth station with transmitting high-density stations in the fixed service (HDFS) 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.

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* Document DT/55

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

Source: Document 251 **COMMITTEE 5**

Chairperson, Working Group 5C

Agenda item 1.17 - worldwide allocation for the Earth exploration-satellite (passive) and space research services in the band 18.6-18.8 GHz

1 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) ~~S5.523~~ ADD S5.522B MOBILE except aeronautical mobile ~~Earth exploration-satellite (passive)~~ Space research (passive) ~~S5.522~~ADD S5.522A	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.523~~ ADD S5.522B MOBILE except aeronautical mobile SPACE RESEARCH (passive) ~~S5.522~~ADD S5.522A	**18.6-18.8** EARTH EXPLORATION-SATELLITE (passive) FIXED FIXED-SATELLITE (space-to-Earth) ~~S5.523~~ ADD S5.522B MOBILE except aeronautical mobile ~~Earth exploration-satellite (passive)~~ Space research (passive) ~~S5.522~~ADD S5.522A

2 ADD

S5.522A The emissions of the fixed service and fixed-satellite service in the band 18.6-18.8 GHz are limited to the values given in **S21.5A** and **S21.16.2**, respectively.

3 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. Other types of fixed-satellite service systems should not be introduced into the band 18.6-18.8 GHz prior to the establishment of appropriate power limits.

4 SUP

S5.522

5 SUP

S5.523

6 MOD

S21.5 3) The power delivered by a transmitter to the antenna of a station in the fixed or mobile service 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 **S21.5A**.

7 MOD

S21.6 4) The limits given in Nos. **S21.2**, **S21.3**, **S21.4** ~~and~~, **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 service:

8 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**

9 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.

10 MOD

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[8] **S21.16.2** ~~The band 18.6-18.8 GHz is allocated to the earth exploration-satellite (passive) and space research (passive) services. Administrations should endeavour to reduce to a minimum the risks of interference to passive sensors. The interference criteria for satellite passive sensors are contained in Recommendation ITU-R SA.1029.~~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.

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Chairperson, Working Group 5C

1 **MOD**

Section IV – Table of Frequency Allocations

55.78-66 GHz

Allocation to services		
Region 1	**Region 2**	**Region 3**
55.78-56.2~~69~~	EARTH EXPLORATION-SATELLITE (passive) FIXED ADD S5.XXX INTER-SATELLITE S5.556A MOBILE S5.558 SPACE RESEARCH (passive) S5.547 S5.557	
~~55.78~~56.26-56.9	EARTH EXPLORATION-SATELLITE (passive) FIXED INTER-SATELLITE S5.556A MOBILE S5.558 SPACE RESEARCH (passive) S5.547 S5.557	

ADD

S5.XXX In the band 55.78-56.26 GHz, in order to protect stations in the EES (passive) service, the maximum transmitter power density delivered by a transmitter to the antenna of an FS station is limited to –26 dB(W/MHz).

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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WORKING GROUP 1 OF THE PLENARY

Morocco (Kingdom of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

APPLICATION OF PROVISION S23.13

Please add the following countries as co-sponsors to this document:

– Saudi Arabia (Kingdom of) and Oman (Sultanate of).

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 1
OF THE PLENARY

Morocco (Kingdom of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

APPLICATION OF PROVISION S23.13

Several proposals are before this Conference in relation to the application of the provisions of the Radio Regulations S23.13 in BSS bands as well as in FSS bands. The RRB adopted a rule of procedure for the BSS bands which was the subject of objection by some administration. It was modified but nevertheless, still remains unsatisfactory to the administrations concerned. Action taken by previous conferences did not resolve the problem completely, and the application of that provision requires, therefore, further consideration by this Conference. For that purpose this document analyzes the reasons for that provision, examines the extent to which any related procedure is within the competence of the ITU, and proposes practical solutions in the form of additional provisions in Articles S9 and S11.

Provision S23.13 was among the conditions specified by WARC-71 for allocating frequency bands to the broadcasting-satellite service. It was adopted within the framework of negotiations within the United Nations on the social, cultural and political effects of TV transmissions by a country over the territory of another country. Because the technology was not developed enough, ITU limited itself to an overlap that could not be avoided. Allocation of frequency bands to BSS (sound) was only made more than 20 years later by WARC-92. Some question the extent to which S23.13 may be applied to BSS (sound) since ITU authorizes the use of international sound broadcasting in the HF bands over distances greater than the greatest coverage area of GSOs.

Since 1971 there has been such an evolution of satellite technology that the majority of the capacity of GSO satellites of the FSS in operation are used for Direct-To-Home (DTH) TV transmissions each of them covering a large number of countries without being subjected to any agreement similar to the one referred to in S23.13. One may consider that this situation was not exactly the one foreseen when S23.13 was adopted, and that DTH in FSS bands may, if not regulated, lead to the use of interactive communications and consequently, S23.13 may need to be reformulated differently. Such an action requires detailed studies within ITU Member States and could be considered by future WRCs. In the case that action is recommended by this Conference, it is necessary to indicate that Study Groups and the CPM should not undertake any study in this respect since it involves, among others, matters which are not within the competence of the ITU. With or without any action by this Conference in relation to future studies, provisions relating to the application of S23.13 are proposed for adoption and, with the purpose of simplifying the task of the Conference, these proposed provisions are limited to TV transmissions.

An administration wishing to develop a BSS system should seek the agreement of any administration having a BSS system entitled to be taken into account in accordance with the provisions of Article S9. In addition, when the coverage area of the proposed system includes territory of other administrations, S23.13 applies. In the case where the procedure of Article S9 is applied, as complemented by Article S11 it covers nearly all possible situations that safeguard the rights of the administrations concerned. In the case of S23.13, the Radio Regulations contain no specified procedure. RRB tried to simplify the task of administrations by applying to the required agreement, part of the procedures contained in Article 4 of Appendix S30 or of Article S9. As an example of the inadequacy of the action taken by the RRB, in good faith, is the fact that its rule of procedure contains the approach of "no comment = agreement". This implies two major decisions which are not compatible with S23.13:

– First, a "no comment" within a specified period of time implies that there has been a formal request for an agreement. An agreement under Article S9 has its conditions and criteria well defined in the Radio Regulations and the publication of a special section may be considered as a formal request for coordination and time limits may be counted from the date of that publication. An administration that has received a request for an agreement under S23.13 needs to know the details of the requested agreement, which is necessarily a bilateral agreement that does not need to be published. Therefore the publication of a special section can in no way be considered as a formal request and no time-limit can be derived from its date.

– Second, considering the specific nature of S23.13, an agreement under this article does not necessarily fall within the competence of an administration as defined in No. 1002 of the Constitution. Comments under S23.13 may involve a number of ministerial departments and may require a collegial decision by a government. Because of the diplomatic consequences of such a comment, a Member State may decide not to make any comments and this shall, in no way, be considered as an agreement.

Radio Regulations does not specify the status of an assignment to which S23.13 applies, in cases where the agreement is not obtained. Shall it be considered as not being in conformity with the Radio Regulations? Numbers S11.30 and S11.31 specify that "*Each notice shall be examined: with respect to its conformity with the Table of Frequency Allocations and the other provisions of these Regulations,…."*. What are these "other provisions" apart from those relating to coordination? No conference was able to reply to this question. The simplified Radio Regulations introduced footnote S11.31.2 that indicates that "*The "other provisions" shall be identified and included in the Rules of Procedure.*" To our knowledge, the current Rules of Procedure do not cover this case. Consequently, until the adoption, and if necessary confirmation by a WRC of Rules of Procedure covering S23.13, an assignment for which an agreement under that provision could not be obtained should not be considered as not being in conformity with the Radio Regulations.

Considering the above, it is proposed to apply S23.13 to BSS systems as follows.

MRC/288/1

Following the publication of a special section relating to a BSS system:

– If the BR receives a formal agreement under S23.13, it shall include reference to that agreement when the assignments to the system are recorded.

MRC/288/2

– If an administration objects to the inclusion of its territory in the coverage area of the BSS system and the BR has not received the due diligence information about that system, the administration responsible for the system shall be requested to act accordingly. In case of disagreement, the two administrations shall be requested to make every effort to reach an agreement. In case of continuing disagreement, the RRB shall examine the matter and the Bureau shall adopt a finding on the basis of agreed Rules of Procedure. In any case, the territory of the objecting administration shall be excluded from the service area of the BSS system.

MRC/288/3

– If, at any moment following the receipt by the Bureau of the due diligence information relating to a BSS system, an administration objects to the inclusion of its territory in the coverage area or the service area of that system, the Bureau shall exclude the territory of that administrations from the service area of the satellite system and shall inform the administration responsible for the BSS system accordingly.

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WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

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PLENARY MEETING

Note by the Secretary-General

INFORMATION ON THE IMPLEMENTATION, BY ITU SECRETARIAT, OF RESOLUTION 99 (MINNEAPOLIS, 1998)

1 During the first Plenary Meeting on 8 May 2000, the delegation of Morocco requested, on behalf of the Arab Group, the Secretary-General and the Director of the Radiocommunication Bureau to present to the Plenary the current position on the implementation, by the ITU Secretariat, of Resolution 99 (Minneapolis, 1998) relating to the status of Palestine in ITU.

2 This Resolution reaffirms the observer status of Palestine at all Union conferences, assemblies and meetings while conferring on it some new specific rights which are not traditionally granted to observers, and urges the General Secretariat and the three Bureaux to apply the provisions of the Administrative Regulations and related resolutions and recommendations to the Palestinian Authority in the same manner as they are applied to administrations, in particular in relation to the international access code, call signs and the processing of frequency notification assignments.

3 As far as WRC-2000 is concerned, a specific invitation was sent to Palestine to participate in the WRC as an observer.

4 Pursuant to Resolution 99, the observer from Palestine is seated in the room, in WRC-2000 but also in all other official meetings of ITU, immediately after the Member States and, consequently, appears also in the list of participants, immediately after the Member States under a special heading “Observer/Resolution 99 (PP-98)”.

5 Furthermore, the observer from Palestine has been issued with a yellow card with a black square printed on it to be used if raising points of order relating to proceedings on Palestinian and Middle East issues.

6 Immediately following the Plenipotentiary Conference, Minneapolis, 1998, the Director of the Radiocommunication Bureau received a written request from the Ministry of Post and Telecommunication of the Palestinian Authority for the allocation of a call sign series. In accordance with Resolution 99 (Minneapolis, 1998), the Bureau allocated the call sign series E4A - E4Z to the Palestinian Authority on a provisional basis, subject to confirmation by WRC-2000 (Document 116 refers). This provisional allocation was published in Operational Bulletin 685 dated 1 February 1999.

7 It would simply be added, for the sake of completeness that, pursuant to a request made by the Ministry of Post and Telecommunication of the Palestinian Authority in November 1998, the international country code 970 has been reserved. This information was published in Operational Bulletin 689 dated 1 January 1999.

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WORKING GROUP 2
OF THE PLENARY

Working Group 4B

NOTE
BY THE CHAIRPERSON OF WORKING GROUP 4B
TO THE CHAIRPERSON OF WORKING GROUP 2 OF THE PLENARY

Working Group 4B has reviewed Resolution 124 (WRC-97) and noted that the ITU-R studies in response to this resolution have been completed. These results are presented in Recommendation ITU-R F.1502 which was approved by the 2000 Radiocommunication Assembly (see Document 160). However, Resolution 124 (WRC-97) did not resolve that a future conference review the results of these studies.

Working Group 4B has modified Resolution 124 to correct this oversight and the attention of Working Group 2 of the Plenary is drawn to Resolution 124 (Rev. WRC-2000) in Document 277.

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

INTERNATIONAL TELECOMMUNICATION UNION

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WORKING GROUP 4A

Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 4A

In its consideration of several documents allocated to Working Group 4B, it was observed that many concerned issues within the terms of reference of Working Group 4A. Accordingly, the following items are recommended to Working Group 4A for its attention and possible action:

- Document 16, sections 2.2 (Article S9), 2.3.1 (No. S11.32), and 2.4 (Article S21);
- Document 36, sections 3.2 (last item of Table 2 on Appendix S30B, §§ 8.3, 8.4); and
- Document 41, section 7.2 (Resolution 30 (WRC-97)).

In considering Document 36(Add.1) (section 3), Working Group 4B agreed to make appropriate changes to the Radio Regulations to replace references to the Weekly Circular with the new IFIC. This change may affect provisions of the Radio Regulations under consideration by Working Group 4A.

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

INTERNATIONAL TELECOMMUNICATION UNION

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PLENARY MEETING

Working Group 1 of the Plenary

POSSIBLE MEASURES TO RESOLVE BSS-BSS INCOMPATIBILITIES IN THE REPLANNING PROCESS FOR REGIONS 1 AND 3

In addition to the measures described in Document CMR2000/34 and its Corrigendum 1, the following may be applied in the replanning action undertaken by the Radiocommunication Bureau during WRC-2000, if necessary to resolve BSS-BSS incompatibilities in order to achieve successful replanning:

1 Those operating systems which entered in the process with a peak e.i.r.p. above 58.9 dBW and protection ratios of 31 dB (co-channel downlink at WARC-77) and 40 dB (co-channel feeder link at Orb-88) may be requested to align themselves to have standard e.i.r.p. of 58.9 dBW or lower (down to 56 dBW) and protection ratios of 24 dB (co-channel downlink at WRC-97) and 30 dB (co-channel feeder link at WRC-97). These operating systems may need to be analysed with respect to Recommendation ITU-R BO.1213. They may also be requested to further reduce their protection ratio of co-channel downlink down to 21 dB.

2 Existing systems* may be requested to accept, and Part B** systems which have submitted due diligence information in accordance with Resolution 49 (WRC-97) before 12 May 2000 1700 hours, may need to accept additional EPM degradation of about 1 dB greater than that referred to in paragraph 6.2 of Attachment 1 to Document 34. These systems which have a co-channel protection ratio of 24 dB or higher may need to further reduce their co-channel protection ratio downlink to 21 dB.

3 If a significantly high number of beams remain not included in the Plan at the end of Step 3, the implementation of both Step 3 and Step 4 will continue as follows:

a) co-channel and adjacent channels downlink and feeder-link protection ratios may be reduced by about 1 dB;

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* 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.

** Whenever the term “Part B” is used in this document, it refers to satellite networks which have successfully completed the coordination procedure of Article 4 of Appendices S30/S30A, yet to be brought into use.

b) EPM degradation threshold may be increased beyond 0.45 dB;

c) the orbital separation arc limit beyond which interference will not be taken into account, currently 15 and 9 degrees may be reduced to 9 degrees.

4 In case of national assignments, if the preferred orbital position could not be accommodated after 3 runs, another orbital position may be allocated, in consultation with the administration.

5 There are cases in which two or more sets of channels and beams were used with different characteristics in order to meet requirements of coordination with a given country (or given countries). This situation may create difficulties with regard to accommodating national assignments of certain other (either the same or neighbouring) countries. To resolve the issue, the beam characteristics can be aligned with those which are less interfering or less sensitive.

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WORKING GROUP 5B

Sub-Working Group 5B-1

MODIFICATIONS TO ARTICLE S15 AND RESOLUTION 207

(WRC-2000 AGENDA ITEM 1.7)

The following modifications to Aricle S15 and Resolution 207 have been approved by Sub-Working Group 5B-1 in response to Agenda item 1.7. They are submitted to Working Group 5B for consideration and approval.

Pekka LÄNSMAN
Chairperson,
Sub-Working Group 5B-1

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 (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

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 HF frequencies 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, the use of 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 h)* that these stations are causing harmful interference to the maritime mobile and aeronautical mobile (R) services;~~

~~*c*~~ *i)* 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* ~~*c*~~*g)* are reserved for distress and safety purposes;

~~d~~ j) 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;

k) 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~~ *l)* 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~~ m) 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 the ITU-R or ITU-D, as appropriate

a) 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.

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

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

to urge 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 unauthorised transmissions on 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 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 invite 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 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 these studies.

INTERNATIONAL TELECOMMUNICATION UNION

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COMMITTEE 4

Report by the Chairperson of Working Group 4B

FOURTH REPORT FROM WORKING GROUP 4B TO COMMITTEE 4

(AGENDA ITEMS 2 AND 4)

At its ninth meeting on 19 May 2000, the Working Group reviewed the texts of Resolution 27 (Rev.WRC-97), Resolution 127 (Rev.WRC-97) and Resolution 728 (Rev.WRC-97).

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

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

MOD

RESOLUTION 27 (Rev.WRC-~~97~~2000)

Use of incorporation by reference~~References to ITU-R and ITU-T Recommendations~~ in the Radio Regulations

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

considering

a) that the principles of incorporation by reference were adopted by the WRC-95, revised by WRC-97 and further refined~~have been revised~~ by this Conference (see Annexes 1 and 2 to this Resolution);

b) that there are provisions of the Radio Regulations containing references which ~~employ mandatory incorporation by reference but~~ fail to distinguish adequately whether the status of the referenced text is mandatory or non-mandatory,~~make explicit reference to the ITU-R or ITU-T Recommendations incorporated;~~

~~*c)* that the 1997 Conference Preparatory Meeting (CPM-97) for this Conference urged administrations to give further consideration to the status of material incorporated by reference:~~

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

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

~~– taking into account the factors set out in Annex 2 to this Resolution;~~

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

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

noting

that references to Resolutions or Recommendations of a world radiocommunication conference (WRC) require no special procedures, and are acceptable without restriction, 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),

~~that ITU-R and ITU-T Recommendations incorporated or proposed for incorporation by reference in the provisions of the Radio Regulations be identified and examined at WRC-99, with a view to establishing the correct method of reference in accordance with the principles set out in Annex 1 to this Resolution and taking into account the factors listed in Annex 2 to this Resolution, in order to complete the simplification of the Radio Regulations in respect of incorporation by reference,~~

instructs the Director of the Radiocommunication Bureau

to bring this Resolution to the attention of the ITU-R Radiocommunication Assembly and Study Groups~~arrange for a review of the provisions of the Radio Regulations containing references to ITU-R or ITU-T Recommendations and propose suitable recommendations to the CPM-99 for inclusion in its Report to WRC-99, using the list of provisions contained in Annex 3 to this Resolution together with the guidance contained in Annexes 1 and 2 to this Resolution, and taking into account the list of ITU-R Recommendations contained in Annex 4 to this Resolution~~,

urges administrations

to prepare proposals to future conferences to clarify the status of references where there remain ambiguities regarding the mandatory or non-mandatory status of those references where those references are relevant to specific agenda items~~use the CPM Report to WRC-99 in order to prepare their proposals on incorporation by reference to that Conference~~.

MOD

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

~~1 Where references are non-mandatory, it is not necessary to establish specific conditions in applying the texts quoted. In such cases, reference could, for example, be made to "the latest version" of a Recommendation.~~

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

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

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

4.1 the ~~referenced~~ text 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 ~~referenced~~ text incorporated by reference must be ~~adopted by the Plenary of a competent WRC, but should not be part of the Final Acts~~submitted for adoption by a competent WRC in accordance with *resolves* 3;

4.4 all texts incorporated by reference ~~must~~shall be ~~readily available~~published following a WRC, ~~by being published in a separate volume;~~in accordance with *resolves* 4.

~~4.~~5 ~~i~~If, between WRCs, a ~~referenced~~ text incorporated by reference (e.g. an ITU-R Recommendation) is updated, the reference in the Radio Regulations shall continue to apply to the ~~original~~earlier version incorporated by reference until such time as a competent WRC agrees to incorporate the new version ~~of the reference~~. The mechanism for considering such a step is given in Resolution **28 (Rev.WRC-~~95~~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-~~97~~2000)

~~Factors to be considered for the further a~~Application of incorporation by reference

~~In reviewing~~When introducing new instances of incorporation by reference into the provisions of the Radio Regulations or reviewing existing instances of incorporation by reference,~~employing references to other texts,~~ administrations and ITU-R~~study groups~~ 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 whether in existing non-mandatory references, or mandatory references which are determined to be of non-mandatory character, appropriate linking language is used, e.g. the words "should" or "may";~~

~~3~~2 ~~whether in existing~~ mandatory references shall use~~, or other types of reference which are determined to be of mandatory character,~~ clear ~~mandatory~~ linking language ~~is used, e.g. the word~~ 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".

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

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

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

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

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)

WRC procedures for adoption of texts for incorporation by reference

WRC-97 established the precedent of handling texts of ITU-R Recommendations incorporated by reference without reproducing them in full as conference documents (see Document WRC97/157). It is necessary and sufficient that the referenced texts be made available to delegations in sufficient time for all administrations to consult the referenced texts in their final English, Spanish and French versions. A copy of the texts will be made available to each administration upon its request.

During the course of each WRC a list of the texts incorporated by reference shall be developed and maintained by the working committees. This list shall be published as a conference document in line with developments during the conference. [The Editorial Committee shall monitor this process and report any deficiencies.]

By adoption of the linking reference provisions at second reading, and provided that the referenced text is available for delegates to consult, as stated above, the plenary meeting will be deemed to have formally adopted the referenced text.

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 127 (Rev.WRC-~~97~~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 (~~Geneva, 1997~~Istanbul, 2000),

considering

a) that the agenda of ~~this Conference~~WRC-97 included consideration of the adoption of additional allocations for the non-geostationary (non-GSO) mobile-satellite ~~systems in the mobile-satellite~~ service (MSS);

b) that the Report of the 199~~7~~9 Conference Preparatory Meeting (CPM-9~~7~~9) stated that the Radiocommunication Bureau has identified ~~at least 23~~25 non-GSO MSS networks as of 26 November 1999 at frequencies below 1 GHz, at some stage of coordination under Resolution **46 (Rev.WRC-~~97~~2000)**, 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, ~~bit~~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, since CPM-97, one administration has carried out additional analyses and hardware demonstrations with a view to determining the feasibility of sharing between non-GSO MSS feeder links and services such as the Earth exploration-satellite (passive), radio astronomy and space research (passive) services in bands around 1.4 GHz;~~

~~*e*~~*d)* that factors taken into account by ~~these~~post-CPM-97 activities in order to protect the passive services around 1.4 GHz from out-of-band emissions include: the use of narrow-band non-GSO MSS feeder-link transmissions; the use of spectrum-efficient modulation methods, such as 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;

~~*f*~~*e)* that factors taken into account by ~~these~~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~~,~~;

~~d~~f) that, since CPM-97, ~~one administration has~~ITU-R studies have been carried out ~~additional analyses and hardware demonstrations~~containing theoretical analyses with a view to determining ~~the feasibility of sharing between~~if the operation of non-GSO MSS feeder links ~~and services such as~~in bands around 1.4 GHz would be compatible with the Earth exploration-satellite (passive), radio astronomy and space research (passive) services ~~in bands around 1.4 GHz~~;

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 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 are necessary;

i) that such additional tests and measurements will be completed prior to WRC-02/03,

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 a former resolution identified issues relating to frequency sharing between the MSS and terrestrial services at frequencies below 3 GHz as being among the urgent studies required in preparation for this Conference;~~

~~*c)* that one administration performed such studies, which were submitted to ITU-R, but these studies could not be considered due to time limitations;~~

~~d~~b) that, since WRC-95, ~~one administration has performed~~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,

~~resolves~~requests ITU-R, as a matter of urgency,

1 ~~to invite ITU-R, as a matter of urgency,~~ to continue studies, and to carry out additional tests and demonstrations to validate the studies ~~to determine the~~on operational and technical measures required to facilitate sharing in portions of the band 1 390-~~1 400~~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 invite ITU-R, as a matter of urgency,~~ to carry out additional tests and demonstrations to validate the studies ~~to determine~~on operational and technical means to facilitate sharing, in portions of the band ~~1 427~~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 invite ITU-R, as a matter of urgency,~~ to ~~study operational and technical measures required~~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

~~4~~ to invite ~~a future competent conference*~~ [WRC-02/03] to consider, on the basis of completion of studies referred to in ~~*resolves*~~*requests 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.

~~* *Note by the Secretariat* – See Resolution **722 (WRC-97)**.~~

MOD

RESOLUTION 728 (Rev.WRC-~~97~~2000)

Studies relating to consideration of allocations in the broadcasting band 470-862 MHz to non-geostationary mobile-satellite services

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

considering

a) that the agenda of ~~WRC-97~~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 199~~7~~9 Conference Preparatory Meeting (CPM-9~~7~~9) stated that the Radiocommunication Bureau has identified at least ~~[23~~22~~]~~ non-GSO MSS networks ~~[~~as of 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 268/11 and sound broadcasting requirements under Question 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 invite ~~a future competent conference~~[a future competent conference/WRC-06] to consider, on the basis of the results of the studies referred to in *resolves* 1, the possibility of making additional allocations on a worldwide basis for non-GSO MSS, [taking into account, in particular, *considering h)* and *i)* above, with a view to considering allocations at a future conference,]

urges administrations

to participate actively in such studies, with the involvement of interested parties.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 295(Rev.1)-E
23 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Indonesia (Republic of)

PROPOSAL FOR THE WORK OF THE CONFERENCE

(PP-98 RESOLUTION 86)

This document has been withdrawn.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 295-E
19 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Indonesia (Republic of)

PROPOSALS FOR THE WORK OF THE CONFERENCE

(PP-98 RESOLUTION 86)

ARTICLE S9

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

NOC

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

NOC

Sub-Section IIA – Requirement and request for coordination

MOD INS/295/1

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

Reasons: In order to include receiving terrestrial stations in the procedure of coordination with respect to the transmitting earth station.

ADD INS/295/2

S9.18*bis* *hbis)* for stations in the terrestrial network with respect to any other station in the terrestrial service.[13*bis*]

Reasons: For effecting coordination procedure between networks of terrestrial stations of administrations with terrestrial networks of another administration.

ADD INS/295/3

[13*bis*] **S9.18*bis*.1** Coordination may be based on the criteria relevant to ITU-R Recommendations or technical criteria agreed by the administration concerned.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 296-E*
19 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Cuba

PROPOSAL FOR THE WORK OF THE CONFERENCE

In accordance with the decision taken by the Plenary Meeting of the conference with regard to the addition of the names of countries to the footnotes in Article S5, the Administration of Cuba requests its inclusion in footnote S5.480.

MOD CUB/296/1

S5.480 *Additional allocation:* in Brazil, Costa Rica, Cuba, Ecuador, Guatemala, Honduras and Mexico, the band 10-10.45 GHz is also allocated to the fixed and mobile services on a primary basis.

* Pursuant to Resolution 26 (Rev.WRC-97) the secretariat notes that this contribution was received on 19 May 2000.

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Corrigendum 1 to Document 297-E
23 May 2000
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ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5A

Belarus (Republic of), Russian Federation, Ukraine

PROPOSALS FOR THE WORK OF THE CONFERENCE

PROPOSALS FOR A CONSENSUS ON WRC-2000 AGENDA ITEM 1.6.1

Add “Belarus” to the countries co-sponsoring this document.

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 297-E
19 May 2000
Original: Russian

ISTANBUL, 8 MAY – 2 JUNE 2000

WORKING GROUP 5A

Russian Federation, Ukraine

PROPOSALS FOR THE WORK OF THE CONFERENCE

PROPOSALS FOR A CONSENSUS ON WRC-2000 AGENDA ITEM 1.6.1

After extensive preparatory work, a great many administrations have presented a considerable number of contributions to WRC-2000, drawing attention to various problems relating to the possible identification of additional spectrum for IMT-2000, in particular the protection of investments made for the development of existing systems, the cost of refarming frequency bands, differences in spectrum requirements and specific features of the transition from existing to new systems, satisfaction of the special needs of the developing countries and so on. Bearing in mind that WRC-2000 is to adopt a decision which should promote the successful worldwide development of state-of-the-art technologies, particularly IMT-2000, we consider that the present conflicting points of view are based not on technical but on regulatory and terminological factors.

In accordance with the basic principles of the Radio Regulations, the Table of Frequency Allocations and the footnotes thereto have a strict regulatory status and should employ the established terminology and definitions (Article S1), in particular with regard to the allocation of frequency bands to the various radiocommunication services, the allotment of radio frequencies or a radio-frequency channel for radiocommunication services and the assignment of radio frequencies or a radio-frequency channel to a radio station. Hence the Radio Regulations, on procedural and legal grounds, do not permit the use of non-standard terminology such as the words “identification” or “are intended”, in view of the considerable degree of ambiguity in the meaning of those expressions. Furthermore, all the provisions of the Table of Frequency Allocations in the Radio Regulations and the footnotes thereto impose fairly stringent and unequivocal obligations on national administrations regarding the use of the radio-frequency spectrum.

On the basis of the contributions presented by administrations to WRC-2000, to CPM-99 and during the discussions held at WRC-2000, and taking into account the framework for consensus on WRC-2000 set out in Document DT/25(Rev.2), we propose a four-stage procedure for resolving the issue of global allocations:

Stage 1 - Amend footnote S5.388

Replace the existing text of the footnote by the following:

“Use for IMT-2000 of the bands 862-960 MHz, 1 710-1 885 MHz, 1 885-2 025 MHz and 2 110-2 200 MHz, which are allocated to the mobile service on a primary basis, should be on a worldwide basis in accordance with the provisions of Resolution **AAA**”.

Stage 2 - Add a new Resolution AAA "Identification of global spectrum for IMT-2000"

RESOLUTION AAA

Identification of global spectrum for IMT-2000

The World Radiocommunication Conference (Istanbul, 2000),

considering

a) that ITU-R has recommended the 1-3 GHz range as the most suitable for IMT-2000;

b) that WARC-92 identified the bands 1 885-2 025 MHz and 2 110-2 200 MHz 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;

c) the conclusions set out in the CPM-99 Report;

d) that, in some cases, the only way of implementing IMT-2000 is through spectrum refarming, which entails significant financial cost;

e) that it is necessary to ensure that both the operators of existing commercial systems in the radiocommunication services to which the bands are allocated under the Radio Regulations and IMT-2000 operators enjoy equal market status in order to safeguard investments made in existing networks until such time as demand for the services they provide declines;

f) that, in some cases, it is necessary to protect radiocommunication systems in services to which band allocations are currently made in the Radio Regulations until such time as they cease operation,

emphasizing

that identification under this resolution does not preclude the use of these bands by systems in other radiocommunication services to which they are allocated, and allows national administrations sufficient flexibility in selecting a national strategy for the development of IMT-2000 on the basis of national circumstances, and, in particular, in determing the amount of spectrum required, setting a timetable for the availability and use of spectrum for IMT-2000, planning transition to new systems and so on,

noting

a) that harmonized use of spectrum constitutes an important factor for global roaming and global access to IMT-2000 services, thereby benefiting manufacturers and operators and fostering the availability of services for consumers;

b) that the frequency arrangements for IMT-2000 should take account of the frequency arrangements for existing second-generation land mobile systems,

recognizing

a) that, in countries which have implemented second-generation systems on their territory, the bands 880-915 and 925-960 MHz may be available for IMT-2000 only in the long term, as and when the use of these systems has declined with the growth in demand for IMT-2000 services;

b) that, in countries which have implemented second-generation systems on their territory, the bands 1 710-1 785 and 1 805-1 880 MHz may be available for IMT-2000 only in the long term, as and when the use of these systems has declined with the growth in demand for IMT-2000;

c) that, in countries which have implemented second-generation systems on their territory, the band 1 880-1 885 MHz may be available for IMT-2000 only in the long term, as and when the use of these systems has declined with the growth in demand for IMT-2000 services,

calls upon administrations

when deploying IMT-2000 systems, to use the relevant international technical characteristics set out in ITU-R and ITU-T Recommendations,

resolves

1 that the bands 1 885-2 025 MHz and 2 110-2 200 MHz are identified as core bands for use by administrations wishing to implement IMT-2000;

2 that the bands 862-960 MHz and 1 710-1 885 MHz are identified as additional bands for use by administrations wishing to implement IMT-2000,

instructs ITU-R

1 to develop harmonized frequency arrangements for the terrestrial component of IMT-2000 in the additional spectrum identified under *resolves* 2 above, taking due account of the current use and/or the transition of existing services already operating in those bands;

2 to develop frequency arrangements for the operation of IMT-2000 in the additional spectrum identified, with the aim of achieving compatibility with existing frequency arrangements for second-generation mobile service systems;

3 to study ways of accommodating, in the frequency bands used by first and second-generation mobile communication systems, evolution of such systems to IMT-2000 and other state-of-the-art communication systems;

4 to study means of facilitating global roaming within the different regional frequency allocations in the bands identified for IMT-2000 and other state-of-the-art communication systems;

5 to study sharing issues related to the deployment of IMT-2000 in the frequency bands identified for IMT-2000 and other state-of-the-art communication systems;

6 to maintain a database of national studies and decisions on the selection of spectrum for IMT-2000 and other state-of-the-art communication systems,

invites administrations

1 to adopt regulatory and spectrum allocation decisions which protect investments in existing mobile telecommunication systems and facilitate the ability of existing operators to evolve their systems to IMT-2000 and beyond on the basis of market needs;

2 to adopt regulatory and spectrum allocation decisions which afford operators flexibility to provide the services and use the different technologies which best reflect market needs;

3 to give due consideration to protecting investments in other existing radiocommunication services and cushioning the impact on existing users;

4 to develop and adopt appropriate and sound mechanisms for evaluating the cost of refarming and ensure that comparable replacement spectrum is provided in cases where refarming is deemed necessary.

Stage 3 - Insert **MOD S5.388** in the bands identified by the conference as IMT-2000 bands.

Stage 4 - Delete Resolution 212 (WRC-97).

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INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 298-E
19 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Chairperson of Working Group 4B

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

AGENDA ITEM 4

At its 9th meeting on 19 May 2000, the Working Group reviewed the text of Resolution 51 (WRC-97) and agreed to the attached revision prepared by the Sub-Working Group. Working Group 4B further agreed that transitional measures that may later be adopted by this conference should be contained in a new resolution separate from Resolution 51.

A number of administrations expressed concern about the revision to Resolution 51 and preferred to maintain the resolution without change. One administration noted that the conference should consider the financial implications of the revision.

A. ALLISON
Chairperson of Working Group 4B
Box 68

MOD

RESOLUTION 51 (Rev.WRC-~~97~~2000)

~~**Provisional application of certain provisions of the Radio Regulations as modified by WRC-97 and transitional arrangements**~~**Transitional arrangements relating to the advance publication and coordination of satellite networks**

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

considering

a) that as a result of the review under Resolution 18 of the Plenipotentiary Conference (Kyoto, 1994), a number of provisions relating to the advance publication, coordination and notification of assignments for satellite networks have been modified and these should be applied provisionally as soon as possible;

b) that ~~it was~~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 ~~this Conference~~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, shall be applied by the Bureau and by administrations on a provisional basis as of 22 November 1997;

e) that WRC-97 decided that, for satellite networks which are subject to coordination for which the API has been received by the Bureau prior to 22 November 1997 but the coordination data has not been received by the Bureau prior to this date, the responsible administration shall have until 22 November 1999 or the end of the period pursuant to the application of No. **1056A**, whichever date comes earlier, to submit the coordination data in accordance with the applicable provisions of the Radio Regulations; otherwise the Bureau shall cancel the relevant API in accordance with No. **1056A** or No. **S9.5D** as applicable;

f) that WRC-97 decided that the revised Appendix **S4** with respect to the API for satellite networks which are subject to coordination under Section II of Article **S9** shall be applied as of 22 November 1997,

resolves

~~1 that the provisions of Sections I, IA and IB of Article **S9** and provisions of Article **S11** (Nos. **S11.43A**, **S11.44**, **S11.44B** to **S11.44I**, **S11.47** and **S11.48**), as revised by this Conference, shall be applied by the Bureau and by administrations on a provisional basis as of 22 November 1997;~~

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

~~3~~ that, for satellite networks for which the API has been received by the Bureau prior to 22 November 1997, the maximum allowed time period from the date of ~~receipt of the API~~publication of the Special Section of the Weekly Circular referred to in **S9.2B** to bring the relevant frequency assignments into use shall be six years plus the extension pursuant to No. **1550** of the Radio Regulations (1994 version) (see also Resolution **49 (WRC-97)**)~~;~~.

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

~~5 that, for those networks which are subject to coordination for which the API has been received but not yet published prior to 22 November 1997, the Bureau shall publish only the information of the revised Appendix **S4** as modified by this Conference.~~

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 299-E
19 May 2000
Original: English

ISTANBUL, 8 MAY – 2 JUNE 2000

COMMITTEE 4

Note from the Chairperson of the Conference to the Chairperson of Committee 4

ADDITION OF COUNTRY NAMES TO FOOTNOTES

The third Plenary Meeting agreed that requests to add country names to existing footnotes may be considered in accordance with Resolution 26 (Rev.WRC-97) on the basis that there are no objections from countries that may be affected. Such requests must be submitted within a deadline of 12 noon (Istanbul time) Monday, 22 May 2000.

F.M. YURDAL
Chairperson of the Conference

INTERNATIONAL TELECOMMUNICATION UNION

WRC-2000 WORLD RADIOCOMMUNICATION CONFERENCE

Document 300-E
24 May 2000
Original: French/ English/ Spanish

ISTANBUL, 8 MAY – 2 JUNE 2000

LIST OF DOCUMENTS ISSUED
(Documents 251 – 300)

DOCUMENT NUMBER	***SOURCE***	***TITLE***	***DESTINATION***
251	SWG 5C-2	Chairperson, Sub-Working Group 5C-2	WG 5C
252	SWG 5C-2	Modification of bringing into use and administrative due diligence requirements as a consequence of allocation changes above 71 GHz	WG 5C
253	SWG 5B-1	Modifications to Appendix S18	WG 5B
254	SWG 5B-1	Modifications to Resolution 342	WG 5B
255+(Rev.1)	Drafting Group 5D-2	Resolution [COM5/6] (WRC-2000)	WG 5D
256	C4	Second series of texts submitted by Committee 4 to the Editorial Committee	C6
257+(Rev.1)	WG 5C	Chairperson, Working Group 5C	C5
258	C5	Proposals relating to agenda item 1.14	C4
259+(Rev.1)	Drafting Group 5D-2	Resolution [COM5/7] (WRC-2000)	WG 5D
260+(Rev.1)	Drafting Group 5D-3	Note from the Chairperson of Drafting Group 5D-3 to the Chairperson of Working Group 5D	WG 5D
261	WG 4B	Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 2 of the Plenary	WG PLEN-2
262	WG 4B	Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 1 of the Plenary	WG PLEN-1
263+(Rev.1)	Drafting Group 5D-1	Resolution [COM5/9] (WRC-2000)	WG 5D

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264	WG 4B	Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 5D	WG 5D
265	CHN	Proposal for the work of the Conference	WG PLEN-2
266	Drafting Group 5D ad hoc	Report of the Chairperson of Drafting Group 5D ad hoc to the Chairperson of WG 5D Issues related to the sharing situation in the frequency band 13.75-14 GHz	WG 5D
267	Drafting Group 5D-1	Note from the Chairperson of Drafting Group 5D-1 to the Chairperson of Working Group 5D	WG 5D
268	PL	Minutes of the Second Plenary Meeting	PL
269	J	Proposals for the work of the Conference	WG PLEN-1
270	CTR	Proposal for the work of the Conference	C4
271	VEN	Proposals for the work of the Conference	C4
272	ARG	Proposals for the work of the Conference	C4
273	SWG 5B-2	Space-to-space allocation for the radionavigation-satellite service	WG 5B
274	WG 5D	Resolution [COM5/3] (WRC-2000)	C5
275	WG 5D	Resolution [COM5/2] (WRC-2000)	C5
276	SWG 5C-1	Draft revision of Resolution 122 (WRC-97)	WG 5C
277	WG 4B	Resolution 5 (Rev.WRC-2000)	C4
278	WG 4A	Note from the Chairperson of Working Group 4A to the Chaiperson of Working Group 5C	WG 5C
279	SWG 5C-1	Country footnote for use of HAPS in fixed service in the bands 27.5-28.35 GHz and 31.0-31.3 GHz	WG 5C
280	WG 5B	WRC-2000 agenda item 1.15.3	C5
281	WG 5C	Draft revision of Resolution 122 (WRC-97)	C5
282	SWG 5C-1	Country footnote for use of HAPS in the fixed service in the bands 27.5-28.35 GHz and 31.0-31.3 GHz	WG 5C
283	WG 5C	Allocation above 71 GHz (agenda item 1.16)	C5

DOCUMENT NUMBER	*SOURCE*	*TITLE*	*DESTINATION*
284	WG 5C ad hoc 1	Liaison statement to Working Group 4A from Working Group 5C	WG 5C
285	WG 5C ad hoc 1	Draft New Resolution [COM5/11]	WG 5C
286	WG 5C	Chairperson, Working Group 5C	C5
287	WG 5C	Chairperson, Working Group 5C	C5
288	MRC	Proposals for the work of the Conference	WG PLEN-1
289	SG	Information on the implementation, by ITU Secretariat, of Resolution 99 (Minneapolis, 1998)	PL
290	WG 4B	Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 2 of the Plenary	WG PLEN-2
291	WG 4B	Note by the Chairperson of Working Group 4B to the Chairperson of Working Group 4A	WG 4A
292	WG PLEN-1	Possible measures to resolve BSS-BSS incompatibilities in the replanning process for Regions 1 and 3	PL
293	SWG 5B-1	Modifications to Article S15 and Resolution 207	WG 5B
294	WG 4B	Fourth Report from Working Group 4B to Committee 4	C4
295+(Rev.1)	INS	Proposals for the work of the Conference	C4
296	CUB	Proposal for the work of the Conference	C4
297 + Corr.1	BLR/RUS/ UKR	Proposals for the work of the Conference	WG 5A
298	WG 4B	Report by the Chairperson of Working Group 4B to the Chairperson of Committee 4	C4
299	Chairperson, WRC-2000	Note from the Chairperson of the Conference to the Chairperson of Committee 4 Addition of country names to footnotes	C4
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