Documents of the World Administrative Radio Conference for dealing with frequency allocations in certain parts of the spectrum (WARC-92) (Malaga-Torremolinos, 1992)

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

- This PDF includes Document DT No. 1-120
- The complete set of conference documents includes Document No. 1-401, DL No. 1-37, DT No. 1-120

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/1-E
31 January 1992

PLENARY MEETING

Note by the Secretary-General

COORDINATED PROPOSALS BY ADMINISTRATIONS

(see No. 379 of the Nairobi Convention)

This Addendum to Document DT/1 presents the coordinated proposals contained in Documents 26, 31 and in Documents 34 to 54.

The organization of this Addendum is identical to that of Document DT/1, i.e.,

Addendum 1 to Document DT/1A1:	Proposals relating to the Table of Frequency Allocations of the Radio Regulations (Article 8), bands below 137 MHz.
Addendum 1 to Document DT/1A2:	Ditto, bands between 137 MHz and 3000 MHz.
Addendum 1 to Document DT/1A3:	Ditto, bands above 3 GHz.
Addendum 1 to Document DT/1B1:	Proposals relating to Articles 55 and 56 of the Radio Regulations.
Addendum 1 to Document DT/1B2:	Proposals relating to Articles 27 and 28, and Appendice 3 of the Radio Regulations.
Addendum 1 to Document DT/1B3:	Other proposals relating to the provisions of the Radio Regulations.

Pekka TARJANNE
Secretary-General

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/1-E
17 January 1992

PLENARY MEETING

Note by the Secretary-General

COORDINATED PROPOSALS BY ADMINISTRATIONS

(see No. 379 of the Nairobi Convention)

1. General

The proposals contained in Documents 1 to 33, except for Documents 26 and 31, have been published as a working document covering the several relevant parts of the Radio Regulations to which the various items of the Conference agenda (see Document 1) refer.

The proposals were arranged in the order of receipt (which corresponds to the numbers of the documents in which they appear). Only the text, properly speaking, of the proposals has been published in the working document. Those wishing to read the "Reasons" or introductory notes should consult the document containing the proposals concerned.

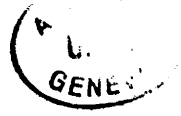
The proposals relating to the Table of Frequency Allocations (Article 8 of the Radio Regulations) were grouped in a way that corresponds to the current Tables of the Radio Regulations (edition of 1990). The proposals are contained in parts 1A and 1B of this document.

2. Organization of document DT/1

The proposals relating to the various agenda items were grouped as follows:

Document DT/1A1:	Proposals relating to the Table of Frequency Allocations of the Radio Regulations (Article 8), bands below 137 MHz.
Document DT/1A2:	Ditto, bands between 137 MHz and 3000 MHz.
Document DT/1A3:	Ditto, bands above 3 GHz.
Document DT/1B1:	Proposals relating to Articles 55 and 56 of the Radio Regulations.
Document DT/1B2:	Proposals relating to Articles 11, 13, 27, 28, 29 and 30 and Appendices 30 and 30A of the Radio Regulations.
Document DT/1B3:	Other proposals relating to the provisions of the Radio Regulations.

Pekka TARJANNE
Secretary-General



INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/1A1-E
31 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS

OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS BELOW 137 MHz)

Attachment : Proposals by Administrations.

ARTICLE 8

Frequency Allocations

Section IV. Table of Frequency Allocations

VUT/48/2
NOC **503** We advocate that a strong coordination framework should be promoted for planning and authorization of HF broadcasting with the larger users encouraged to take an early lead in the introduction of SSB services.

---

kHz
4 063 - 5 450

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/1 **NOC**	**5 060 - 5 250**	FIXED Mobile except aeronautical mobile 521	
EQA/45/2 **NOC**	**5 250 - 5 450**	FIXED MOBILE except aeronautical mobile	

---

kHz
5 450 - 7 100

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/3 **NOC**	**5 730 - 5 950** FIXED LAND MOBILE	**5 730 - 5 950** FIXED MOBILE except aeronautical mobile (R)	**5 730 - 5 950** FIXED Mobile except aeronautical mobile (R)
MLI/39/15 **YEM/41/25** **MOD**	**5 730 - ~~5 950~~5 900** FIXED LAND MOBILE	**5 730 - ~~5 950~~5 900** FIXED MOBILE except aeronautical mobile (R)	**5 730 - ~~5 950~~5 900** FIXED Mobile except aeronautical mobile (R)
ALG/40/1 **MOD**	**5 730 - ~~5 950~~5 840** FIXED LAND MOBILE	**5 730 - ~~5 950~~5 840** FIXED Mobile except aeronautical mobile (R)	**5 730 - ~~5 950~~5 840** FIXED Mobile except aeronautical mobile (R)

kHz
5 450 - 7 100 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
ALG/40/2 **MOD**	~~**5 730**~~**5 840 - 5 950** ~~FIXED~~ ~~LAND MOBILE~~ BROADCASTING 521A	~~**5 730**~~**5 840 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING 521A	~~**5 730**~~**5 840 - 5 950** ~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521A
MLI/39/16 **MOD**	~~**5 730**~~**5 900 - 5 950** ~~FIXED~~ ~~LAND MOBILE~~ BROADCASTING 521A 521B	~~**5 730**~~**5 900 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING 521A 521B	~~**5 730**~~**5 900 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING 521A 521B
YEM/41/26 **MOD**	~~**5 730**~~**5 900 - 5 950** ~~FIXED~~ ~~LAND MOBILE~~ BROADCASTING	~~**5 730**~~**5 950 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING	~~**5 730**~~**5 900 - 5 950** ~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING
MLI/39/17 **ALG/40/3** **NOC**	**5 950 - 6 200**	BROADCASTING	
EQA/45/4 **NOC**	**6 765 - 7 000**	FIXED Land mobile 525 524	

MLI/39/18

ADD **521A** The procedures required for the utilization of the bands 5 900 - 5 950 kHz, 7 300 - 7 450 kHz, 9 350 - 9 500 kHz, 11 550 - 11 650 kHz, 12 050 - 12 075 kHz, 13 800 - 13 900 kHz, 15 600 - 15 700 kHz, 17 450 - 17 550 kHz, and 18 900 - 19 300 kHz by the broadcasting service and the withdrawal of stations in the fixed service (utilizing these bands) will be laid down in accordance with an appropriate timetable and under conditions to be determined by the next WARC HFBC.

ALG/40/4

ADD **521A** The conditions of use and the bringing into service of broadcasting stations in the frequency bands (in kHz) 5 840 - 5 950, 7 300 - 7 470, 9 300 - 9 500, 11 530 - 11 650, 12 050 - 12 140, 13 550 - 13 600, 13 800 - 13 900, 15 600 - 15 980, 17 450 - 17 550, 18 900 - 19 300 and the withdrawal of the services using those bands will be determined by the next competent HFBC conference.

MLI/39/19

ADD **521B**

Provided that no harmful interference is caused to the broadcasting service, the frequencies in the bands 5 900 - 5 950 kHz, 7 300 - 7 450 kHz, 9 350 - 9 500 kHz, 11 550 - 11 650 kHz, 12 050 - 12 075 kHz, 13 800 - 13 900 kHz, 15 600 - 15 700 kHz, 17 450 - 17 550 kHz and 18 900 - 19 300 kHz may be used by stations in the fixed and mobile services communicating within national frontiers, on condition that the total radiated power of each station does not exceed 27 dBW.

kHz
7 100 - 10 100

	Allocation to Services		
	Region 1	Region 2	Region 3
MLI/39/20 **NOC**	**7 100 - 7 300** BROADCASTING	**7 100 - 7 300** AMATEUR 510 528	**7 100 - 7 300** BROADCASTING
EQA/45/5 **NOC**	**7 300 - 8 100**	FIXED Land mobile 529	
MLI/39/21 **MOD**	**7 300 - ~~8 100~~7 450**	FIXED ~~Land mobile~~ BROADCASTING 521A 521B ~~529~~	
ALG/40/5 **MOD**	**7 300 - ~~8 100~~7 470**	~~FIXED~~ ~~Land Mobile~~ ~~529~~ BROADCASTING 521A	
MLI/39/22 **MOD**	**~~7 300~~7 450 - 8 100**	FIXED Land mobile 529	
ALG/40/6 **MOD**	**~~7 300~~7 470 - 8 100**	FIXED Land Mobile 529	
EQA/45/6 **NOC**	**8 100 - 8 195**	FIXED MARITIME MOBILE	
EQA/45/7 **NOC**	**9 040 - 9 500**	FIXED	
MLI/39/23 **MOD**	**9 040 - ~~9 500~~9 350**	FIXED	
ALG/40/7 **YEM/41/27** **MOD**	**9 040 - ~~9 500~~9 300**	FIXED	
ALG/40/8 **MOD**	**~~9 040~~9 300 - 9 500**	~~FIXED~~ BROADCASTING 521A	
YEM/41/28 **MOD**	**~~9 040~~9 300 - 9 500**	~~FIXED~~ BROADCASTING	
MLI/39/24 **MOD**	**~~9 040~~9 350 - 9 500**	~~FIXED~~ BROADCASTING 521A 521B	
MLI/39/25 **NOC**	**9 500 - 9 900**	BROADCASTING 530 531	

kHz
7 100 - 10 100 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/8 **NOC**	**9 900 - 9 995**	FIXED	
YEM/41/29 **MOD**	**9 900 - ~~9 995~~9 940**	~~FIXED~~ BROADCASTING	
YEM/41/30 **MOD**	**~~9 900~~9 940 - 9 995**	FIXED	

---

kHz
10 100 - 14 250

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/9 **NOC**	**10 100 - 10 150**	FIXED Amateur 510	
EQA/45/10 **NOC**	**10 150 - 11 175**	FIXED Mobile except aeronautical mobile (R)	
YEM/41/31 **MOD**	**10 150 - ~~11 175~~10 250**	FIXED Mobile except aeronautical mobile (R)	
YEM/41/32 **MOD**	**~~10 150~~10 250 -** **~~11 175~~10 500**	~~FIXED~~ BROADCASTING ~~Mobile except aeronautical mobile (R)~~	
YEM/41/33 **MOD**	**~~10 150~~10 500 - 11 175**	FIXED Mobile except aeronautical mobile (R)	
EQA/45/11 **NOC**	**11 400 - 11 650**	FIXED	
MLI/39/26 **MOD**	**11 400 - ~~11 650~~11 550**	FIXED	
ALG/40/9 **MOD**	**11 400 - ~~11 650~~11 530**	FIXED	
YEM/41/34 **MOD**	**11 400 - ~~11 650~~11 500**	FIXED	
YEM/41/35 **MOD**	**~~11 400~~11 500 - 11 650**	~~FIXED~~ BROADCASTING	
ALG/40/10 **MOD**	**~~11 400~~11 530 - 11 650**	~~FIXED~~ BROADCASTING 521A	
MLI/39/27 **MOD**	**~~11 400~~11 550 - 11 650**	~~FIXED~~ BROADCASTING 521A 521B	
MLI/39/28 **ALG/40/11** **NOC**	**11 650 - 12 050**	BROADCASTING 530 531	

kHz
10 100 - 14 250 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/12 **NOC**	**12 050 - 12 230**	FIXED	
MLI/39/29 **MOD**	**12 050 - ~~12 230~~12 075**	FIXED BROADCASTING 521A 521B	
ALG/40/12 **MOD**	**12 050 - ~~12 230~~12 140**	~~FIXED~~ BROADCASTING 521A	
YEM/41/36 **MOD**	**12 050 - ~~12 230~~12 120**	~~FIXED~~ BROADCASTING	
MLI/39/30 **MOD**	**~~12 050~~12 075 - 12 230**	FIXED	
YEM/41/37 **MOD**	**~~12 050~~12 120 - 12 230**	FIXED	
ALG/40/13 **MOD**	**~~12 050~~12 140 - 12 230**	FIXED	
EQA/45/13 **NOC**	**13 360 - 13 410**	FIXED RADIO ASTRONOMY 533	
EQA/45/14 **NOC**	**13 410 - 13 600**	FIXED Mobile except aeronautical mobile (R) 534	
ALG/40/14 **MOD**	**13 410 - ~~13 600~~13 550**	FIXED Mobile except aeronautical mobile (R) 534	
YEM/41/38 **MOD**	**13 410 - ~~13 600~~13 510**	FIXED Mobile except aeronautical mobile (R) ~~534~~	
YEM/41/39 **MOD**	**~~13 410~~13 510 - 13 600**	~~FIXED~~ BROADCASTING ~~Mobile except aeronautical mobile (R)~~ 534	
ALG/40/15 **MOD**	**~~13 410~~13 550 - 13 600**	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ ~~534~~ BROADCASTING 521A	
MLI/39/31 **ALG/40/16** **NOC**	**13 600 - 13 800**	BROADCASTING 531	
EQA/45/15 **NOC**	**13 800 - 14 000**	FIXED Mobile except aeronautical mobile (R)	

kHz
10 100 - 14 250 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
MLI/39/32 **MOD**	**13 800 - ~~14 000~~13 900**	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521A 521B	
ALG/40/17 **MOD**	**13 800 - ~~14 000~~13 900**	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521A	
YEM/41/40 **MOD**	**13 800 - ~~14 000~~13 900**	~~FIXED~~ ~~Mobile except~~ ~~aeronautical mobile (R)~~ BROADCASTING	
MLI/39/33 **ALG/40/18** **YEM/41/41** **MOD**	**~~13 800~~13 900 - 14 000**	FIXED Mobile except aeronautical mobile (R)	

kHz
14 250 - 18 068

	Allocation to Services		
	Region 1	Region 2	Region 3
YEM/41/42 **MOD**	**14 350 - ~~14 990~~14 500**	FIXED Mobile except aeronautical mobile (R)	
YEM/41/43 **MOD**	**~~14 350~~14 500 -** **~~14 990~~14 800**	~~FIXED~~BROADCASTING ~~Mobile except aeronautical mobile (R)~~	
YEM/41/44 **MOD**	**~~14 350~~14 800 - 14 990**	FIXED Mobile except aeronautical mobile (R)	
MLI/39/34 **NOC**	**15 100 - 15 600**	BROADCASTING 531	
MLI/39/35 **MOD**	**15 600 - ~~16 360~~15 700**	~~FIXED~~ BROADCASTING 521A 521B ~~536~~	
ALG/40/19 **MOD**	**15 600 - ~~16 360~~15 980**	~~FIXED~~ ~~536~~ BROADCASTING 521A	
YEM/41/45 **MOD**	**15 600 - ~~16 360~~15 980**	~~FIXED~~ BROADCASTING ~~536~~	

kHz
14 250 - 18 068 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/16 MOD	**15 600 - ~~16 360~~15 700**	~~FIXED~~ BROADCASTING ~~536~~	
MLI/39/36 EQA/45/17 MOD	**~~15 600~~15 700 - 16 360**	FIXED 536	
ALG/40/20 YEM/41/46 MOD	**~~15 600~~15 980 - 16 360**	FIXED 536	
MLI/39/37 ALG/40/21 YEM/41/47 MOD	**17 410 - ~~17 550~~17 450**	FIXED	
EQA/45/18 MOD	**17 410 - ~~17 550~~17 500**	FIXED	
MLI/39/38 MOD	**~~17 410~~17 450 - 17 550**	~~FIXED~~ BROADCASTING 521A 521B	
ALG/40/22 MOD	**~~17 410~~17 450 - 17 550**	~~FIXED~~ BROADCASTING 521A	
YEM/41/48 MOD	**~~17 410~~17 450 - 17 550**	~~FIXED~~ BROADCASTING	
EQA/45/19 MOD	**~~17 410~~17 500 - 17 550**	~~FIXED~~ BROADCASTING	
MLI/39/39 NOC	**17 550 - 17 900**	BROADCASTING 531	

kHz
18 068 - 21 870

	Allocation to Services		
	Region 1	Region 2	Region 3
YEM/41/49 **MOD**	**18 168 - ~~18 780~~18 480**	FIXED Mobile except aeronautical mobile	
YEM/41/50 **MOD**	**~~18 168~~18 480 - 18 780**	~~FIXED~~ BROADCASTING ~~Mobile except aeronautical mobile~~	
ALG/40/23 **MOD**	**18 900 - ~~19 680~~19 300**	~~FIXED~~ BROADCASTING 521A	
MLI/39/40 **MOD**	**18 900 - ~~19 680~~19 300**	~~FIXED~~ BROADCASTING 521A 521B	
YEM/41/51 **MOD**	**18 900 - ~~19 680~~19 300**	~~FIXED~~ BROADCASTING	
MLI/39/41 **ALG/40/24** **YEM/41/52** **MOD**	**~~18 900~~19 300 - 19 680**	FIXED	
YEM/41/53 **MOD**	**20 010 - ~~21 000~~20 200**	FIXED Mobile	
YEM/41/54 **MOD**	**~~20 010~~20 200 -** **~~21 000~~20 700**	~~FIXED~~ BROADCASTING ~~Mobile~~	
YEM/41/55 **MOD**	**~~20 010~~20 700 - 21 000**	FIXED Mobile	

YEM/41/8
MOD **555** Additional allocation: in Angola, Cameroon, the Congo, Madagascar, Mozambique, Somalia, Sudan, Tanzania~~,~~ and Chad ~~and Yemen (P.D.R. of)~~, the band 47 - 68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a permitted basis.

YEM/41/9
MOD **581** Additional allocation: in the Federal Republic of Germany, Spain, France, Ireland, Italy, Liechtenstein, Monaco, the United Kingdom~~,~~ and Switzerland ~~and Yemen (P.D.R.)~~, the band 87.5 - 88 MHz is also allocated to the land mobile service on a permitted basis and subject to agreement obtained under the procedure set forth in Article 14.

The following proposals also concern the frequency bands

dealt with in this document:

NZL/26/1
NOC

New Zealand proposes that there be no change to the existing bands allocated exclusively to HF broadcasting; that there be no consequential modifications to the Table of Frequency Allocations concerning the HF bands; that there be no change to the interpretation of the Tropical Broadcasting Zone as defined by RR 406 - 411 and the conditions for use of those bands in RR 503.

New Zealand also proposes that WARC-92 develop a Resolution to the next competent WARC that the question of implementation of the single-sideband technique be revisited, with the aim of accelerating the cessation of double-sideband transmissions, and the earliest introduction of a single-sideband.

PRG/37/11

Paraguay proposes:

- that no modifications should be made to any standard frequency and time signal service bands;
- that no modifications should be made to any amateur service bands;
- that the possibility be studied of aligning allocations at around 7 MHz for the three ITU Regions, having regard to the needs of the amateur service in Region 2;
- that no modifications be made to any internationally planned bands including allocations to the maritime mobile, aeronautical mobile (R) and aeronautical mobile (OR) services;
- that any extension of the frequency spectrum for the HF broadcasting service should be used for SSB transmission (-12 dB or better);
- that consideration be given to speeding up the compulsory changeover to the SSB transmission technique;
- that measures be adopted to encourage the manufacture of easy-to-operate receivers for SSB reception.

MLI/39/2

It is therefore essential for us that any extension should be carried out outside these tropical bands. Our Administration is in favour of maintaining the status quo.

MLI/39/3

For the extension required, we propose the following nine new extension bands:

- 5 900 - 5 950 kHz
- 7 300 - 7 450 kHz
- 9 350 - 9 500 kHz
- 11 550 - 11 650 kHz
- 12 050 - 12 075 kHz
- 13 800 - 13 900 kHz
- 15 600 - 15 700 kHz
- 17 450 - 17 550 kHz
- 18 900 - 19 300 kHz

This allocation would make it possible to meet a maximum of requirements, particularly for national coverages. We propose further that these new bands should be used for the purpose of meeting DSB requirements and permitting the gradual introduction of SSB, the year 2015 being maintained as the initial deadline for the cessation of DSB emissions.

MLI/39/4

The procedures required for the use of these bands by the broadcasting service and for their withdrawal from stations in the fixed service will be laid down in accordance with an appropriate timetable and in conditions to be determined by the next WARC HFBC.

YEM/41/2

The Yemeni Administration supports the possible extension of frequency allocations in HF broadcasting bands and in this regard we would like to submit our proposals as shown in Annex 1.

PAK/44/1

This administration is of the view that the extension of the HF broadcasting should be preferably adjacent to the existing bands outside the maritime mobile, amateur and amateur-satellite services bands and the allocation should be on a worldwide basis. Based on these considerations, the following extensions are proposed for exclusive HF broadcasting service:

5 900	- 5 950 kHz	50 kHz
7 300	- 7 525 kHz	225 kHz
9 300	- 9 500 kHz	200 kHz
11 500	- 11 650 kHz	150 kHz
12 050	- 12 150 kHz	100 kHz
13 800	- 13 900 kHz	100 kHz
15 600	- 15 900 kHz	300 kHz
17 450	- 17 550 kHz	100 kHz
18 900	- 19 300 kHz	400 kHz

PAK/44/2

However in order to meet the pressing requirement of amateurs, it is proposed to delete the allocation to broadcasting service from 7 100 to 7 200 kHz and allocate this band to amateur and amateur-satellite service. It is also proposed to delete the allocation to broadcasting from 25 670 kHz to 26 100 kHz and allocate this band to fixed and mobile services on primary basis. A minimum period of ten years be given for the new allocation to HF broadcasting service to come into force.

One aspect to be considered under this agenda item is the reservation of new HFBC extension bands for exclusive use with SSB operation and the time frame for introduction of SSB in all of HFBC bands. In accordance with Recommendation No. 515, new HF broadcasting transmitters to be installed after 31 December 1990 should have the capability of transmission either in both SSB and DSB mode or SSB mode alone. Moreover, Resolution No. 517 of WARC HFBC-87 calls for introduction of SSB transmission in broadcasting bands as per characteristics given in Appendix 45 and replacement of all DSB emissions with SSB by 31 December 2015. Some administrations are proposing for earlier implementation of this substitution for spectrum efficiently. It may be realized that for developing countries, it would be difficult to substitute SSB for DSB in all exclusive HF broadcasting service bands in a shorter time frame and as such we do not support advancement in these dates.

VUT/48/1

We support proposals leading to the eventual worldwide introduction of SSB emissions for HF broadcasting as a positive step towards mitigating the inevitable future congestion of the HF bands. We are confident that cheap SSB receivers will follow the introduction of SSB services by the larger international broadcasting services thus allowing the less-developed countries, such as the Pacific Island nations, to follow suit.

Due to the difficulties in providing adequate nationwide broadcast coverage using MF or VHF we consider the continued use of frequencies in the bands specified in RR 2669 of importance to Vanuatu and consequently would prefer the retention of Footnote RR 503 relating to broadcasting in the Tropical Zone. Vanuatu uses or is coordinating use of the following "Tropical Zone" bands:

2 300 - 2 495 kHz	(Specifically 2 485 kHz)
3 200 - 3 400 kHz	(Specifically 3 330 kHz)
4 750 - 4 995 kHz	(Specifically 4 960 kHz)
5 005 - 5 060 kHz	(Specifically 5 025 kHz)

VUT/48/3

Consequently, we would seek to maintain the current allocations from 3.5 - 8 MHz. We are particularly interested in maintaining "fixed allocations" (without the addition of HFBC) for the following bands:

3 500 - 3 900 kHz	
4 438 - 4 650 kHz	
4 850 - 4 995 kHz	with the retention of RR 503 (proposal VUT/48/2)
5 250 - 5 450 kHz	
5 730 - 5 950 kHz	
6 765 - 7 000 kHz	
7 300 - 8 100 kHz	

Burkina Faso proposes:

BFA/49/1

- that no frequency band below 10 MHz currently allocated to the fixed service should be used for any extensions of the HF broadcasting bands;

BFA/49/2

- that no changes should be made to the status of broadcasting in the Tropical Zone, with particular reference to No. 503 and Nos. 2666 to 2673 of the Radio Regulations;

BFA/49/3

- that those parts of the bands above 10 MHz which might be allocated for purposes of extending the broadcasting bands should be limited in such a way as to permit the operation of the existing fixed services. In this connection, agreements for the transfer of services in operation should take account of the procedures of Resolution Nos. 8 and 9 of WARC-79, particularly with regard to the time limits.

INS/52/2

In Indonesia HF-band for fixed and mobile services is still widely utilized and is considered potential to support the communication for government (including the national defence) and other requirements. Indonesia can only consider the release of part of the HF spectrum for fixed and mobile services above 10 MHz for the HF broadcasting service.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/1A1-E
17 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS

OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS BELOW 137 MHz)

Attachment : Proposals by Administrations.

ARTICLE 8

Frequency Allocations

Section IV. Table of Frequency Allocations

E/25/1
B/30/1
SUP **464A**
Mob-87

B/30/2
SUP **481**

EUR/20/24
MOD **503** For the conditions for the use of the bands 2 300 - 2 495 kHz (2 498 kHz in Region 1) and 3 200 - 3 400 kHz ~~4 750 - 4 995 kHz and 5 005 - 5 060 kHz~~ by the broadcasting service, see Nos. 406 to 410, 411 and 2666 to 2673.

---

kHz
2501 - 3 230

PNG/16/1
NOC

Allocation to Services		
Region 1	Region 2	Region 3
3 200 - 3 230	FIXED MOBILE except aeronautical mobile (R) BROADCASTING 503 506	

---

kHz
3 230 - 4 063

PNG/16/2
NOC

Allocation to Services		
Region 1	Region 2	Region 3
3 230 - 3 400	FIXED MOBILE except aeronautical mobile BROADCASTING 503 506 508	

---

kHz
4 063 - 5 450

	Allocation to Services		
	Region 1	Region 2	Region 3
PNG/16/3 **NOC**	**4 750 - 4 850** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING 503	**4 750 - 4 850** FIXED MOBILE except aeronautical mobile (R) BROADCASTING 503	**4 750 - 4 850** FIXED BROADCASTING 503 Land Mobile
EUR/20/22 **MOD**	**4 750 - 4 850** FIXED AERONAUTICAL MOBILE (OR) LAND MOBILE BROADCASTING ~~503~~	**4 750 - 4 850** FIXED MOBILE except aeronautical mobile (R) BROADCASTING ~~503~~	**4 750 - 4 850** FIXED BROADCASTING ~~503~~ Land Mobile
PNG/16/4 **NOC**	**4 850 - 4 995**	FIXED LAND MOBILE BROADCASTING 503	
EUR/20/23 **MOD**	**4 850 - 4 995**	FIXED LAND MOBILE BROADCASTING ~~503~~	
PNG/16/5 **NOC**	**5 005 - 5 060**	FIXED BROADCASTING 503	
EUR/20/25 **MOD**	**5 005 - 5 060**	FIXED BROADCASTING ~~503~~	

kHz
5 450 - 7 100

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/16 **USA/12/4** **KRE/17/1** **MOD**	**5 730 - ~~5 950~~ 5 900** FIXED LAND MOBILE	**5 730 - ~~5 950~~ 5 900** FIXED MOBILE except aeronautical mobile (R)	**5 730 - ~~5 950~~ 5 900** FIXED Mobile except aeronautical mobile (R)
J/27/2 **MOD**	**5 730 - ~~5 950~~5 840** FIXED LAND MOBILE	**5 730 - ~~5 950~~5 840** FIXED MOBILE except aeronautical mobile (R)	**5 730 - ~~5 950~~5 840** FIXED Mobile except aeronautical mobile (R)
J/27/3 **MOD**	**~~5 730~~5 840 - 5 950** ~~FIXED~~ ~~LAND MOBILE~~ BROADCASTING 521A 521B	**~~5 730~~5 840 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING 521B 521C	**~~5 730~~5 840 - 5 950** ~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521B 521D
URS/7/17 **MOD**	**~~5 730~~ 5 900 - 5 950** ~~FIXED~~ ~~LAND MOBILE~~ BROADCASTING 521A	**~~5 730~~ 5 900 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING 521A	**~~5 730~~ 5 900 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING 521A
USA/12/5 **MOD**	**~~5 730~~5 900 - 5 950** ~~FIXED~~ ~~LAND MOBILE~~ BROADCASTING 521A 521B 521C	**~~5 730~~5 900 - 5 950** ~~FIXED~~ ~~MOBILE except aeronautical mobile (R)~~ BROADCASTING 521A 521B 521C	**~~5 730~~5 900 - 5 950** ~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521A 521B 521C
KRE/17/2 **MOD**	**~~5 950~~5 900 - 6 200**	BROADCASTING	
URS/7/18 **USA/12/6** **NOC**	**5 950 - 6 200**	BROADCASTING	
KEN/13/1 **NOC**	**6 685 - 6 765**	AERONAUTICAL MOBILE (OR)	
PNG/16/6 **KEN/13/2** **NOC**	**6 765 - 7 000**	FIXED Land Mobile 525 524	
USA/12/10 **EUR/20/28** **MOD**	**6 765 - ~~7 000~~6 900**	FIXED Land Mobile 525 524	
USA/12/11 **EUR/20/29** **MOD**	**~~6 765~~6 900 - 7 000**	~~FIXED~~ AMATEUR 510 AMATEUR-SATELLITE Land Mobile 525 ~~524~~ 525A	

kHz
5 450 - 7 100 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/12 **KEN/13/3** **PNG/16/7** **NOC**	**7 000 - 7 100**	AMATEUR 510 AMATEUR-SATELLITE 526 527	

URS/7/19
ADD **521A** The bringing into operation of stations of the broadcasting service in the bands 5 900 - 5 950, 7 300 - 7 450, 9 350 - 9 500, 11 550 - 11 650, 12 050 - 12 075, 15 600 - 15 700, 17 450 - 17 550 and 18 900 - 19 300 kHz and the removal from these bands of stations belonging to the fixed service shall be effected within the time-limits and on the conditions established by WARC HFBC.

USA/12/7
ADD **521A** Emissions limited to single-sideband with characteristics specified in Appendix 45 to the Radio Regulations.

J/27/4
ADD **521A** The band 5 840 - 5 950 kHz in Region 1 is allocated to the fixed and land mobile services on a primary basis subject to the procedure described in Resolution No. J1. The date of commencement of operations in the broadcasting service in this frequency band shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution No. J1, of all assignments to stations in the fixed and land mobile services operating in accordance with the Table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by broadcasting operations in this frequency band.

USA/12/8
ADD **521B** The band 5 900 - 5 950 kHz is allocated to the fixed and mobile services on a primary basis subject to the procedure described in Resolution No. BBB. Within this band, the date of commencement of operations in the broadcasting service shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution No. BBB, of all assignments to stations in the fixed and mobile services operating in accordance with the Table of Frequency Allocations and other provisions of the Radio Regulations, which are recorded in the Master Register and which may be affected by broadcasting operations.

J/27/5
ADD **521B** The use of frequency bands 5 840 - 5 950 kHz, 7 300 - 7 600 kHz, 9 400 - 9 500 kHz, 9 900 - 9 995 kHz, 11 570 - 11 650 kHz, 12 050 - 12 110 kHz, 13 570 - 13 600 kHz, 13 800 - 13 900 kHz, 15 600 - 15 995 kHz and 17 520 - 17 550 kHz by the broadcasting service is limited to single-sideband emission with characteristics specified in Appendix 45 to the Radio Regulations.

USA/12/9
ADD **521C** On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 5 900 - 5 950 kHz, 7 400 - 7 525 kHz, 9 350 - 9 500 kHz, 11 550 - 11 650 kHz, 13 800 - 13 900 kHz, 15 600 - 15 700 kHz, 17 450 - 17 550 kHz, and 18 900 - 19 300 kHz, may be used by stations in the fixed and mobile services. The broadcasting service will exercise technical restraints that facilitate access to the bands by the fixed and mobile services. Use of these frequency bands by the fixed and mobile services will take appropriate account of broadcast schedules published in accordance with the Radio Regulations.

J/27/6
ADD **521C** The band 5 840 - 5 950 kHz in Region 2 is allocated to the fixed and mobile (except for the aeronautical mobile (R)) services on a primary basis subject to the procedure described in Resolution No. J1. The date of commencement of operations in the broadcasting service in this frequency band shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution No. J1, of all assignments to stations in the fixed and mobile (except for the aeronautical mobile (R)) services operating in accordance with the Table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by broadcasting operations in this frequency band.

J/27/7
ADD **521D** The band 5 840 - 5 950 kHz in Region 3 is allocated to the fixed service on a primary basis and the mobile (except for the aeronautical mobile (R)) services on a secondary basis subject to the procedure described in Resolution No. J1. The date of commencement of operations in the broadcasting service in this frequency band shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution No. J1, of all assignments to stations in the fixed and mobile (except for the aeronautical mobile (R)) services operating in accordance with the Table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by broadcasting operations in this frequency band.

USA/12/13
ADD **525A** The band 6 900 - 7 000 kHz is allocated to the fixed service on a primary basis subject to the procedure described in Resolution No. BBB. Within this band, the date of commencement of operations in the amateur service shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution No. BBB, of all assignments to stations in the fixed service operating in accordance with the Table and other provisions of the Radio Regulations, which are recorded in the Master Register and which may be affected by amateur operations.

EUR/20/31
ADD **525A** The band 6 900 - 7 000 kHz is allocated to the fixed service on a primary basis subject to the procedure described in Resolution No. AAA. Within this band, the date of commencement of operations in the amateur and amateur-satellite services shall not be earlier than 1 January 2000.

KEN/13/4
NOC **526** Additional allocation: in Angola, Iraq, Kenya, Rwanda, Somalia and Togo, the band 7 000 - 7 050 kHz is also allocated to the fixed service on a primary basis.

kHz
7 100 - 10 100

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/20 **NOC**	**7 100 - 7 300** BROADCASTING	**7 100 - 7 300** AMATEUR 510 528	**7 100 - 7 300** BROADCASTING
USA/12/14 **MOD**	**7 100 - ~~7 300~~7 200** ~~BROADCASTING~~ AMATEUR 510 AMATEUR SATELLITE	**7 100 - ~~7 300~~7 200** AMATEUR 510 AMATEUR SATELLITE ~~528~~	**7 100 - ~~7 300~~7 200** ~~BROADCASTING~~ AMATEUR 510 AMATEUR-SATELLITE
PNG/16/8 **MOD**	**7 100 - ~~7 300~~7 200** ~~BROADCASTING~~ AMATEUR 510	**7 100 - ~~7 300~~7 200** AMATEUR 510 ~~528~~ 528A	**7 100 - ~~7 300~~7 200** ~~BROADCASTING~~ AMATEUR 510 528A
EUR/20/30 **MOD**	**7 100 - 7 300** BROADCASTING	**7 100 - 7 300** ~~AMATEUR 510~~ BROADCASTING ~~528~~ 528A	**7 100 - 7 300** BROADCASTING
KRE/17/3 **MOD**	**7 100 - ~~7 300~~7 400** BROADCASTING	**7 100 - 7 300** AMATEUR 510 528	**7 100 - ~~7 300~~7 400** BROADCASTING
USA/12/15 **MOD**	**~~7 100~~7 200 - 7 300** BROADCASTING	**~~7 100~~7 200 - 7 300** ~~AMATEUR 510~~ BROADCASTING ~~528~~ 528A	**~~7 100~~7 200 - 7 300** BROADCASTING
PNG/16/11 **MOD**	**~~7 100~~7 200 - 7 300** BROADCASTING	**~~7 100~~7 200 - 7 300** ~~AMATEUR 510~~ BROADCASTING ~~528~~	**~~7 100~~7 200 - 7 300** BROADCASTING
URS/7/21 **MOD**	**7 300 - ~~8 100~~ 7 450**	FIXED ~~Land Mobile~~ BROADCASTING 521A ~~529~~	
USA/12/16 **MOD**	**7 300 - ~~8 100~~7 525**	~~FIXED~~ ~~Land Mobile~~ BROADCASTING 528B ~~529~~ 521C 528C	

kHz
7 100 - 10 ~~100~~ (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
PNG/16/12 MOD	**7 300 - ~~8 100~~7 400**	BROADCASTING ~~FIXED~~ ~~Land Mobile~~ ~~529~~528B	
J/27/8 MOD	**7 300 - ~~8 100~~7 600**	~~FIXED~~ ~~Land Mobile~~ BROADCASTING 521B 529B ~~529~~	
PNG/16/13 MOD	**~~7 300~~7 400 - 8 100**	FIXED Land Mobile 529	
KRE/17/4 MOD	**~~7 300~~7 400 - 8 100** FIXED Land Mobile	**7 300 - 8 100** FIXED Land Mobile	**~~7 300~~7 400 - 8 100** FIXED Land Mobile 529
URS/7/22 MOD	**~~7 300~~ 7 450 - 8 100**	FIXED Land Mobile 529	
USA/12/17 MOD	**~~7 300~~7 525 - 8 100**	FIXED Land Mobile 529	
J/27/9 MOD	**~~7 300~~7 600 - 8 100**	FIXED Land Mobile 529	
URS/7/23 USA/12/22 MOD	**9 040 - ~~9 500~~ 9 350**	FIXED	
KOR/8/1 KRE/17/5 J/27/11 MOD	**9 040 - ~~9 500~~9 400**	FIXED	
PNG/16/15 MOD	**9 040 - 9 500**	FIXED Land Mobile 529B	
URS/7/24 MOD	**~~9 040~~ 9 350 - 9 500**	~~FIXED~~ BROADCASTING 521A	
USA/12/23 MOD	**~~9 040~~9 350 - 9 500**	~~FIXED~~ BROADCASTING 521A 521C 528C	
KOR/8/2 MOD	**~~9 500~~9 400 - 9 900**	BROADCASTING 530 MOD 531	

kHz
7 100 - 10 100 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
KRE/17/6 **MOD**	**~~9 500~~9 400 - 9 900**	BROADCASTING 530 531	
J/27/12 **MOD**	**~~9 040~~9 400 - 9 500**	~~FIXED~~ BROADCASTING 521B 529C	
URS/7/25 **USA/12/24** **NOC**	**9 500 - 9 900**	BROADCASTING 530 531	
PNG/16/16 **MOD**	**9 900 - 9 995**	FIXED Land Mobile 529B	
J/27/13 **MOD**	**9 900 - 9 995**	~~FIXED~~ BROADCASTING 521B 529C	

USA/12/18
PNG/16/10
EUR/20/32
SUP **528**

USA/12/19
ADD **528A** In Region 2 the band 7 200 - 7 300 kHz is allocated to the amateur service on a primary basis until 1 July 2007, which is the changeover date for the fixed and mobile services as described in Resolution No. BBB. Within this band, the commencement of operations in the broadcasting service shall not be earlier than that date.

PNG/16/9
ADD **528A** In Regions 1 and 3, the band 7 100 - 7 200 kHz is allocated to the broadcasting service until 1 January 2000. Within this band, the date of commencement of operations in the amateur service shall not be earlier than 1 January 2000.

EUR/20/33
ADD **528A** In Region 2 the band 7 100 - 7 300 kHz is allocated to the amateur service on a primary basis until 1 January 2000. In accordance with Resolution No. AAA, within this band the commencement of operations in the broadcasting service shall not be earlier than that date.

USA/12/20
ADD **528B** Emissions in the band 7 400 - 7 525 kHz are limited to single-sideband with characteristics specified in Appendix 45 to the Radio Regulations.

PNG/16/14
ADD **528B** The band 7 300 - 7 400 kHz is allocated for fixed and mobile services subject to the procedure described in Resolution No. 8. Within this band, the date of commencement of operations in the broadcasting service shall not be earlier than 1 January 2000.

USA/12/21
ADD **528C** The bands 7 300 - 7 525 kHz, 9 350 - 9 500 kHz, 11 550 - 11 650 kHz, 13 800 - 13 900 kHz, 15 600 - 15 700 kHz, 17 450 - 17 550 kHz, and 18 900 - 19 300 kHz are allocated to the fixed service on a primary basis subject to the procedure described in Resolution No. BBB. Within these bands, the date of commencement of operations in the broadcasting service shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution No. BBB, of all assignments to stations in the fixed service operating in accordance with the Table of Frequency Allocations and other provisions of the Radio Regulations, which are recorded in the Master Register and which may be affected by broadcasting operations.

PNG/16/17
ADD **529B** The band 9 040 - 9 500 kHz and 9 900 - 9 995 kHz may be used by the land mobile service on a secondary basis.

J/27/10
ADD **529B** The frequency band 7 300 - 7 600 kHz is allocated to the fixed service on a primary basis and the land mobile service on a secondary basis subject to the procedure described in Resolution No. J1. The date of commencement of operations in the broadcasting service in this frequency band shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution No. J1, of all assignments to stations in the fixed and land mobile services operating in accordance with the table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by broadcasting operations in this frequency band.

J/27/14
ADD **529C** The frequency bands 9 400 - 9 500 kHz, 9 900 - 9 995 kHz, 11 570 - 11 650 kHz, 12 050 - 12 110 kHz, 15 600 - 15 995 kHz and 17 520 - 17 550 kHz are allocated to the fixed service on a primary basis subject to the procedure described in Resolution No. J1. The date of commencement of operations in the broadcasting service in those frequency bands shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution No. J1, of all assignments to stations in the fixed service operating in accordance with the Table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by broadcasting operations in those frequency bands.

Either

EUR/20/17
MOD **530** On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands 9 775 - 9 900 kHz, 11 650 - 11 700 kHz, and 11 975 - 12 050 kHz [list all new HFBC extension bands except those mentioned in Footnote 530A]* may be used by stations in the fixed service communicating only within the boundary of the country in which they are located, each station using a total radiated power not exceeding 24 dBW.

Or

EUR/20/18
ADD **530A** On condition that harmful interference is not caused to the broadcasting service, frequencies in the bands [4 550-4 650 kHz and 5 840-5 950 kHz]* may be used by stations in the fixed and land mobile services communicating only within the boundary of the country in which they are located, each station not using a total radiated power exceeding 24 dBW.KOR/8/16

KOR/8/16
MOD **531** The bands 9 400 - 9 500 kHz, 9 775 - 9 900 kHz, 10 150 - 10 250 kHz, ~~11 650~~11 550 - 11 700 kHz, 11 975 - ~~12 050~~12 150 kHz, ~~13 600~~13 500 - 13 800 kHz, 14 800 - 14 990 kHz, 15 450 - ~~15 600~~15 700 kHz, ~~17 550~~17 480 - 17 700 kHz and 21 750 - 21 850 kHz are allocated to the fixed service on a primary basis subject to the procedure described in Resolution 8. The use of these bands by the broadcasting service shall be subject to provisions established by the World Administrative Radio Conference for the Planning of the HF Bands Allocated to the Broadcasting Service (see Resolution 508). The provisions of Resolution 512 (HFBC-87) also apply. Within these bands, the date of commencement of operations in the broadcasting service on a planned channel shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution 8, of all assignments to stations in the fixed service operating in accordance with the Table and other provisions of the Radio Regulations, which are recorded in the Master Register and which may be affected by broadcasting operations on that channel.

EUR/20/19
ADD **531A** The bands [list relevant new extension bands]* are allocated to the [list relevant services and status]* subject to the procedures described in Resolution No. AAA. This provision shall terminate on 1 January 2000.

EUR/20/20
ADD **531B** The use of the bands [list all new HFBC extension bands]* by the broadcasting services shall be subject to provisions to be established by a competent WARC. Within these bands the date of commencement of operations in the broadcasting service on a planned channel shall not be earlier than the date of completion of satisfactory transfer, according to the procedures described in Resolution No. AAA.

EUR/20/21
ADD **531C** In the frequency bands [list all new HFBC extension bands]* emissions from stations of the broadcasting service shall be limited to single sideband with charteristics as specified in Appendix 45.

kHz
10 100 - 14 250

	Allocation to Services		
	Region 1	Region 2	Region 3
KOR/8/3 MOD	10 150 - ~~11 175~~10 250	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING MOD 531	
KOR/8/4 MOD	~~10 150~~10 250 - 11 175	FIXED Mobile except aeronautical mobile (R)	
URS/7/26 KOR/8/5 USA/12/25 MOD	11 400 - ~~11 650~~ 11 550	FIXED	
KRE/17/7 MOD	11 400 - ~~11 650~~11 600	FIXED	
J/27/15 MOD	11 400 - ~~11 650~~11 570	FIXED	
URS/7/27 MOD	~~11 400~~ 11 550 - 11 650	~~FIXED~~ BROADCASTING 521A	
USA/12/26 MOD	~~11 400~~11 550 - 11 650	~~FIXED~~ BROADCASTING 521A 521C 528C	
J/27/16 MOD	~~11 400~~11 570 - 11 650	~~FIXED~~ BROADCASTING 521B 529C	
KOR/8/6 MOD	~~11 650~~11 550 - ~~12 050~~12 150	BROADCASTING 530 MOD 531	
KRE/17/8 MOD	~~11 650~~11 600 - ~~12 050~~12 100	BROADCASTING 530 531	
URS/7/28 USA/12/27 NOC	11 650 - 12 050	BROADCASTING 530 531	
URS/7/29 MOD	12 050 - ~~12 230~~ 12 075	~~FIXED~~ BROADCASTING 521A	
J/27/17 MOD	12 050 - ~~12 230~~12 110	~~FIXED~~ BROADCASTING 521B 529C	
URS/7/30 MOD	~~12 050~~ 12 075 - 12 230	FIXED	
KRE/17/9 MOD	~~12 050~~12 100 - 12 230	FIXED	
J/27/18 MOD	~~12 050~~12 110 - 12 230	FIXED	
KOR/8/7 MOD	~~12 050~~12 150 - 12 230	FIXED	

kHz
10 100 - 14 250 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
KOR/8/8 MOD	**13 410 - ~~13 600~~13 500**	FIXED Mobile except aeronautical mobile (R) ~~534~~	
J/27/19 MOD	**13 410 - ~~13 600~~13 570**	FIXED Mobile except aeronautical mobile (R) 534	
KOR/8/9 MOD	**~~13 600~~13 500 - 13 800**	BROADCASTING MOD 531 534	
J/27/20 MOD	**~~13 410~~13 570 - 13 600**	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521B 534A ~~534~~	
USA/12/28 NOC	**13 600 - 13 800**	BROADCASTING 531	
USA/12/29 MOD	**13 800 - ~~14 000~~13 900**	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521A 521C 528C	
J/27/21 MOD	**13 800 - ~~14 000~~13 900**	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING 521B 534A	
USA/12/30 J/27/22 MOD	**~~13 800~~13 900 - 14 000**	FIXED Mobile except aeronautical mobile (R)	

B/30/3
SUP **532**

J/27/23
ADD **534A** The frequency bands 13 570 - 13 600 kHz and 13 800 - 13 900 kHz are allocated to the fixed service on a primary basis and the mobile (except for the aeronautical mobile (R)) service on a secondary basis subject to the procedure described in Resolution No. J1. The date of commencement of operations in the broadcasting service in those frequency bands shall not be earlier than the date of completion of satisfactory transfer, in accordance with the procedure described in Resolution No. J1, of all assignments to stations in the fixed and mobile (except for the aeronautical mobile (R)) services operating in accordance with the Table and other provisions of the Radio Regulations which are recorded in the Master Register and which may be affected by broadcasting operations in those frequency bands.

kHz
14 250 - 18 068

	Allocation to Services		
	Region 1	Region 2	Region 3
KOR/8/10 **MOD**	**14 350 - ~~14 990~~14 800**	FIXED Mobile except aeronautical mobile (R)	
KOR/8/11 **MOD**	**~~14 350~~14 800 - 14 990**	~~FIXED~~ ~~Mobile except aeronautical mobile (R)~~ BROADCASTING MOD 531	
URS/7/31 **USA/12/31** **NOC**	**15 100 - 15 600**	BROADCASTING 531	
KOR/8/12 **MOD**	**15 100 - ~~15 600~~15 700**	BROADCASTING MOD 531	
KRE/17/10 **MOD**	**15 100 - ~~15 600~~15 700**	BROADCASTING 531	
URS/7/32 **MOD**	**15 600 - ~~16 360~~ 15 700**	~~FIXED~~ BROADCASTING 521A ~~536~~	
USA/12/32 **MOD**	15 600 - **~~16 360~~15 700**	~~FIXED~~ ~~536~~ BROADCASTING 521A 521C 528C	
J/27/24 **MOD**	**15 600 - ~~16 360~~15 995**	~~FIXED~~ BROADCASTING 521B 529C ~~536~~	
URS/7/33 **KOR/8/13** **USA/12/33** **KRE/17/11** **MOD**	**~~15 600~~ 15 700 - 16 360**	FIXED 536	
J/27/25 **MOD**	**~~15 600~~15 995 - 16 360**	FIXED 536	
URS/7/34 **USA/12/34** **MOD**	**17 410 - ~~17 550~~ 17 450**	FIXED	
KOR/8/14 **MOD**	**17 410 - ~~17 550~~17 480**	FIXED	
KRE/17/12 **MOD**	**17 410 - ~~17 550~~17 500**	FIXED	
J/27/26 **MOD**	**17 410 - ~~17 550~~17 520**	FIXED	
URS/7/35 **MOD**	**~~17 410~~ 17 450 - 17 550**	~~FIXED~~ BROADCASTING 521A	
USA/12/35 **MOD**	**~~17 410~~17 450 - 17 550**	~~FIXED~~ BROADCASTING 521A 521C 528C	

kHz
14 250 - 18 068 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
KOR/8/15 **MOD**	**~~17 550~~17 480 - 17 900**	BROADCASTING MOD 531	
KRE/17/13 **MOD**	**~~17 550~~17 500 - 17 900**	BROADCASTING 531	
J/27/27 **MOD**	**~~17 410~~17 520 - 17 550**	~~FIXED~~ BROADCASTING 521B 529C	
URS/7/36 **USA/12/36** **NOC**	**17 550 - 17 900**	BROADCASTING 531	

KRE/15/1
MOD **535** Additional allocation: in Afghanistan, China, the Ivory Coast, Iran, Dem. People's Rep. of Korea and the U.S.S.R., the band 14 250 - 14 350 kHz is also allocated to the fixed service on a primary basis. Stations of the fixed service shall not use a radiated power exceeding 24 dBW.

---

kHz
18 068 - 21 870

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/37 **MOD**	**18 900 - ~~19 680~~ 19 300**	~~FIXED~~ BROADCASTING 521A	
USA/12/37 **MOD**	**18 900 - ~~19 680~~19 300**	~~FIXED~~ BROADCASTING 521A 521C 528C	
URS/7/38 **USA/12/38** **MOD**	**~~18 900~~ 19 300 - 19 680**	FIXED	

B/30/4
SUP **537**

B/30/4
SUP **543**

B/30/3
SUP **544**

E/25/9
MOD **545** The band 25 550 - 25 600 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis subject to the procedure described in Resolution 8. The use of this band by the radio astronomy service shall be subject to the completion of the satisfactory transfer of all assignments to stations in the fixed and mobile, except aeronautical mobile, services operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution 8. ~~The band 25 600 - 25 670 kHz is allocated to the broadcasting service on a primary basis, subject to provisions to be established by the world administrative radio conference for the planning of HF bands allocated to the broadcasting service (see Resolution 508).~~ After completion of all the above-mentioned provisions, all emissions capable of causing harmful interference to the radio astronomy service in the band 25 550 - 25 670 kHz shall be avoided. The use of passive sensors by other services will also be authorized.

B/30/5
MOD **545** ~~The band 25 550 - 25 600 kHz is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis subject to the procedure described in Resolution 8. The use of this band by the radio astronomy service shall be subject to the completion of the satisfactory transfer of all assignments to stations in the fixed and mobile, except aeronautical mobile, services operating in this band and recorded in the Master Register, in accordance with the procedure described in Resolution 8.~~ The band 25 600 - 25 670 kHz is allocated to the broadcasting service on a primary basis, subject to provisions to be established by the world administrative radio conference for the planning of HF bands allocated to the broadcasting service (see Resolutions 508 and 512). The date for the stations of the broadcasting service to cease their transmissions should be the same as that established to the broadcasting stations to start their transmissions in the expanded bands by the WARC-79. After ~~completion of all the above-mentioned provisions~~ this date, all emissions capable of causing harmful interference to the radio astronomy service ~~in the band 25 500 - 25 700 kHz~~ shall be avoided. The use of passive sensors by other services will also be authorized.

E/25/2
B/30/6
SUP **551**

B/30/6
SUP **569**

B/30/7
MOD **572**

The frequency 75 MHz is assigned to aeronautical marker beacons. Administrations shall refrain from assigning frequencies close to the limits of the guardband to stations of other services which, because of their power or geographical position, might cause harmful interference or otherwise place a constraint on marker beacons.

~~Until 31 December 1989, administrations in Regions 2 and 3 should refrain from assigning frequencies to stations of other services in the bands 74.6 - 74.8 MHz and 75.2 - 75.4 MHz.~~

~~In the future every~~ Every effort should be made to improve further the characteristics of airborne receivers and to limit the power of transmitting stations close to the limits 74.8 MHz and 75.2 MHz.

MHz
75.2 - 137

B/30/9
MOD

Allocation to Services		
Region 1	Region 2	Region 3
136 - 137	AERONAUTICAL MOBILE (R) Fixed Mobile except aeronautical mobile (R) Space Operation (space-to-Earth) Meteorological-Satellite (space-to-Earth) Space Research (space-to-Earth) 591 594A~~595~~	

E/25/8
MOD **581**

Additional allocation: in the Federal Republic of Germany, ~~Spain,~~ France, Ireland, Italy, Liechtenstein, Monaco, the United Kingdom, Switzerland and Yemen (P.D.R.), the band 87.5 - 88 MHz is also allocated to the land mobile service on a permitted basis and subject to agreement obtained under the procedure set forth in Article 14.

E/25/3
B/30/8
SUP **582**

E/25/10
MOD **584**

Broadcasting stations in the band ~~100~~ 87.5 - 108 MHz in Region 1 shall be established and operated in accordance with an agreement and associated plan for the band 87.5 - 108 MHz to be drawn up by a regional broadcasting conference (see Resolution 510). ~~Prior to the date of entry into force of this agreement, broadcasting stations may be introduced subject to agreement between administrations concerned, on the understanding that such an operation shall in no case prejudice the establishment of the plan.~~

B/30/11
SUP **595**
Mob-87

The following proposals also concern the frequency bands

dealt with in this document:

NIG/9/1

The Nigerian Administration has considered Recommendation No. 511 as adopted by WARC-HFBC 87 relating to the possible extension of the frequency spectrum allocated exclusively to HF broadcasting. It is noted that this extension started with the WARC-79 when about 40% of additional spectrum required was provided. It is also noted that the growth in the total amount of HF broadcasting continues to increase; particularly in the developed world. However, it should be realized that in the developing countries particularly in Nigeria, the HF band is shared between broadcasting and fixed services. This situation will conceivably persist for quite a while, and should therefore be adequately recognized by WARC-92 in the possible expansion of the HF band for broadcasting services.

Furthermore, HF broadcasting in Nigeria utilizes AM-DSB modulation, any proposal that demands changeover to or increased use of SSB modulation must be carefully considered in the light of the needs of the developing countries.

In summary, the Nigerian Administration does not support any extension at frequencies below 10 MHz. Due consideration will be given to any proposal on extension above this limit. In particular, the band designated for the tropical zone should be left intact. A moratorium period of about 20 years is recommended for any possible phasing out of the DSB system.

KEN/13/5

ii) The Kenyan Administration favours the retention of RR 503 and its provisions.

KEN/13/6

iii) The Kenyan Administration favours possible extension of broadcasting bands above 10 MHz. Some of these extensions should be incorporated within the provisions of RR 503. However, the introduction of the broadcasting service in such bands should be gradual and the Conference should develop some regulatory procedures for the transition period.

EUR/20

Bands out of which HFBC extension bands should be allocated

1. Below 10 MHz

EUR/20/1 a) 4 550 - 4 650 kHz

EUR/20/2 b) 5 060 - 5 250 kHz*

EUR/20/3 c) 5 840 - 5 950 kHz*

EUR/20/4 d) 7 300 - 7 650 kHz*

EUR/20/5 e) 9 290 - 9 500 kHz*

EUR/20/6 f) 9 900 - 9 940 kHz*

2. Above 10 MHz

EUR/20/7 g) 10 250 - 10 500 kHz

EUR/20/8 h) 11 500 - 11 650 kHz*

EUR/20/9 i) 12 050 - 12 120 kHz*

EUR/20/10 j) 13 570 - 13 600 kHz*

EUR/20/11 k) 13 800 - 13 900 kHz*

EUR/20/12 l) 14 500 - 14 800 kHz

EUR/20/13 m) 15 600 - 15 980 kHz*

EUR/20/14 n) 17 480 - 17 550 kHz*

EUR/20/15 o) 18 480 - 18 780 kHz

EUR/20/16 p) 18 900 - 19 200 kHz

---

* Adjacent to currently allocated broadcasting bands.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/1A2-E
31 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS

OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS BETWEEN 137 MHz AND 3000 MHz)

Attachment : Proposals by Administrations.

MHz
137 - 146

	Allocation to Services		
	Region 1	**Region 2**	**Region 3**
IND/34/1 MOD	137 - ~~138~~137.3	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 596A 596B Fixed Mobile except aeronautical mobile (R) 596 597 598 599	
IND/34/2 MOD	~~137~~137.3 - ~~138~~137.5	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599	
IND/34/3 MOD	~~137~~137.5 - 138	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 596A 596B Fixed Mobile except aeronautical mobile (R) 596 597 598 599	

YEM/41/10
MOD **596** Different category of service: in Afghanistan, Saudi Arabia, Bahrain, Brunei, China, the United Arab Emirates, India, Indonesia, Iran, Iraq, Kuwait, Malaysia, Oman, Pakistan, Qatar, Singapore~~,~~ and Thailand, ~~Yemen A.R. and Yemen (P.D.R. of),~~ the allocation of the band 137 - 138 MHz to the fixed and mobile, except aeronautical mobile (R), services is on a primary basis (see No. 425).

IND/34/4
ADD **596A** The mobile-satellite service is limited to low-Earth orbit systems.

IND/34/5
ADD **596B** Unwanted emissions by services using spread spectrum modulation which generate a broad spectrum of sidebands, cause harmful interference to the radio astronomy service in adjacent or even well-removed bands. Low-Earth orbit satellite systems using spread spectrum modulation shall use adequate filtering to protect the radio astronomy service. The spectral power flux-density value representing the threshold of interference for radio astronomy is -223 dB (W/m^2/4 kHz) at 150 MHz with 1% Duty cycle (see also Nos. 343 and 344 and Article 36).

YEM/41/11
MOD **604** Additional allocation: in Ethiopia, Finland, Kenya, Malta, Somalia, Sudan, Tanzania~~, Yemen A.R.~~ and Yugoslavia, the band 138 - 144 MHz is also allocated to the fixed service on a primary basis.

MHz
146 - 156.8375

	Allocation to Services		
	Region 1	Region 2	Region 3
IND/34/6 **MOD**	**146 - ~~149.9~~148** FIXED MOBILE except aeronautical mobile (R) ~~608~~	**146 - 148** AMATEUR 607	**146 - 148** AMATEUR FIXED MOBILE 607
IND/34/7 **MOD**	**~~146~~148 - ~~149.9~~149.4** FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 596A 596B 608	**148 - ~~149.9~~149.4** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 596A 596B 608	
IND/34/8 **MOD**	**~~146~~149.4 - ~~149.9~~149.6** FIXED MOBILE except aeronautical mobile (R) 608	**~~148~~149.4 - ~~149.9~~149.6** FIXED MOBILE 608	
IND/34/9 **MOD**	**~~146~~149.6 - 149.9** FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 596A 596B 608	**~~148~~149.6 - 149.9** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 596A 596B 608	

YEM/41/12
MOD

621 **Mob-87** Additional allocation: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Monaco, Norway, the Netherlands, the United Kingdom, Sweden~~,~~ and Switzerland ~~and Yemen (P.D.R. of)~~, the band 174 - 223 MHz is also allocated to the land mobile service on a permitted basis. However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

YEM/41/13
MOD **622** Different category of service: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Luxembourg, Monaco, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, and Switzerland ~~and Yemen (P.D.R. of)~~, the band 223 - 230 MHz is allocated to the land mobile service on a permitted basis (see No. 425). However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

MOZ/36/1
MOD **635** Alternative allocation: in Botswana, Lesotho, Mozambique, Namibia, South Africa, Swaziland and Zambia, the bands 223 - 238 MHz and 246 - 254 MHz are allocated to the broadcasting service on a primary basis subject to agreement obtained under the procedure set forth in Article 14.

MHz
406.1 - 470

EQA/45/29
MOD

Allocation to Services		
Region 1	Region 2	Region 3
420 - 430	FIXED MOBILE except aeronautical mobile Radiolocation 651 651A 652 653	

EQA/45/31
ADD **651A** The bands 420 - 422 MHz and 928 - 930 MHz are also allocated to the mobile-satellite service, on a primary basis, for low-orbit satellites.

MHz
470 - 890

	Allocation to Services		
	Region 1	Region 2	Region 3
NZL/26/3 MOD	**470 - 790** BROADCASTING 676 677A 682 683 684 685 686 686A 687 689 693 693A 694	**470 - 512** BROADCASTING Fixed Mobile 674 675	**470 - 585** FIXED MOBILE BROADCASTING 673 677 679
		512 - 608 BROADCASTING 678	**585 - 610** FIXED MOBILE BROADCASTING RADIONAVIGATION 688 689 690
		608 - 614 RADIO ASTRONOMY Mobile-Satellite except aeronautical mobile-satellite (Earth-to-space)	
NZL/26/4 MOD **NZL/26/5 MOD**		**614 - 806** BROADCASTING Fixed Mobile 675 692 692A 693 693A	**610 - 890** FIXED MOBILE BROADCASTING
NZL/26/6 MOD	**790 - 862** FIXED BROADCASTING 693A 694 695 695A 696 697 702		
	862 - 890 FIXED MOBILE except aeronautical mobile BROADCASTING 703 704	**806 - 890** FIXED MOBILE BROADCASTING 692A 700	677 688 689 690 691 693 693A 701

YEM/41/14
MOD **676** Additional allocation: in Burundi, Cameroon, the Congo, Ethiopia, Israel, Kenya, Libya, Senegal, Sudan, Syria, and Yemen ~~(P.D.R. of)~~, the band 470 - 582 MHz is also allocated to the fixed service on a secondary basis.

NZL/26/7
ADD **693A** The band 742 - 806 MHz is also allocated to the broadcasting-satellite service (sound). Stations operating in this service shall not produce a power flux-density in excess of -152 dB(W/m^2)4 kHz within territories of other countries without the consent of the administrations of those countries.

MHz
890 - 1240

Allocation to Services		
Region 1	Region 2	Region 3
890 - 942 FIXED MOBILE except aeronautical mobile BROADCASTING 703 Radiolocation	**890 - 902** FIXED MOBILE except aeronautical mobile Radiolocation 704A 705	**890 - 942** FIXED MOBILE BROADCASTING Radiolocation
	902 - 928 FIXED Amateur MOBILE except aeronautical mobile Radiolocation 705 707 707A	
	928 - 942 FIXED MOBILE except aeronautical mobile Radiolocation 705 651A	
704 651A		706 651A

EQA/45/30
MOD

YEM/41/15
MOD **711** Additional allocation: in Afghanistan, Angola, Saudi Arabia, Bahrain, Bangladesh, Cameroon, China, the United Arab Emirates, Ethiopia, Guinea, Guyana, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, the Lebanon, Libya, Malawi, Morocco, Mozambique, Nepal, Nigeria, Oman, Pakistan, the Philippines, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Thailand, Togo and Yemen ~~(P.D.R. of)~~, the band 1 215 - 1 300 MHz is also allocated to the fixed and mobile services on a primary basis.

IND/34/10A
ADD **722A** Within the frequency band 1 456 -1 515 MHz assignments may be made to the stations in the broadcasting-satelllite service (sound) subject to the agreement between the administrations concerned and those having services operating in accordance with the Table of Frequency Allocations, which may be affected. Such stations, in any case, shall not produce the power flux-density in excess of the values as in RR No. 2557 without the consent of the administrations concerned.

YEM/41/16
MOD **724** Different category of service: in Afghanistan, Saudi Arabia, Bahrain, Bulgaria, Cameroon, Egypt, the United Arab Emirates, France, Hungary, Iran, Iraq, Israel, Kuwait, the Lebanon, Morocco, Mongolia, Oman, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Czechoslovakia, the U.S.S.R., Yemen ~~(P.D.R. of)~~ and Yugoslavia, the allocation of the band 1 525 - 1 530 MHz to the mobile, except aeronautical mobile, service is on a primary basis (see No. 425).

MHz
1 429 - 1 533

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/2 MOD	**1 429 - ~~1 525~~1 456.5** FIXED MOBILE except aeronautical mobile 722	**1 429 - ~~1 525~~1 456.5** FIXED MOBILE 723 722	
IND/34/10 MOD	**1 429 - ~~1 525~~1 515** FIXED MOBILE except aeronautical mobile 722 722A	**1 429 - ~~1 525~~1 515** FIXED MOBILE 723 722 722A	
EQA/45/23 MOD	**1 429 - ~~1 525~~1 514.5** FIXED MOBILE except aeronautical mobile 722	**1 429 - ~~1 525~~1 514.5** FIXED MOBILE 723 722	
AUS/31/3 MOD	~~1 429~~1 456.5 - ~~1 525~~1 490 BROADCASTING-SATELLITE 722A BROADCASTING 722A FIXED MOBILE except aeronautical mobile 722	~~1 429~~1 456.5 - ~~1 525~~1 490 BROADCASTING-SATELLITE 722A BROADCASTING 722A FIXED MOBILE 723 722	
AUS/31/5 MOD	~~1 429~~1 490 - ~~1 525~~1 515 FIXED MOBILE except aeronautical mobile 722	~~1 429~~1 490 - ~~1 525~~1 515 FIXED MOBILE 723 722	
EQA/45/24 MOD	~~1 429~~1 514.5 - 1 525 ~~FIXED~~ ~~MOBILE except aeronautical mobile~~ MOBILE-SATELLITE (space-to-Earth) 722 722A	~~1 429~~1 514.5 - 1 525 ~~FIXED~~ ~~MOBILE 723~~ MOBILE-SATELLITE (space-to-Earth) 722 722A	

MHz
1 429 - 1 533 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/6 **IND/34/11** **MOD**	~~**1 429**~~**1 515 - 1 525** FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 722	~~**1 429**~~**1 515 - 1 525** FIXED MOBILE 723 MOBILE-SATELLITE (space-to-Earth) 722	
NZL/26/8 **MOD**	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) ~~FIXED~~ MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile except aeronautical mobile 724 Fixed 722 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722 723A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) ~~FIXED~~ MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile 723 724 Fixed 722
AUS/31/7 **MOD**	**1 525 - 1 530** MOBILE-SATELLITE (space-to-Earth) SPACE OPERATION (space-to-Earth) FIXED Earth Exploration-Satellite Mobile except aeronautical mobile 724 722 725	**1 525 - 1 530** MOBILE-SATELLITE (space-to-Earth) SPACE OPERATION (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722 723A	**1 525 - 1 530** MOBILE-SATELLITE (space-to-Earth) SPACE OPERATION (space-to-Earth) FIXED Earth Exploration-Satellite Mobile except aeronautical mobile 723 724 722
IND/34/12 **ALG/40/25** **PAK/44/8** **MOD**	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile except aeronautical mobile 724 722 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722 723A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile 723 724 722

MHz

1 429 - 1 533 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/26 MOD	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) ~~FIXED~~ MARITIME-MOBILE SATELLITE (space-to-Earth) Land mobile-satellite (space-to-Earth) Earth Exploration-Satellite Mobile except aeronautical mobile 724 722 722A 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MARITIME-MOBILE SATELLITE (space-to-Earth) Land mobile-satellite (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722 722A 723A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) ~~FIXED~~ MARITIME-MOBILE SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile 723 724 722 722A
NZL/26/9 MOD	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) ~~LAND MOBILE-SATELLITE (space to Earth)~~ Earth Exploration-Satellite Fixed Mobile except aeronautical mobile 722 726 726A	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) ~~LAND MOBILE SATELLITE (space to Earth)~~ Earth Exploration-Satellite Fixed Mobile 723 722 726 726A	
AUS/31/8 MOD	**1 530 - 1 533** MOBILE-SATELLITE (space-to-Earth) SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE SATELLITE (space to Earth)~~ ~~LAND MOBILE- SATELLITE (space to Earth)~~ Earth Exploration-Satellite Fixed Mobile except aeronautical mobile 722~~-726~~ 726A	**1 530 - 1 533** MOBILE-SATELLITE (space-to-Earth) SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE SATELLITE (space to Earth)~~ ~~LAND MOBILE SATELLITE (space to Earth)~~ Earth Exploration-Satellite Fixed Mobile 723 722~~-726~~ 726A	

AUS/31/4
ADD **722A** Use of the band 1 456.5 - 1 490 MHz by the broadcasting-satellite and broadcasting services is designated for digital sound broadcasting.

EQA/45/25
ADD **722A** The bands 1 514.5 - 1 525 MHz and 1 525 - 1 530 MHz are also allocated to the fixed and mobile services on a secondary basis. Stations in the fixed and mobile services will cease operation in these bands on 1 January 1999.

MHz
1 533 - 1 610

	Allocation to Services		
	Region 1	Region 2	Region 3
NZL/26/10 **MOD**	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile except aeronautical mobile ~~Land Mobile-Satellite (space to Earth)~~ 726B 722 726 726A	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 ~~Land Mobile-Satellite (space to Earth)~~ 726B 722 726 726A	
AUS/31/9 **MOD**	**1 533 - 1 535** MOBILE-SATELLITE (space-to-Earth) SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ Earth Exploration-Satellite Fixed Mobile except aeronautical mobile ~~Land Mobile-Satellite (space to Earth) 726B~~ 722 ~~726~~ 726A	**1 533 - 1 535** MOBILE-SATELLITE (space-to-Earth) SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ Earth Exploration-Satellite Fixed Mobile 723 ~~Land Mobile-Satellite (space to Earth) 726B~~ 722 ~~726~~ 726A	
NZL/26/11 **MOD**	**1 535 - 1 544**	~~MARITIME MOBILE-SATELLITE (space to Earth)~~ ~~Land Mobile-Satellite (space to Earth)~~ 726B MOBILE-SATELLITE (space-to-Earth) 722 726A 727	
AUS/31/12 **MOD**	**1 535 - 1 544**	MOBILE-SATELLITE (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ ~~Land Mobile-Satellite (space to Earth) 726B~~ 722 726A 727	

MHz
1 533 - 1 610 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/13 **NOC**	**1 544 - 1 545**	MOBILE-SATELLITE (space-to-Earth) 722 727 727A	
AUS/31/77 **MOD**	**1 545 - 1 555**	~~AERONAUTICAL MOBILE SATELLITE (R) (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) 722 726A 727 729 729A 729B 730	
NZL/26/12 **MOD**	**1 555 - 1 559**	~~LAND MOBILE SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) 722 726A 727 730 730A	
AUS/31/14 **MOD**	**1 555 - 1 559**	MOBILE-SATELLITE (space-to-Earth) ~~LAND MOBILE SATELLITE (space to Earth)~~ 722 726A 727 730 ~~730A~~	
AUS/31/16 **MOD**	**1 559 - 1 610**	AERONAUTICAL RADIONAVIGATION RADIONAVIGATION-SATELLITE (space-to-Earth) 722 727 730 731 ~~731A 731B 731C 731D~~	

AUS/31/10
SUP **726**

AUS/31/11
SUP **726B**
Mob-87

IND/34/15
MOD **726B**
Mob-87 The use of the bands 1 533 - 1 544 MHz, ~~1 626.5 - 1 631.5 MHz~~ and 1 634.5 - 1 645.5 MHz by the land mobile-satellite service is limited to non-speech low bit-rate data transmissions.

YEM/41/17
MOD **727** Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, the Congo, Egypt, the United Arab Emirates, Ethiopia, Iran, Iraq, Israel, Jordan, Kuwait, the Lebanon, Malta, Morocco, Niger, Oman, Pakistan, Qatar, Syria, Somalia, Sudan, Sri Lanka, Chad, Thailand, Togo, Yemen ~~(P.D.R. of)~~ and Zambia, the bands 1 540 - 1 645.5 MHz and 1 646.5 - 1 660 MHz are also allocated to the fixed service on a secondary basis.

AUS/31/79
ADD **729B** In coordinating and operating mobile-satellite networks in the bands 1 545 - 1 555 MHz and 1 646.5 - 1 656.5 MHz, technical and/or operational measures for priority of access for aeronautical mobile-satellite (R) safety communications shall be employed, taking into account the provisions of Articles 51 and 61.

If priority access for aeronautical mobile-satellite (R) safety communications cannot be achieved in operational practice, usage of these bands by non-safety mobile-satellite communications shall be reduced as necessary to ensure that sufficient capacity is available in a timely manner for aeronautical mobile-satellite (R) safety communications. See also [MOD] Resolution No. 44.

AUS/31/15
SUP **730A**
Mob-87

AUS/31/17
SUP **731A**
Mob-87
to
731D
Mob-87

MHz
1 610 - 1 660

	Allocation to Services		
	Region 1	Region 2	Region 3
NZL/26/13 **MOD**	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE 722 727 730 731 731A 731B 731D 732 733 733A 733B 733E 733F 734	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E MOBILE-SATELLITE 722 731B 731C 732 733 733C 733D 734	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space) 733A 733E MOBILE-SATELLITE 722 727 730 731B 731C 732 733 733B 734
AUS/31/18 **MOD**	**1 610 - ~~1 626.5~~1 613.8** AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY 722 727 730 731 ~~731A 731B~~ ~~731D~~ 732 733 733A 733B 733E 733F MOD 734	**1 610 - ~~1 626.5~~1 613.8** AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY 722 ~~731B 731C~~ 732 733 733C 733D MOD 734	**1 610 - ~~1 626.5~~1 613.8** AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) RADIO ASTRONOMY Radiodetermination-Satellite (Earth-to-space) 733A 733E 722 727 730 ~~731B 731C~~ 732 733 733B MOD 734

MHz
1 610 - 1 660 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
IND/34/13 MOD	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A MOBILE-SATELLITE (Earth-to-space) 722 727 730 731 731A 731B 731D 732 733 ~~733A 733B 733E 733F~~ MOD 734	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A ~~733E~~ MOBILE-SATELLITE (Earth-to-space) 722 731B 731C 732 733 733C 733D MOD 734	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION ~~Radiodetermination Satellite (Earth-to-space) 733A 733E~~ RADIODETERMINATION-SATELLITE (Earth-to-space) 733A MOBILE-SATELLITE (Earth-to-space) 722 727 730 731B 731C 732 ~~733~~ 733B MOD 734
EQA/45/27 MOD	**1 610 - ~~1 626.5~~1 616** AERONAUTICAL RADIONAVIGATION 722 727 730 731 731A 731B 731D 732 733 733A 733B 733E 733F 734	**1 610 - ~~1 626.5~~1 616** AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E 722 731B 731C 732 733 733C 733D 734	**1 610 - ~~1 626.5~~1 616** AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space) 733A 733E 722 727 730 731B 731C 732 733 733B 734
AUS/31/19 MOD	**~~1 610~~1 613.8 - 1 626.5** AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) (space-to-Earth) 722 727 730 731 ~~731A 731B 731D~~ 732 733 733A 733B 733E 733F ~~734~~	**~~1 610~~1 613.8 - 1 6260.5** AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E MOBILE-SATELLITE (Earth-to-space) (space-to-Earth) 722 ~~731B 731C~~ 732 733 733C 733D ~~734~~	**~~1 610~~1 613.8 - 1 626.5** AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) (space-to-Earth) Radiodetermination-Satellite (Earth-to-space) 733A 733E 722 727 730 ~~731B 731C~~ 732 733 733B ~~734~~

MHz

1 610 - 1 660 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EQA/45/28 MOD	~~1 610~~1 616 - 1 626.5 AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) 722 727 730 731 731A 731B 731D 732 733 733A 733B 733E 733F 734	~~1 610~~1 616 - 1 626.5 AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E MOBILE-SATELLITE (Earth-to-space) 722 731B 731C 732 733 733C 733D 734	~~1 610~~1 616 - 1 626.5 AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space) 733A 733E MOBILE-SATELLITE (Earth-to-space) 722 727 730 731B 731C 732 733 733B 734
NZL/26/14 MOD	**1 626.5 - 1 631.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~Land Mobile-Satellite (Earth-to-space)~~ 726B MOBILE-SATELLITE (Earth-to-space) 722 726A 727 730	
AUS/31/21 MOD	**1 626.5 - 1 631.5**	MOBILE-SATELLITE (Earth-to-space) ~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~Land Mobile-Satellite (Earth-to-space) 726B~~ 722 726A 727 730	
IND/34/14 MOD	**1 626.5 - 1 631.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) ~~Land Mobile-Satellite (Earth-to-space) 726B~~ 722 726A 727 730	
NZL/26/15 AUS/31/22 MOD	**1 631.5 - 1 634.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~LAND MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 727 730 734A	
NZL/26/16 MOD	**1 634.5 - 1 645.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~Land Mobile-Satellite (Earth-to-space)~~ 726B MOBILE-SATELLITE (Earth-to-space) 722 726A 727 730	

MHz
1 610 - 1 660 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/23 **MOD**	**1 634.5 - 1 645.5**	MOBILE-SATELLITE (Earth-to-space) ~~MARITIME MOBILE SATELLITE (Earth-to-space)~~ ~~Land Mobile Satellite (Earth-to-space) 726B~~ 722 726A 727 730	
AUS/31/24 **NOC**	**1 645.5 - 1 646.5**	MOBILE-SATELLITE (Earth-to-space) 722 734B	
AUS/31/78 **MOD**	**1 646.5 - 1 656.5**	~~AERONAUTICAL MOBILE SATELLITE (R) (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 727 729A 729B 730 735	
NZL/26/17 **MOD**	**1 656.5 - 1 660**	~~LAND MOBILE SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 727 730 730A 734A	
AUS/31/25 **MOD**	**1 656.5 - 1 660**	MOBILE-SATELLITE (Earth-to-space) ~~LAND MOBILE SATELLITE (Earth-to-space)~~ 722 726A 727 730 ~~730A~~ 734A	

PAK/44/6
NOC **733B**

IND/34/16
SUP **733B**
Mob-87

IND/34/17
SUP **733E**
Mob-87

IND/34/18
SUP **733F**
Mob-87

AUS/31/20
MOD **734** ~~The band 1 610.6 - 1 613.8 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations.~~ In making assignments to stations of other services to which the band 1 610 - 1 613.8 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

IND/34/19
MOD **734** The band 1 610.6 - 1 613.8 MHz is also allocated to the radio astronomy service on a ~~secondary~~primary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations ~~are urged to~~shall take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

MHz

1 660 - 1 700

	Allocation to Services		
	Region 1	Region 2	Region 3
NZL/26/18 **MOD**	**1 660 - 1 660.5**	RADIO ASTRONOMY ~~LAND MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 730A 736	
AUS/31/26 **MOD**	**1 660 - 1 660.5**	RADIO ASTRONOMY MOBILE-SATELLITE except aeronautical mobile satellite (Earth-to-space) ~~LAND MOBILE-SATELLITE (Earth-to-space)~~ 722 726A ~~730A~~ 736	
AUS/31/27 **MOD**	**1 670 - ~~1 690~~1 675**	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE ~~except aeronautical mobile~~ 744A 722	
AUS/31/28 **MOD**	~~1 670~~1 675 - 1 690	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 722	

YEM/41/18
MOD **737** Different category of service: in Afghanistan, Saudi Arabia, Bahrain, Benin, Bulgaria, Cameroon, the Central African Republic, the Congo, Cuba, Egypt, the United Arab Emirates, Ethiopia, Hungary, India, Indonesia, Iran, Israel, Kenya, Kuwait, the Lebanon, Malaysia, Mongolia, Oman, Uganda, Pakistan, Poland, Qatar, Syria, the German Democratic Republic, Singapore, Somalia, Sri Lanka, Chad, Czechoslovakia, Thailand, Tunisia, the U.S.S.R., Yemen ~~A.R., Yemen (P.D.R. of)~~ and Yugoslavia, the allocation of the band 1 660.5 - 1 668.4 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis until 1 January 1990 (see No. 425).

YEM/41/19
MOD **741** Different category of service: in Saudi Arabia, Austria, Bahrain, Bulgaria, the Congo, Egypt, the United Arab Emirates, Ethiopia, Guinea, Hungary, Iraq, Israel, Jordan, Kenya, Kuwait, the Lebanon, Mauritania, Mongolia, Oman, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Somalia, Tanzania, Czechoslovakia, the U.S.S.R., Yemen ~~A.R., Yemen (P.D.R. of)~~ and Yugoslavia, the allocation of the band 1 690 - 1 700 MHz to the fixed and mobile, except aeronautical mobile, services is on a primary basis (see No. 425).

MHz
1 700 - 2 450

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/30 **MOD**	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) ~~Mobile except aeronautical mobile~~ MOBILE except aeronautical mobile 744B 671 722 743A	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 744B 671 722 743	
NZL/26/19 **MOD**	**1 710 - 2 290** FIXED MOBILE ~~Mobile~~ 722 743A 743B 744 746 747 748 750	**1 710 - 2 290** FIXED MOBILE 722 743B 744 745 746 747 748 749 750	
AUS/31/31 **MOD**	**1 710 - ~~2 290~~2 025** FIXED ~~Mobile~~ MOBILE 744A 744B 744C 744D 722 ~~743A~~ 744 746 ~~747 748 750~~	**1 710 - ~~2 290~~2 025** FIXED MOBILE 744A 744B 744C 744D 722 744 745 746 ~~747 748 749 750~~	
IND/34/20 **MOD**	**1 710 - ~~2 290~~1 765** FIXED Mobile 722 743A 744 ~~746 747 748 750~~	**1 710 - ~~2 290~~1 765** FIXED MOBILE 722 744 745 ~~746~~ ~~747 748 749 750~~	
IND/34/21 **MOD**	~~**1 710**~~**1 765 - ~~2 290~~1 775** FIXED MOBILE-SATELLITE (Earth-to-space) Mobile ~~722~~ 743A ~~744~~ 746 ~~747 748 750~~	~~**1 710**~~**1 765 - ~~2 290~~1 775** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) ~~722 744~~ 745 746 ~~747 748 749 750~~	
IND/34/24 **MOD**	~~**1 710**~~**1 775 - ~~2 290~~2 025** FIXED Mobile ~~722~~743A ~~744~~746 ~~747 748 750~~	~~**1 710**~~**1 775 - ~~2 270~~2 025** FIXED MOBILE ~~722 744~~745 746 ~~747 748 749 750~~	

MHz
1 700 - 2 450

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/32 MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) ~~Mobile~~ ~~722 743A 744 746 747 748 750~~	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) ~~722 744 745 746 747 748 749 750~~	
IND/34/25 MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) Mobile ~~722~~743A ~~744 746 747 748 750~~	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) MOBILE ~~722 744 745 746 747 748 749 750~~	
AUS/31/33 MOD	~~1 710~~2 110 - ~~2 290~~2 200 FIXED MOBILE ~~Mobile~~ ~~722 743A 744 746 747~~ 748 749 ~~750~~	~~1 710~~2 110 - ~~2 290~~2 200 FIXED MOBILE ~~722 744 745 746 747~~ 748 749 ~~750~~	
IND/34/26 MOD	~~1 710~~2 110 - ~~2 290~~2 200 FIXED Mobile ~~722~~743A ~~744 746 747~~748 ~~750~~	~~1 710~~2 110 - ~~2 290~~2 200 FIXED MOBILE ~~722 744 745 746 747~~748 749 ~~750~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
E/53/1 MOD	~~1 710~~2 110 - ~~2 290~~2 120 FIXED MOBILE ~~Mobile~~ SPACE RESEARCH (deep space) (Earth-to-space) ~~722 743A 744 746~~ 746A 746B ~~747 748~~ ~~750~~	~~1 710~~2 110 - ~~2 290~~2 120 FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) ~~722 744 745 746~~ 746A 746B ~~747 748~~ 749 ~~750~~	
AUS/31/34 MOD	~~1 710~~2 200 - 2 290 FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) ~~Mobile~~ ~~722 743A 744 746~~ ~~747 748 750~~750A	~~1 710~~2 200 - 2 290 FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) ~~722 744 745 746~~ ~~747 748 749 750~~750A	
IND/34/27 MOD	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) Mobile ~~722~~743A ~~744 746~~ ~~747 748 750~~	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) MOBILE ~~722 744 745 746~~ ~~747 748 749 750~~	
AUS/31/35 MOD	2 290 - 2 300 FIXED SPACE RESEARCH (deep space) (space-to-Earth) Mobile except aeronautical mobile 743A 750A	2 290 - 2 300 FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth) 750A	

NZL/26/20
ADD **743B** The band [1 720 - 2 300 MHz] is designated for use by FPLMTS.

AUS/31/29
ADD **744A** The use of the bands 1 670 - 1 675 MHz and 1 800 - 1 805 MHz by the aeronautical mobile service is designated for public correspondence with aircraft. For this purpose, the band 1 670 - 1 675 MHz is for transmissions from aeronautical stations, and the band 1 800 - 1 805 MHz is for transmissions from aircraft stations.

AUS/31/36
ADD **744B** Use of the band 1 700 - 1 870 MHz by the mobile service is designated for the R1 interface (vehicular stations) of public land mobile telecommunication systems having characteristics in accordance with the Recommendations of the CCIR.

AUS/31/37
ADD **744C** Use of the band 1 870 - 1 930 MHz by the mobile service is designated for the R2 interface (personal stations) of public land mobile telecommunication systems having characteristics in accordance with the Recommendations of the CCIR.

AUS/31/38
ADD **744D** In the bands 1 710 - 1 870 MHz and 1 870 - 1 930 MHz, the use of space techniques, in accordance with the Recommendations of the CCIR, may also be authorized when they are used in connection with the uses specified in Nos. 744B and 744C.

NZL/26/23
NOC **747**

AUS/31/39
IND/34/22
SUP **747**

NZL/26/24
NOC **748**

E/53/2
SUP **748**

AUS/31/40
IND/34/23
SUP **750**

AUS/31/41
ADD **750A** Additional use: In Australia [and .....] , the bands 2 200 - 2 290 MHz and 2 290 - 2 300 MHz are also used for Very Long Baseline Interferometry (VLBI) observations between widely separated terrestrial stations for radio astronomy, geodesy and spacecraft navigation.

MHz
2 450 - 2 655

	Allocation to Services		
	Region 1	Region 2	Region 3
IND/34/28 MOD	**2 483.5 - 2 500** FIXED MOBILE RADIODETERMINATION-SATELLITE (space-to-Earth) 753A MOBILE-SATELLITE (space-to-Earth) Radiolocation ~~733F~~ 752 ~~753A 753B~~ ~~753C~~ 753E	**2 483.5 - 2 500** FIXED MOBILE RADIODETERMINATION-SATELLITE (space-to-Earth) 753A MOBILE-SATELLITE (space-to-Earth) RADIOLOCATION 752 753D	**2 483.5 - 2 500** FIXED MOBILE RADIODETERMINATION-SATELLITE (space-to-Earth) 753A MOBILE-SATELLITE (space-to-Earth) RADIOLOCATION ~~Radiodetermination Satellite (space-to-Earth) 753A~~ 752 ~~753C~~
IND/34/31 MOD	**2 500 - 2 655** FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 760 720 753 756 758 759	**2 500 - 2 655** FIXED 762 764 FIXED-SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 760 720 755	**2 500 - 2 535** FIXED 762 764 FIXED-SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 760 754 754A **2 535 - 2 655** FIXED 762 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 760 720
PAK/44/9 MOD	**2 500 - ~~2 655~~2 520** FIXED 762 763 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~753 756 758 759	**2 500 - ~~2 655~~2 520** FIXED 762 764 ~~FIXED-SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~755	**2 500 - ~~2 535~~2 520** FIXED 762 764 ~~FIXED-SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~754~~754A

MHz
2 450 - 2 655

	Allocation to Services		
	Region 1	Region 2	Region 3
PAK/44/10 MOD	~~2 500~~2 520 - ~~2 655~~2 535 FIXED 762 763 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 754B ~~720~~753 756 758 759	~~2 500~~2 520 - ~~2 655~~2 535 FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 754B ~~720~~755	~~2 500~~2 520 - 2 535 FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 754B ~~754 754A~~
PAK/44/11 MOD	~~2 500~~2 535 - ~~2 655~~2 570 FIXED 762 763 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 754B ~~720~~753 756 758 759	~~2 500~~2 535 - ~~2 655~~2 570 FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 754B ~~720~~755	2 535 - ~~2 655~~2 570 FIXED 762 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 754B ~~720~~
PAK/44/14 MOD	~~2 500~~2 570 - ~~2 655~~2 620 FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 757A 760 ~~720~~753 756 758 759	~~2 500~~2 570 - ~~2 655~~2 620 FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 757A 760 ~~720~~755	~~2 535~~2 570 - ~~2 655~~2 620 FIXED 762 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 757A 760 ~~720~~
PAK/44/15 MOD	~~2 500~~2 620 - ~~2 655~~2 640 FIXED 762 763 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~753 756 758 759	~~2 500~~2 620 - ~~2 655~~2 640 FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~755	~~2 535~~2 620 - ~~2 655~~2 640 FIXED 762 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~

MHz
2 450 - 2 655 (continued)

Allocation to Services		
Region 1	Region 2	Region 3
~~2 500~~2 640 - 2 655	~~2 500~~2 640 - 2 655	~~2 500~~2 640 - 2 655
FIXED 762 763 764	FIXED 762 764	FIXED 762 764
MOBILE except aeronautical mobile	~~FIXED SATELLITE (space to Earth) 761~~	MOBILE except aeronautical mobile
~~BROADCASTING SATELLITE 757 760~~	MOBILE except aeronautical mobile	~~BROADCASTING SATELLITE 757 760~~
MOBILE-SATELLITE (Earth-to-space 766A	~~BROADCASTING SATELLITE 757 760~~	MOBILE-SATELLITE (Earth-to-space 766A
	MOBILE-SATELLITE (Earth-to-space 766A	
720~~753 756~~ 758 759	720 ~~755~~	720

IND/34/29
SUP **753B**
Mob-87

IND/34/30
SUP **753C**
Mob-87

PAK/44/12
SUP **754**

PAK/44/13
ADD **754B** The allocation to mobile-satellite services in the band 2 520 - 2 570 MHz shall come into effect from 1 January, 2002.

IND/34/33
MOD **757** The use of the band 2 500 - 2 690 MHz by the broadcasting-satellite service is limited to national and regional systems ~~for community reception~~ and such use shall be subject to agreement obtained under the procedure set forth in Article 14. The power flux-density at the Earth's surface shall not exceed the values given in Nos. 2561 to 2564.

PAK/44/16
MOD **757** The use of the band ~~2 500 - 2 690~~2 570 - 2 620 MHz by the broadcasting-satellite service is limited ~~to national and regional systems for community reception and such use shall be subject to agreement obtained under the procedure set forth in Article 14. The power flux-density at the Earth's surface shall not exceed the values given in Nos. 2561 to 2564~~sound broadcasting only.

PAK/44/17
ADD **757A** The band 2 570 - 2 620 MHz is also allocated to the broadcasting service limited to complementary terrestrial broadcast for broadcasting satellite.

PAK/44/18
SUP **761**

MHz
2 655 - 3 300

	Allocation to Services		
	Region 1	Region 2	Region 3
IND/34/32 MOD	**2 655 - 2 690** FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 760 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 758 759 765	**2 655 - 2 690** FIXED 762 764 FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 760 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 765	**2 655 - 2 690** FIXED 762 764 FIXED-SATELLITE (Earth-to-space) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 760 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 765 766
PAK/44/20 MOD	**2 655 - 2 690** FIXED 762 763 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (Earth-to-space 766A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 758 759 765	**2 655 - 2 690** FIXED 762 764 ~~FIXED SATELLITE (Earth to space) (space to Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (Earth-to-space 766A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 765	**2 655 - 2 690** FIXED 762 764 ~~FIXED SATELLITE (Earth to space) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (Earth-to-space 766A Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) 765~~766~~

PAK/44/21
SUP **766**

PAK/44/22
ADD **766A** The allocation to the mobile-satellite service in the band 2 640 - 2 690 MHz shall come into effect from 1 January, 2002.

YEM/41/20
MOD **769** Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bulgaria, Cameroon, the Central African Republic, the Congo, the Ivory Coast, Cuba, Egypt, the United Arab Emirates, Ethiopia, Gabon, Guinea, Guinea-Bissau, Hungary, Iran, Iraq, Israel, the Lebanon, Malaysia, Malawi, Mali, Morocco, Mauritania, Mongolia, Nigeria, Oman, Pakistan, the Philippines, Poland, Qatar, Syria, the German Democratic Republic, Roumania, Singapore, Somalia, Sri Lanka, Czechoslovakia, Thailand, Tunisia, the U.S.S.R., Yemen ~~A.R., Yemen (P.D.R. of)~~, Yugoslavia, Zaire and Zambia, the band 2 690 - 2 700 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

The following proposals also concern the frequency bands

dealt with in this document:

PRG/37/12

Considering the relative advantages and disadvantages of the three possible frequency bands which might be adopted (700 MHz, 1.5 GHz and 2.5 GHz), Paraguay proposes:

- a 48 MHz bandwidth, which is considered sufficient to provide a satisfactory service for each country (Region 2), including the complementary terrestrial (sound) broadcasting uses;
- a frequency allocation for the broadcasting-satellite (sound) and terrestrial broadcasting service from 1 427 MHz to 1 475 MHz.

PRG/37/13

In this connection, Paraguay proposes:

1) that the aeronautical mobile (R) service be considered as a priority service in relation to systems of public correspondence with any aircraft;

2) that operation of the public correspondence service with aircraft shall not limit, restrict or in any way interfere with radionavigation and communication systems ensuring flight safety and regularity;

3) that no frequencies be allocated for public correspondence with aircraft in bands currently allocated to the aeronautical mobile-satellite (R) service or the aeronautical radionavigation-satellite service.

MLI/39/5

Because of the demand made on this band, the so called L-band, the Administration of Mali proposes:

Protection of the band 1 - 3 GHz.

MLI/39/6

Extension and use of the band 2.6 GHz (S-band) by the broadcasting-satellite service.

MLI/39/8

Our Administration considers that the extension desired in the band 1.5 GHz will make it possible to meet these requirements and invites the CCIR to review the sharing criteria.

MLI/39/9

No new or supplementary allocation should be made to terrestrial APC systems in the above-mentioned bands reserved for the aeronautical service.

MLI/39/10

The Administration of Mali invites the CCIR to continue these studies with a view to determining an appropriate part of the spectrum for this service.

MLI/39/12

In connection with the implementation of Resolution No. 708 (Mob-87), the Administration of Mali wishes to maintain Footnotes 733B (Earth-to-space) and 753C (space-to-Earth) as they appear in the Radio Regulations.

YEM/41/7

Consequently, the Yemeni Administration does not support the idea of using this band for broadcasting (sound) and other services, unless adequate protection is secured.

PAK/44/4

The CCIR Report on WARC-92 suggests 100 - 500 MHz band for operation of low-Earth orbiting satellites.

Considering that new technologies for small payloads on board low earth satellite systems have great potential to provide a number of radio services such as low cost two way data communication, the allocation of some suitable frequencies slots below 1 GHz is supported. The Administration of Pakistan proposes 137 - 138 and 272 - 273 MHz band.

PAK/44/5

It is therefore proposed that the existing status of allocation to SRS, SOS and EESS wide Footnotes 747 and 750 may be retained and also WARC-92 may consider a Resolution for prevention of those future space service assignments in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz which can utilize the bands above 20 GHz.

VUT/48/4

The Vanuatu Meteorological Service receives direct geostationary satellite transmissions in the band 1 690 - 1 698 MHz (specifically 1 691.5 MHz) and consequently we would not favour any allocations that would affect this transmission.

VUT/48/5

We do not favour full band sharing (before the year 2005) in the 1 500 - 1 525 MHz band between MSS down link and the fixed service as the nature of our point-to-multipoint Digital Radio Concentrator System precludes antenna pointing as an effective means of reducing the received signal from the satellite.

VUT/48/6

We note the current MSS allocations (up link 1 626.5 - 1 660.5 MHz and down link 1 530 - 1 559 MHz) give an up-link bandwidth of 34 MHz and down-link bandwidth of 29 MHz and we would support early increase of the down-link frequencies to 1 525 - 1 559 MHz to balance up-link and down-link bandwidths.

VUT/48/7

Furthermore, we would support allocation of 1 520 - 1 525 MHz on a shared basis to be introduced not earlier than 1998 (with a corresponding increase adjacent to the existing up-link frequencies) thus providing a net 10 MHz L-band down-link increase for MSS operators on a worldwide basis.

VUT/48/8

Vanuatu supports measures that would lead to a worldwide standard for FPLMTS and we support our regional neighbour, Australia's, proposal for the following FPLMTS bands:

1 700 - 1 870 MHz	Vehicular stations (Document 31, proposal AUS/31/36)
1 870 - 1 930 MHz	Personal stations (Document 31, proposal AUS/31/37)

VUT/48/9

Our fixed digital microwave links lie in the band 2.1 GHz - 2.3 GHz and consequently we would not like to see FPLMTS allocations within these frequencies.

VUT/48/10

Vanuatu particularly notes Australia's proposal (1 456.5 - 1 490 MHz (Document 31, proposal AUS/31/3)) and while we agree that an allocation of around 1.5 GHz would be highly desirable for BSS (Sound) we cannot support partitioning of the band (1 429 - 1 525 MHz) as a solution as, under our scheme, the band is used fairly homogeneously with no "mid-band gap" as such, that could accommodate this service.

BFA/49/5

Burkina Faso proposes that the frequency bands 1 525 - 1 559 MHz and 1 626.5 - 1 660.5 MHz should be rearranged as part of the development of the mobile and mobile-satellite services:

- either for specific mobile services (maritime mobile-satellite, aeronautical mobile-satellite, land mobile-satellite);

- or as part of a general mobile-satellite service.

BFA/49/6

Burkina Faso proposes that two frequency bands, each with a width of 5 MHz, should be selected in the bands 862 - 960 MHz or 1.5 - 1.9 MHz with a view to their worldwide allocation to a terrestrial system of public correspondence with aircraft.

ISR/51/1

The bandwidth currently allocated for the maritime mobile-satellite service (MMSS) for Earth-to-space is wider than that for space-to-Earth. In order to balance this, there is a need to add 5 MHz, preferably in the 1 525 - 1 530 MHz band, for MMSS on a primary basis with LMSS on a secondary basis - both for space-to-Earth. Israel supports such a proposal.

ISR/51/2

Long-term allocations for the mobile-satellite service (MSS) - there is no readily available spectrum for future MSS services in the next 10 -15 years, therefore Israel supports the proposed 2 x 25 MHz allocation on a primary basis for the year 2000 in the 2 520 - 2 545/2 640 - 2 665 MHz bands and the proposed 2 x 25 MHz allocation on a secondary basis of 2 545 - 2 570/2 665 - 2 690 MHz. Israel supports the proposal that in the year 2005, the 2 520 - 2 570 and 2 640 - 2 690 MHz bands should be on a primary basis.

Israel supports the proposal that, after the year 2000, all long-term MSS allocations should be generic.

Israel also proposes to exclude the aeronautical mobile-satellite service from the 2 655 - 2 690 MHz band in order to give maximum protection to the radio astronomy service.

ISR/51/3

"Generic" allocation - The bands which are currently allocated to MSS are further divided into specific mobile services such as aeronautical maritime, and land. This sub-division could cause imbalance in the utilization of the spectrum. It does, however, separate services which have to protect unique service needs such as maritime and aeronautical safety.

Israel supports the principle of generic allocation only in new allocations, provided that safety provisions are not compromised.

ISR/51/4

Israel may consider the option to support the proposal to use for APC services a 2 x 5 MHz allocation in as high a frequency band as possible.

ISR/51/5

Israel supports the principle of FPLMTS but has not concluded in what bands and how much spectrum should be allocated.

ISR/51/6

Israel will support these allocations only if it can be shown that they will cause no interference to other systems in the band. We believe, therefore, that further studies should be taken before a decision is reached.

ISR/51/8

Israel supports the proposal to add a co-primary allocation in the aeronautical radionavigation and the radiodetermination-satellite service (Earth-to-space) band for the mobile-satellite service in the 1 616.5 - 1 626.5 MHz band. This allocation is to be also on a secondary basis for space-to-Earth.

ISR/51/9

Israel supports the proposal to add a co-primary allocation in the fixed and mobile (except for aeronautical mobile) band for mobile-satellite service in the 1 515 - 1 525 MHz band, such an allocation to be for a space-to-Earth service.

INS/52/3

Indonesia supports proposals that proposed the 2.5 GHz band which are not allocated for multipoint, multidistribution TV services (2 530 - 2 642 MHz) to be used for BSS (Sound).

INS/52/5

For the initial implementation of FPLMTS, the meeting agreed to propose the centre frequency of fixed service at the 1.8 GHz band (1 790.5 - 1 825.5 MHz) and 2.0 GHz (1 982.5 - 2 017.5 MHz).

INS/52/6

Indonesia proposes the need to provide spectrum allocation for LEO mobile satellite systems below 1 GHz at 137 - 138 MHz (space-to-Earth), 400.15 - 401 MHz (space-to-Earth) and 148 - 149.9 MHz (Earth-to-space) on a worldwide basis with primary status.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/1A2-E
17 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS

OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS BETWEEN 137 MHz AND 3000 MHz)

Attachment : Proposals by Administrations.

MHz
137 - 146

	Allocation to Services		
	Region 1	**Region 2**	**Region 3**
USA/12/39 MOD	**137 - 138**	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 596A 596B SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599	
B/30/10 MOD	**137 - 138**	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Fixed Mobile except aeronautical mobile (R) MOBILE-SATELLITE (space-to-Earth) 599A 596 597 598 599	

USA/12/40
ADD **596A** The mobile-satellite service is limited to low earth orbit satellite systems.

USA/12/41
ADD **596B** The mobile-satellite (space-to-Earth) service is secondary to the meteorological-satellite (space-to-Earth) service in the frequency ranges 137.025 to 137.175 MHz and 137.825 to 137.975 MHz.

B/30/12
ADD **599A** The use of the bands 137 - 138 MHz (space-to-Earth), 148 - 149.9 MHz (Earth-to-space) and 400.15 - 401 MHz (space-to-Earth) by the mobile-satellite service is limited to low-Earth orbit satellite systems.

MHz
146 - 156.8375

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/42 **B/30/13** **MOD**	**146 - ~~149.9~~148** FIXED MOBILE except aeronautical mobile (R) ~~608~~	**146 - 148** AMATEUR 607	**146 - 148** AMATEUR FIXED MOBILE 607
USA/12/43 **MOD**	**~~146~~148 - 149.9** FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 596A 608	**148 - 149.9** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 596A 608	
B/30/14 **MOD**	**~~146~~148 - 149.9** FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 599A 608	**148 - 149.9** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 599A 608	

E/25/4
B/30/15
SUP **614**

B/30/16
MOD **627** In Region 2, ~~the band 216 - 225 MHz is allocated to~~no new stations in the radiolocation service ~~on a primary basis until 1 January 1990~~may be authorized in the band 216 - 225 MHz. ~~On and after 1 January 1990, no new stations in that service may be authorized.~~ Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.

E/25/5
B/30/17
SUP **633**

E/25/6
B/30/17
SUP **634**

MHz
400.05 - 406.1

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/44 MOD	**400.15 - 401**	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 596A SPACE RESEARCH (space-to-Earth) 647A Space Operation (space-to-Earth) 647	
B/30/18 MOD	**400.15 - 401**	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 599A Space Operation (space-to-Earth) 647	
EUR/20/132 MOD	**400.15 - 401**	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) 674A Space Operation (Space-to-Earth) 647	
J/27/28 MOD	**400.15 - 401**	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) (space-to-space) Space Operation (space-to-Earth) 647	

USA/12/45
ADD **647A** The band 400.15 - 401 MHz is also allocated to the space research service in the space-to-space direction for communication with manned space vehicles. In this application, the space research service will not be regarded as a safety service.

EUR/20/133
ADD **647A** The band 400.15 - 401 MHz may also be used by the Space Research Service, space-to-space, for the purpose of radiocommunications with manned space vehicles. The provisions of RR 953 shall not apply.

MHz
406.1 - 470

Allocation to Services		
Region 1	Region 2	Region 3
410 - 420	FIXED	
	MOBILE except aeronautical mobile	
	SPACE RESEARCH (space-to-space) 651A	

USA/12/46
MOD

USA/12/47
ADD **651A** Use of the band 410 - 420 MHz by the space research service is limited to communication links within 5 km of an orbiting, manned space vehicle. In this application, the space research service will not be regarded as a safety service. Such space stations in this service shall not cause harmful interference to stations operating in the fixed and mobile services.

KRE/15/2
MOD **659** Additional allocation: in Angola, Bulgaria, Cameroon, the Congo, Gabon, Hungary, Mali, Mongolia, Niger, Poland, the German Democratic Republic, Dem. People's Rep. of Korea, Roumania, Rwanda, Chad, Czechoslovakia and the U.S.S.R., the band 430 - 440 MHz is also allocated to the fixed service on a primary basis.

B/30/19
MOD **663** Additional allocation: in Brazil, France and the French Overseas Departments in Region 2, and India, the band 433.75 - 434.25 MHz is also allocated to the space operation service (Earth-to-space) on a ~~primary~~secondary basis. ~~until 1 January 1990, subject to agreement obtained under the procedure set forth in Article 14. After 1 January 1990, the band 433.75 - 434.25 MHz will be allocated in the same countries to the same service on a secondary basis.~~

MHz
470 - 890

Allocation to Services		
Region 1	Region 2	Region 3
470 - 790	**608 - 614**	**610 - 890**
		FIXED
	614 - 806	MOBILE
	BROADCASTING	BROADCASTING
790 - 862	Fixed	
FIXED	Mobile	
BROADCASTING	675 692 692A 693	
694 695 695A 696 697 700A 702		
URS/7/48 MOD	**806 - 890**	
862 - 890	FIXED	
FIXED	MOBILE	
MOBILE except aeronautical mobile	BROADCASTING	
BROADCASTING 703		
URS/7/49 MOD		
700A 704	692A 700	677 688 689 690 691 693 701

MHz
470 - 890 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
	470 - 790 BROADCASTING 676 677A 682 683 684 685 686 686A 687 689 693 694	**470 - 512** BROADCASTING Fixed Mobile 674 675	**470 - 585** FIXED MOBILE BROADCASTING 673 677 679
		512 - 608 BROADCASTING 678	**585 - 610** FIXED MOBILE BROADCASTING RADIONAVIGATION 688 689 690
		608 - 614 RADIO ASTRONOMY Mobile-Satellite except aeronautical mobile-satellite (Earth-to-space)	
USA/12/48 MOD		**614 - 806** BROADCASTING Fixed Mobile 675 692 692A 693	**610 - 890** FIXED MOBILE BROADCASTING
USA/12/49 MOD	**790 - 862** FIXED BROADCASTING 694 695 695A 696 697 702 704B		
USA/12/50 MOD	**862 - 890** FIXED MOBILE except aeronautical mobile BROADCASTING 703 704	**806 - 890** FIXED MOBILE BROADCASTING 692A 700 704B	677 688 689 690 691 693 701 704B

E/25/7
B/30/20
SUP 682

URS/7/50
ADD 700A Additional allocation: Region 1, the bands 806 - 890 and 942 - 960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of this service is subject to agreement under the procedure established in Article 14.

E/25/11
MOD 703 In Region 1, in the band 862 - 960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. 400 to 403) excluding Algeria, Egypt, Spain, Libya and Morocco, subject to agreement obtained under the procedure set forth in Article 14. ~~Such operations shall be in accordance with the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963.~~

USA/12/51
ADD 704B The bands 849 - 851 MHz and 894 - 896 MHz are also allocated to the aeronautical mobile service for public correspondence with aircraft. The band 849 - 851 MHz is limited to transmissions from aeronautical stations and the use of the band 894 - 896 MHz is limited to transmissions from aircraft stations.

MHz
890 - 1240

Allocation to Services		
Region 1	Region 2	Region 3
890 - 942 FIXED MOBILE except aeronautical mobile BROADCASTING 703 Radiolocation	**890 - 902** FIXED MOBILE except aeronautical mobile Radiolocation 704A 705	**890 - 942** FIXED MOBILE BROADCASTING Radiolocation
	902 - 928 FIXED Amateur Mobile except aeronautical mobile Radiolocation 705 707 707A	
	928 - 942 FIXED MOBILE except aeronautical mobile Radiolocation	
URS/7/63 MOD 704 705A	705 705A	705A 706

MHz
890 - 1240 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/52 MOD	**890 - 942** FIXED MOBILE except aeronautical mobile BROADCASTING 703 Radiolocation 704 ~~704~~ 704B	**890 - 902** FIXED MOBILE except aeronautical mobile Radiolocation 704A 704B 705 **902 - 928** FIXED Amateur Mobile except aeronautical mobile Radiolocation 705 707 707A **928 - 942** FIXED MOBILE except aeronautical mobile Radiolocation 705	**890 - 942** FIXED MOBILE BROADCASTING Radiolocation 704B 706
URS/7/51 MOD	**942 - 960** FIXED MOBILE except aeronautical mobile BROADCASTING 703 700A 704	**942 - 960** FIXED Mobile 708	**942 - 960** FIXED MOBILE BROADCASTING 701
CAN/23/5 MOD	**942 - 960** FIXED MOBILE except aeronautical mobile BROADCASTING 703 704	**942 - 960** FIXED ~~Mobile~~ MOBILE ~~708~~	**942 - 960** FIXED MOBILE BROADCASTING 701

URS/7/64
ADD **705A** The band 934 - 939 MHz is also allocated to the mobile-satellite service on a primary basis. This use is restricted to links using low-orbit satellites within the national territory and is subject to agreement in accordance with the procedure established in Article 14.

CAN/23/6
SUP **708**

MHz
1 240 - 1 429

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/7 MOD	**1 350 - 1 400** FIXED MOBILE RADIOLOCATION 718 719 720	**1 350 - ~~1 400~~1 370** RADIOLOCATION 714 718 ~~720~~	**1 350 - 1 400** RADIOLOCATION
CAN/23/8 MOD		~~**1 350**~~ **1 370 - 1 400** RADIOLOCATION FIXED MOBILE ~~714~~ 718 720	~~714~~ 718 720
URS/7/52 MOD	**1 427 - 1 429**	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile 722 723B	
B/30/21 MOD	**1 427 - 1 429**	SPACE OPERATION (Earth-to-space) FIXED MOBILE except aeronautical mobile BROADCASTING-SATELLLITE 722A 722	

B/30/24
ADD **722A** The use of the band 1 427 - 1 475 MHz by the broadcasting-satellite service is limited to the transmission of sound programmes or other technically compatible signals. The use of this service may also accommodate terrestrial complementary transmissions.

MHz
1 429 - 1 533

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/53 MOD	**1 429 - 1 525** FIXED MOBILE ~~except aeronautical mobile~~ 722 723B	**1 429 - 1 525** FIXED MOBILE 723 722	
CAN/23/9 MOD	**1 429 - ~~1 525~~1 441** FIXED MOBILE except aeronautical mobile 722	**1 429 - ~~1 525~~1 441** FIXED MOBILE ~~723~~ 722	
FNL/28/1 MOD	**1 429 - ~~1 525~~1 475** FIXED MOBILE except aeronautical mobile 722	**1 429 - ~~1 525~~1 475** FIXED MOBILE 723 722	
B/30/22 MOD	**1 429 - ~~1525~~1475** FIXED MOBILE except aeronautical mobile BROADCASTING-SATELLITE 722A 722	**1 429 - ~~1 525~~1 475** FIXED MOBILE 723 BROADCASTING-SATELLITE 722A 722	
CAN/23/11 MOD	~~1 429~~1 441 - ~~1 525~~1 448 BROADCASTING BROADCASTING-SATELLITE 722A FIXED MOBILE except aeronautical mobile 722 722B 722C	~~1 429~~1 441 - ~~1 525~~1 448 BROADCASTING BROADCASTING-SATELLITE 722A FIXED MOBILE ~~723~~ 722 722B 722C	
CAN/23/12 MOD	~~1 429~~1 448 - ~~1 525~~1 476 BROADCASTING BROADCASTING-SATELLITE 722D FIXED MOBILE except aeronautical mobile 722 722B 722C	~~1 429~~1 448 - ~~1 525~~1 476 BROADCASTING BROADCASTING-SATELLITE 722D FIXED MOBILE ~~723~~ 722 722B 722C	

MHz
1 429 - 1 533 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
FNL/28/2 MOD	~~1 429~~1 475 - 1 525 FIXED MOBILE except aeronautical mobile BROADCASTING- SATELLITE 723B 723C 723D 722	~~1 429~~1 475 - 1 525 FIXED MOBILE 723 BROADCASTING-SATELLITE 723B 723C 723D 722	
B/30/23 MOD	~~1 429~~1 475 - 1 525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 722	~~1 429~~1 475 - 1 525 FIXED MOBILE 723 MOBILE-SATELLITE (space-to-Earth) 722	
CAN/23/13 MOD	~~1 429~~1 476 - ~~1 525~~1 490 BROADCASTING 722E BROADCASTING- SATELLITE 722F FIXED MOBILE except aeronautical mobile 722 722C	~~1 429~~1 476 - ~~1 525~~1 490 BROADCASTING 722E BROADCASTING-SATELLITE 722F FIXED MOBILE ~~723~~ 722 722C	
CAN/23/14 MOD	~~1 429~~1 490 - ~~1 525~~1 497 BROADCASTING BROADCASTING-SATELLITE 722A FIXED MOBILE except aeronautical mobile 722 722B 722C	~~1 429~~1 490 - ~~1 525~~1 497 BROADCASTING BROADCASTING-SATELLITE 722A FIXED MOBILE ~~723~~ 722 722B 722C	
CAN/23/15 MOD	~~1 429~~1 497 - ~~1 525~~1 515 BROADCASTING BROADCASTING- SATELLITE 722D FIXED MOBILE except aeronautical mobile 722 722B 722C	~~1 429~~1 497 - ~~1 525~~1 515 BROADCASTING BROADCASTING-SATELLITE 722D FIXED MOBILE ~~723~~ 722 722B 722C	

MHz
1 429 - 1 533 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/22 MOD	~~1 429~~1 515 - 1 525 FIXED MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 722 723B	~~1 429~~1 515 - 1 525 FIXED MOBILE ~~723~~ MOBILE-SATELLITE (space-to-Earth) 722 723B	
URS/7/54 MOD	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile ~~except aeronautical mobile~~ 724 722 723B 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MARITIME MOBILE SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722 723A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED MARITIME MOBILE SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile 723 724 722
USA/12/53 MOD	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ~~FIXED~~ Fixed 723B Earth Exploration-Satellite Mobile except aeronautical mobile 724 722 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed Earth Exploration-Satellite Mobile ~~723~~ 722 723A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) ~~FIXED~~ Fixed 723B Earth Exploration-Satellite Mobile ~~723~~ 724 722

MHz
1 429 - 1 533 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/20/120 MOD	**1 525 - 1 530** ~~SPACE OPERATION (space-to-Earth)~~ MARITIME MOBILE-SATELLITE (space-to-Earth) FIXED Earth Exploration-Satellite Land Mobile-Satellite (space-to-Earth) MOD 726B Mobile except aeronautical mobile 724 722 725	**1 525 - 1 530** ~~SPACE OPERATION (space-to-Earth)~~ MARITIME MOBILE SATELLITE (space-to-Earth) Earth Exploration-Satellite Land Mobile-Satellite (space-to-Earth) MOD 726B Fixed Mobile 723 722 723A	**1 525 - 1 530** ~~SPACE OPERATION (space-to-Earth)~~ MARITIME MOBILE SATELLITE (space-to-Earth) FIXED Earth Exploration-Satellite Land Mobile-Satellite (space-to-Earth) MOD 726B Mobile 723 724 722
CAN/23/23 MOD	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED Earth Exploration-Satellite Mobile except aeronautical mobile 724 MOBILE-SATELLITE (space-to-Earth) 723D 722 723C 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) Earth Exploration-Satellite Fixed Mobile ~~723~~ MOBILE-SATELLITE (space-to-Earth) 723D 722 723A 723C	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED Earth Exploration-Satellite Mobile ~~723~~724 MOBILE SATELLITE (space-to-Earth) 723D 722 723C
J/27/29 MOD	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile except aeronautical mobile 724 Land Mobile-Satellite (space-to-Earth) MOD 726B 722 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 Land Mobile-Satellite (space-to-Earth) MOD 726B 722 723A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) FIXED MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Mobile 723 724 Land Mobile-Satellite (space-to-Earth) MOD 726B 722

MHz
1 429 - 1 533 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
B/30/25 MOD	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) LAND MOBILE-SATELLITE (space-to-Earth) FIXED Earth Exploration-Satellite Mobile except aeronautical mobile 724 722 725	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) LAND MOBILE SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722 723A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) LAND MOBILE-SATELLITE (space-to-Earth) FIXED Earth Exploration-Satellite Mobile 723 724 722
URS/7/55 MOD	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) LAND MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile~~, except aeronautical mobile~~ 722 723B 726 726A	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) LAND MOBILE-SATELLITE (space-to-Earth) Earth Exploration Satellite Fixed Mobile 723 722 726 726A	
USA/12/56 MOD	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ ~~LAND MOBILE-SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile except aeronautical mobile 722 ~~726~~ 726A 726C	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ ~~LAND MOBILE-SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile ~~723~~ 722 ~~726~~ 726A 726C	

MHz
1 429 - 1 533 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/27 MOD	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space-to-Earth)~~ ~~LAND MOBILE-SATELLITE (space-to-Earth)~~ Earth Exploration-Satellite Fixed Mobile except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) 723D 722 ~~726~~726A	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space-to-Earth)~~ ~~LAND MOBILE-SATELLITE (space-to-Earth)~~ Earth Exploration-Satellite Fixed Mobile ~~723~~ MOBILE-SATELLITE (space-to-Earth) 723D 722 ~~726~~726A	
J/27/30 MOD	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) LAND MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile except aeronautical mobile 722 ~~726~~726A	**1 530 - 1 533** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) LAND MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 722 ~~726~~726A	

CAN/23/16
ADD **722A** In the bands 1 441 - 1 448 MHz and 1 490 - 1 497 MHz, space stations in the broadcasting-satellite service shall not operate before 1 January 2020.

CAN/23/17
ADD **722B** In the bands 1 441-1 476 MHz and 1 490-1 515 MHz, stations in the fixed service or the mobile service may claim protection from harmful interference from a space station in the broadcasting-satellite service up to four years after the date of publication of complete information concerning the space station in accordance with the provisions of Article 11. After this period of four years, stations in the fixed service or the mobile service cannot claim protection from the notified and operating space station in the broadcasting-satellite service nor cause interference within the service area of such a space station.

CAN/23/18
ADD **722C** In the band 1 441 - 1 515 MHz, administrations are urged to create plans for the broadcasting service which will permit the continued use of the fixed service and the mobile service for as long as possible. Stations of the fixed service and the mobile service operating in this band cannot claim protection from interference from stations of the broadcasting service or cause interference within the service areas of broadcasting stations operating in accordance with a plan.

CAN/23/19
ADD **722D** In the bands 1 448 - 1 476 MHz and 1 497 - 1 515 MHz, space stations in the broadcasting-satellite service shall not operate before 1 January 2001.

CAN/23/20
ADD **722E** In the band 1 476 - 1 490 MHz, stations in the broadcasting service shall not operate before 1 January 2001.

CAN/23/21
ADD **722F** In the band 1 476 - 1 490 MHz, assignments to space stations in the broadcasting-satellite service shall be subject to agreement obtained under the procedure set forth in Article14 and shall not operate before 1 January 2012.

USA/12/54
MOD **723** In Region 2, in Australia and Papua New Guinea, the use of the band 1 435 - ~~1 535~~1 525 MHz by the aeronautical mobile service for telemetry has priority over other uses by the mobile service.

CAN/23/10
SUP **723**

URS/7/57
ADD **723B** Additional allocation: in the USSR, the band 1 427 - 1 535 MHz is also used by the aeronautical mobile service exclusively for purposes of aeronautical telemetry on a primary basis within the national territory.

USA/12/55
ADD **723B** Fixed service operations can continue on a primary basis until 1 January 1997.

CAN/23/24
ADD **723B** In the band 1 515 - 1 525 MHz, stations in the fixed and mobile services shall not cause harmful interference to the mobile-satellite service after 1 January 1998.

FNL/28/3
ADD **723B** The use of the band 1 475 MHz - 1 525 MHz by the Broadcasting-Satellite Service is limited to the Broadcasting-Satellite (Sound) Service only.

CAN/23/25
ADD **723C** In the band 1 525 - 1 530 MHz, stations in the fixed and space operations services shall not cause harmful interference to the mobile-satellite service.

FNL/28/4
ADD **723C** Additional allocation: The band 1 475 MHz - 1 525 MHz is also allocated on a primary basis to the Terrestrial Broadcasting Service; broadcasting stations in this band shall be limited to those which are complementary to the Broadcasting-Satellite (sound) Service in the same band.

CAN/23/26
ADD **723D** In the bands 1 525 - 1 544 MHz and 1 626.5 - 1 645.5 MHz, maritime mobile-satellite distress and safety communications, as specified in Nos. N 3046 and N 3052, shall have priority access with real-time preemptive capability over all other communications in the mobile-satellite service. Mobile-satellite networks not capable of providing such priority access shall not cause harmful interference to maritime mobile-satellite distress and safety communications of conforming networks.

FNL/28/5
ADD **723D** The allocations to the Broadcasting-Satellite (Sound) Service and to the Broadcasting Service shall come into effect from 1 January 2005. See Resolution No. BBB (Document 20, Part II, proposal EUR/20/54).

USA/12/57
CAN/23/30
J/27/32
B/30/26
SUP **726**

MHz
1 533 - 1 610

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/56 **MOD**	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile~~, except aeronautical mobile~~ Land Mobile-Satellite (space-to-Earth) 726B 722 723B 726 726A	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration Satellite Fixed Mobile 723 Land Mobile-Satellite (space-to-Earth) 726B 722 726 726A	
USA/12/59 **MOD**	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) ~~Land Mobile Satellite (space to Earth) 726B~~ Earth Exploration-Satellite Fixed Mobile except aeronautical mobile 722 ~~726~~ 726A 726C	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) ~~Land Mobile Satellite (space to Earth) 726B~~ Earth Exploration-Satellite Fixed Mobile ~~723~~ 722 ~~726~~ 726A 726C	

MHz
1 533 - 1 610 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/28 MOD	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space-to-Earth)~~ Earth Exploration-Satellite Fixed Mobile except aeronautical mobile ~~Land Mobile-Satellite (space-to-Earth) 726B~~ MOBILE-SATELLITE (space-to-Earth) 723D 722 ~~726~~726A	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) ~~MARITIME MOBILE-SATELLITE (space-to-Earth)~~ Earth Exploration-Satellite Fixed Mobile ~~723~~ ~~Land Mobile-Satellite (space-to-Earth) 726B~~ MOBILE-SATELLITE (space-to-Earth) 723D 722 ~~726~~726A	
J/27/31 MOD	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile except aeronautical mobile Land Mobile-Satellite (space-to-Earth) MOD 726B 722 ~~726~~726A	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 Land Mobile-Satellite (space-to-Earth) MOD 726B 722 ~~726~~726A	
USA/12/60 MOD	**1 535 - 1 544**	~~MARITIME MOBILE-SATELLITE (space-to-Earth)~~ MOBILE-SATELLITE (space-to-Earth) ~~Land Mobile-Satellite (Space-to-Earth) 726B~~ 722 726A 726C 727	
CAN/23/29 MOD	**1 535 - 1 544**	~~MARITIME MOBILE-SATELLITE (space-to-Earth)~~ ~~Land Mobile-Satellite (space-to-Earth) 726B~~ MOBILE-SATELLITE (space-to-Earth) 722 723D 726A 727	
USA/12/62 MOD	**1 545 - 1 555**	~~AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth)~~ MOBILE-SATELLITE (space-to-Earth) 722 726A 727 729 ~~729A~~ 730 730B	
CAN/23/32 MOD	**1 545 - ~~1 555~~1 548**	AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth) 722 726A 727 729 MOD 729A 730	

MHz
1 533 - 1 610 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/33 **MOD**	~~1 645~~1 548 - 1 555	~~AERONAUTICAL MOBILE SATELLITE (R) (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) 722 726A 727 729 ~~729A~~729B 730	
USA/12/63 **MOD**	1 555 - 1 559	~~LAND MOBILE SATELLITE (space to Earth)~~ MOBILE-SATELLITE (space-to-Earth) 722 726A 727 730 ~~730A~~ 730B	
CAN/23/35 **MOD**	1 555 - 1 559	~~LAND MOBILE SATELLITE (space to Earth)~~ MOBILE SATELLITE (space-to-Earth) 722 726A 727 729B 730~~730A~~	

USA/12/61
CAN/23/31
SUP **726B**
Mob-87

EUR/20/121
J/27/33
MOD **726B**
Mob-87

The use of the bands 1 525 - 1 530 MHz, 1 533 - 1 544 MHz, 1 626.5 - 1 631.5 MHz and 1 634.5 - 1645.5 MHz by the land mobile-satellite service is limited to non-speech low bit-rate data transmissions.

B/30/28
MOD **726B**
Mob-87

The use of the bands 1 533 - 1 544 MHz, ~~1 626.5 - 1 631.5 MHz~~ and 1 634.5 - 1 645.5 MHz by the land mobile-satellite service is limited to non-speech low bit-rate data transmissions.

USA/12/58
ADD **726C**

In the frequency bands 1 530 - 1 544 MHz and 1 626.5 - 1 645.5 MHz maritime mobile-satellite distress and safety communications, e.g. GMDSS, shall have priority access with real-time preemptive capability in the mobile-satellite service. Communications of mobile satellite system stations not participating in the GMDSS shall operate on a secondary basis to distress and safety communications of stations operating in the GMDSS. Account shall be taken of the priority of safety-related communications in the mobile-satellite service.

USA/12/64
SUP **729A**
Mob-87

CAN/23/34
MOD **729A**

Notwithstanding any other provisions of the Radio Regulations relating to restrictions in the use of the bands allocated to the aeronautical mobile-satellite (R) service for public correspondence, the bands 1 545 - ~~1 555~~1 548 MHz and 1 646.5 - ~~1 656.5~~1 649.5 MHz may be authorized by administrations for public correspondence with aircraft earth stations. Such communications must cease immediately, if necessary, to permit transmission of messages with priority 1 to 6 in Article 51.

CAN/23/36
ADD **729B**

In the bands 1 548 - 1 559 MHz and 1 649.5 - 1 660.5 MHz, the aeronautical mobile-satellite (R) service shall have priority over all other communications in the mobile-satellite service, through the use of priority access, including where necessary a real-time preemptive capability. This may be accomplished by providing sufficient demand-access channels in reserve to accommodate variations in the magnitude of aeronautical mobile-satellite (R) traffic, in addition to those in use by the aeronautical mobile-satellite (R) network. Mobile-satellite networks not capable of providing this priority-access feature shall not cause harmful interference to aeronautical mobile-satellite (R) service communications of conforming networks.

USA/12/65
CAN/23/37
SUP **730A**
Mob-87

USA/12/66
ADD **730B**

The aeronautical mobile-satellite (R) service shall have priority access with real-time preemptive capability over all other communications in the mobile-satellite service. Systems not interoperable with the aeronautical mobile-satellite (R) service shall operate on a secondary basis. Account shall be taken of the priority of safety-related communications in the other mobile-satellite services.

EUR/20/81
SUP **731A to 731D**

USA/12/67
MOD

MHz
1 610 - 1 660

Allocation to Services		
Region 1	Region 2	Region 3
1 610 - 1 626.5	**1 610 - 1 626.5**	**1 610 - 1 626.5**
AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION	AERONAUTICAL RADIONAVIGATION
RADIODETERMINATION-SATELLITE (Earth-to-space) 733A	RADIODETERMINATION-SATELLITE (Earth-to-space) 733A ~~733E~~	~~Radiodetermination-Satellite (Earth-to-space) 733A 733E~~ RADIODETERMINATION-SATELLITE (Earth-to-space) 733A
MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)	MOBILE-SATELLITE (Earth-to-space)
722 727 730 731 731A 731B 731D 732 733 ~~733A~~ 733B ~~733E~~ ~~733F~~ 733Y 733Z MOD 734	722 731B 731C 732 733 733C 733D 733Y 733Z MOD 734	722 727 730 731B 731C 732 733 733B 733Y 733Z MOD 734

MHz
1 610 - 1 660 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/38 MOD	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE (Earth-to-space) 732A 732B 732C 732D 722 727 730 731 731A 731B 731D MOD 732 ~~733 733A 733B 733E 733F~~734	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION ~~RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E~~ MOBILE-SATELLITE (Earth-to-space) 732A 732B 732C 732D 722 731B 731C MOD 732 ~~733 733C~~733D 734	**1 610 - 1 626.5** AERONAUTICAL RADIONAVIGATION ~~Radiodetermination-Satellite (Earth-to-space) 733A 733E~~ MOBILE-SATELLITE (Earth-to-space) 732A 732B 732C 732D 722 727 730 731B 731C MOD 732 ~~733 733B~~734
USA/12/68 MOD	**1 626.5 - 1 631.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) ~~Land Mobile-Satellite (Earth-to-space) 726B~~ 722 726A 726C 727 730	
CAN/23/50 MOD	**1 626.5 - 1 631.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~Land Mobile-Satellite (Earth-to-space) 726B~~ MOBILE-SATELLITE (Earth-to-space) 722 723D 726A 727 730	
B/30/27 MOD	**1 626.5 - 1 631.5**	MARITIME MOBILE-SATELLITE (Earth-to-space) ~~Land Mobile-Satellite~~LAND MOBILE SATELLITE (Earth-to-space) ~~726B~~ 722 726A 727 730	
USA/12/74 MOD	**1 631.5 - 1 634.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~LAND MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 726C 727 730 734A	
CAN/23/51 MOD	**1 631.5 - 1 634.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~LAND MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 723D 726A 727 730 734A	
USA/12/75 MOD	**1 634.5 - 1 645.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) ~~Land Mobile-Satellite (Earth-to-space) 726B~~ 722 726A 726C 727 730	
CAN/23/52 MOD	**1 634.5 - 1 645.5**	~~MARITIME MOBILE-SATELLITE (Earth-to-space)~~ ~~Land Mobile-Satellite (Earth-to-space) 726B~~ MOBILE-SATELLITE (Earth-to-space) 722 723D 726A 727 730	

MHz
1 610 - 1 660 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/76 MOD	**1 646.5 - 1 656.5**	~~AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 727 729A 730 730B 735	
CAN/23/53 MOD	**1 646.5 - ~~1 656.5~~1 649.5**	AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) 722 726A 727 MOD 729A 730 735	
CAN/23/54 MOD	**~~1 646.5~~1 649.5 - 1 656.5**	~~AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 727 ~~729A~~729B 730 735	
USA/12/77 MOD	**1 656.5 - 1 660**	~~LAND MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 727 730 ~~730A~~ 730B 734A	
CAN/23/55 MOD	**1 656.5 - 1 660**	~~LAND MOBILE-SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 722 726A 727 729B 730 ~~730A~~734A	

CAN/23/39
MOD **732** The band 1 610 - ~~1 626.5~~1 616.5 MHz is reserved on a worldwide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities. Such satellite use is subject to agreement obtained under the procedure set forth in Article 14.

CAN/23/40
ADD **732A** In the bands 1 610 - 1 626.5 MHz, 1 960 - 1 990 MHz, 2 140 - 2 170 MHz, 24.25 - 24.75 GHz and 25.25 - 27.5 GHz, the provisions of MOD 2613 do not apply.

CAN/23/41
ADD **732B** Additional allocation: In the band 1 613.8 - 1 626.5 MHz the mobile-satellite service is also allocated in the space-to-Earth direction on a secondary basis.

CAN/23/42
ADD **732C** Non-geostationary satellite systems shall not operate in the band 1 621.5 - 1 626.5 MHz before 1 January 2001.

CAN/23/43
ADD **732D** Mobile-satellite networks already operating in the band 1 610 - 1 626.5 MHz paired with the band 2 483.5 - 2 500 MHz may continue to operate on a primary basis. Future systems operating in these bands should follow the pairing for mobile-satellite networks given in Resolution No. ZZZ.

CAN/23/44
MOD **733** The bands ~~1 610 - 1 626.5 MHz~~, 5 000 - 5 250 MHz and 15.4 - 15.7 GHz are also allocated to the aeronautical mobile-satellite (R) service on a primary basis. Such use is subject to agreement obtained under the procedure set forth in Article 14.

CAN/23/45
SUP **733A**

CAN/23/46
SUP **733B**

CAN/23/47
SUP **733C**

USA/12/69
CAN/23/48
SUP **733E**
Mob-87

USA/12/70
CAN/23/49
SUP **733F**
Mob-87

USA/12/71
ADD **733Y** The band 1 613.8 - 1 626.5 MHz is also allocated to the mobile-satellite service (space-to-Earth) on a secondary basis.

USA/12/72
ADD **733Z** Systems in the mobile-satellite service shall be introduced into these bands in accordance with appropriate CCIR Recommendations in order to ensure compatibility with the radiodetermination-satellite service.

USA/12/73
MOD **734** The band 1 610.6 - 1 613.8 MHz is also allocated to the radio astronomy service on a ~~secondary~~primary basis for spectral line observations. In making assignments to stations of other services to which the band is allocated, administrations ~~are urged to~~shall take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or airborne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

MHz
1 660 - 1 700

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/78 MOD	**1 660 - 1 660.5**	RADIO ASTRONOMY ~~LAND MOBILE SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 736A 722 726A ~~730A~~ 730B 736	
CAN/23/56 MOD	**1 660 - 1 660.5**	RADIO ASTRONOMY ~~LAND MOBILE SATELLITE (Earth-to-space)~~ MOBILE-SATELLITE (Earth-to-space) 729B 722 726A ~~730A~~736	
B/30/30 MOD	**1 670 - 1 690**	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 722	
EUR/20/78 MOD	**1 670 - ~~1 690~~1 675**	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE~~except aeronautical mobile~~ 739A 722	
EUR/20/79 MOD	**~~1 670~~1 675 - 1 690**	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 722	
B/30/31 MOD	**1 690 - 1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 671 722 741	**1 690 - 1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE-SATELLITE (Earth-to-space) 671 722 740 742	

USA/12/79
ADD **736A** The aeronautical mobile-satellite (R) service is the only aeronautical mobile-satellite service permitted in this band consistent with ADD 730B.

B/30/29
SUP **737**

EUR/20/80
ADD **739A** The bands 1 670 - 1 675 MHz and 1 800 - 1 805 MHz are designated on a worldwide basis for terrestrial aeronautical public correspondence. The use of the frequency band 1 670 - 1 675 MHz is limited to transmissions from aeronautical stations, and the use of the frequency band 1 800 - 1 805 MHz is limited to transmissions from aircraft stations.

MHz
1 700 - 2 450

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/20/82 **MOD**	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ~~Mobile except aeronautical mobile~~ 671 722 ~~743A~~	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 671 722 743	
FNL/29/2 **MOD**	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) Mobile except aeronautical mobile 671 722 743A 746A	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 671 722 743 746A	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
B/30/32 MOD	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) Mobile except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 671 722 743A	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile MOBILE-SATELLITE (Earth-to-space) 671 722 743	
URS/7/58 MOD	**1 710 - ~~2 290~~ 2 025** FIXED MOBILE ~~Mobile~~ 722 743A 744 746 ~~747 748 750~~	**1 710 - ~~2 290~~ 2 025** FIXED MOBILE 722 744 745 746 ~~747 748 749 750~~	
KOR/8/17 MOD	**1 710 - 2 290** FIXED Mobile 746A 746B 722 743A 744 746 747 748 750	**1 710 - 2 290** FIXED MOBILE 746A 746B 722 744 745 746 747 748 ~~749~~ 750	
USA/12/80 MOD	**1 710 - ~~2 290~~2 025** FIXED Mobile 722 743A 744 746 746A ~~747 748 750~~	**1 710 - ~~2 290~~2 025** FIXED MOBILE 722 744 745 746 746A ~~747 748 749 750~~	
EUR/20/83 MOD	**1 710 - ~~2 290~~2 025** FIXED MOBILE ~~Mobile~~ 722 739A ~~743A~~ 744 746 746A 746B ~~747 748 750~~	**1 710 - ~~1 290~~2 025** FIXED MOBILE 722 739A 744 745 746 746A 746B ~~747 748 749 750~~	
CAN/23/57 MOD	**1 710 - ~~2 290~~2 025** FIXED ~~Mobile~~ MOBILE 722 732A 743A 744~~746~~ 746A 746B 746C ~~747 748 750~~	**1 710 - ~~2 290~~2 025** FIXED MOBILE 722 732A 744 745 746 746A 746B 746C~~747 748 749 750~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
J/27/34 MOD	**1 710 - ~~2 290~~2 070** FIXED ~~Mobile~~ MOBILE 722 ~~743A~~ 744 746 MOD 747 ~~748 750~~ 750A	**1 710 - ~~2 290~~2 070** FIXED MOBILE 722 744 745 746 MOD 747 ~~748 749 750~~750A	
FNL/29/3 MOD	**1 710 - 2 290** FIXED Mobile 722 743A 744 746 746A 747 748 750	**1 710 - 2 290** FIXED MOBILE 722 744 745 746 746A 747 748 749 750	
B/30/33 MOD	**1 710 - ~~2 290~~1 720** FIXED Mobile MOBILE-SATELLITE (Earth-to-space) 722 743A 744 ~~746~~ ~~747 748 750~~	**1 710 - ~~2 290~~1 720** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 722 744 ~~745 746~~ ~~747 748 749 750~~	
B/30/34 MOD	~~**1 710**~~**1 720 - ~~2 290~~1 880** FIXED Mobile 722 743A 744 746 ~~747~~ ~~748 750~~	~~**1 710**~~**1 720 - ~~2 290~~2 025** FIXED MOBILE 746A	
B/30/35 MOD	~~**1 710**~~**1 880 - ~~2 290~~1 940** FIXED ~~Mobile~~MOBILE 746A ~~722~~743A ~~744 746 747 748 750~~		
B/30/36 MOD	~~**1 710**~~**1 940 - ~~2 290~~2 025** FIXED Mobile ~~722~~ 743A ~~744 746~~ ~~747 748 750~~	722 744 745 746 ~~747 748 749 750~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/59 MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space), (space-to-space) SPACE OPERATION (Earth-to-space), (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) ~~Mobile~~ ~~722~~ 743A ~~744 746~~ MOD 747 ~~748 750~~	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space), (space-to-space) SPACE OPERATION (Earth-to-space), (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space), (space-to-space) ~~722 744 745 746~~ MOD 747 ~~748 749 750~~	
USA/12/81 MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) MOBILE ~~722 744 745 746 747 748 749 750~~	
EUR/20/87 MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) (space-to-Earth) SPACE OPERATIONS (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) MOBILE 747A ~~Mobile~~ ~~722 743A 744 746 747 748 750~~	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATIONS (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) MOBILE 747A ~~722 744 745 746 747 748~~ 749 ~~750~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/61 MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED ~~Mobile~~ MOBILE EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) SPACE RESEARCH (Earth-to-space) (space-to-space) ~~722~~743A ~~744~~ ~~746~~MOD 747~~748 750~~	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) SPACE RESEARCH (Earth-to-space) (space-to-space) ~~722 744 745 746~~ MOD 747 747A~~748 749 750~~	
B/30/38 MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) SPACE OPERATION (Earth-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) Mobile ~~722~~ 743A ~~744 746 747 748 750~~ 750A	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space) SPACE OPERATION (Earth-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) ~~722 744 745 746 747 748 749 750~~ 750A	
J/27/35 MOD	~~1 710~~2 070 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) Mobile ~~722~~ 743A~~744 746 747 748 750~~	~~1 710~~2 070 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) ~~722 744 745 746 747 748 749 750~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/60 MOD	~~1 710~~2 110 - ~~2 290~~2 200 FIXED Mobile except aeronautical mobile ~~722~~ 743A ~~744 746~~ ~~747~~ 748 ~~750~~	~~1 710~~2 110 - ~~2 290~~2 200 FIXED MOBILE ~~722 744 745 746~~ ~~747~~ 748 749 ~~750~~	
USA/12/84 MOD	~~1 710~~2 110 - ~~2 290~~2 120 FIXED MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) (deep space) Mobile ~~722~~ 743A ~~744 746~~ ~~747 748 750~~	~~1 710~~2 110 - ~~2 290~~2 120 FIXED MOBILE-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (Earth-to-space) (deep space) ~~722 744 745 746~~ ~~747 748 749 750~~	
EUR/20/91 MOD	~~1 710~~2 110 - ~~2 290~~2 200 FIXED MOBILE ~~Mobile~~ ~~722 743A 744 746~~ 746A 746B ~~747~~ 748 ~~750~~	~~1 710~~2 110 - ~~2 290~~2 200 FIXED MOBILE ~~722 744 745 746~~ 746A 746B ~~747~~ 748 749 ~~750~~	
CAN/23/67 MOD	~~1 710~~2 110 - ~~2 290~~2 200 FIXED ~~Mobile~~ MOBILE ~~722~~732A 743A ~~744 746~~ 746B 746C~~747~~748 749A~~750~~	~~1 710~~2 110 - ~~2 290~~2 200 FIXED MOBILE ~~722~~ 732A ~~744 745 746~~746B 746C ~~747~~748 ~~749~~749A ~~750~~	
J/27/36 MOD	~~1 710~~2 110 - ~~2 290~~2 250 FIXED ~~Mobile~~ MOBILE ~~722 743A 744 746 747~~ 748 MOD 750 750A	~~1 710~~2 110 - ~~2 290~~2 250 FIXED MOBILE ~~722 744 745 746 747~~ 748 ~~749~~ MOD 750 750A	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
B/30/39 MOD	~~1 710~~2 110 - ~~2 290~~2 120 FIXED SPACE RESEARCH (deep space) (Earth-to-space) Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 110 - ~~2 290~~2 120 FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) ~~722 744 745 746 747 748 749 750~~	
USA/12/85 MOD	~~1 710~~2 120 - ~~2 290~~2 130 FIXED MOBILE-SATELLITE (space-to-Earth) Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 120 - ~~2 290~~2 130 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ~~722 744 745 746 747 748 749 750~~	
B/30/40 MOD	~~1 710~~2 120 - ~~2 290~~2 200 FIXED Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 120 - ~~2 290~~2 200 FIXED MOBILE ~~722 744 745 746 747 748 749 750~~	
USA/12/88 MOD	~~1 710~~2 130 - ~~2 290~~2 160 FIXED Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 130 - ~~2 290~~2 160 FIXED MOBILE ~~722 744 745 746 747 748 749 750~~	
USA/12/89 MOD	~~1 710~~2 160 - ~~2 290~~2 180 FIXED MOBILE-SATELLITE (space-to-Earth) Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 160 - ~~2 290~~2 180 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) ~~722 744 745 746 747 748 749 750~~	
USA/12/90 MOD	~~1 710~~2 180 - ~~2 290~~2 200 FIXED Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 180 - ~~2 290~~2 200 FIXED MOBILE ~~722 744 745 746 747 748 749 750~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/61 MOD	~~1 710~~ 2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth,) (space-to-space) SPACE OPERATION (space-to-Earth), (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth), (space-to-space) Mobile except aeronautical mobile ~~722~~ 743A ~~744 746 747 748~~ MOD 750	~~1 710~~ 2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth), (space-to-space) SPACE OPERATION (space-to-Earth), (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth), (space-to-space) MOBILE ~~722 744 745 746 747 748 749~~ MOD 750	
USA/12/91 MOD	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) MOBILE ~~722 744 745 746 747 748 749 750~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/20/92 MOD	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATIONS (space-to-Earth) (space to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) MOBILE 747A ~~Mobile~~ ~~722 743A 744 746 747 748 750~~	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATIONS (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) MOBILE 747A ~~722 744 745 746 747 748 749 750~~	
CAN/23/68 MOD	~~1 710~~2 200 - 2 290 FIXED Mobile MOBILE EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) SPACE RESEARCH (space-to-Earth) (space-to-space) ~~722~~743A ~~744 746~~ . MOD 747 747A ~~748 750~~	~~1 710~~2 200 - 2 290 FIXED MOBILE EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) SPACE RESEARCH (space-to-Earth) (space-to-space) ~~722 744 745 746~~ MOD 747 747A ~~748 749 750~~	
B/30/41 MOD	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth) SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (space-to-Earth) Mobile ~~722~~ 743A ~~744 746 747 748 750~~750A	~~1 710~~2 200 - 2 290 FIXED MOBILE SPACE RESEARCH (space-to-Earth) SPACE OPERATION (space-to-Earth) EARTH EXPLORATION-SATELLITE (space-to-Earth) ~~722 744 745 746 747 748 749 750~~ 750A	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
J/27/37 MOD	~~**1 710**~~**2 250 - 2 290** FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) Mobile ~~722~~ 743A ~~744 746 747 748 750~~	~~**1 710**~~**2 250 - 2 290** FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) ~~722 744 745 746 747 748 749 750~~	
EUR/20/93 MOD	**2 290 - 2 300** FIXED SPACE RESEARCH (deep space) (space-to-Earth) ~~Mobile~~MOBILE except aeronautical mobile ~~734A~~	**2 290 - 2 300** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth)	
CAN/23/69 MOD	**2 290 - 2 300** FIXED SPACE RESEARCH (deep-space) (space-to-Earth) ~~Mobile~~ MOBILE except aeronautical mobile 743A	**2 290 - 2 300** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep-space) (space-to-Earth)	
URS/7/62 MOD	**2 300 - 2 450** FIXED MOBILE RADIOLOCATION Amateur ~~Mobile~~ ~~Radiolocation~~ 664 743A 752	**2 300 - 2 450** FIXED MOBILE RADIOLOCATION Amateur 664 751 752	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/93 MOD	**2 300 - ~~2 450~~2 390** FIXED Amateur Mobile Radiolocation 664 743A ~~752~~	**2 300 - ~~2 450~~2 390** FIXED MOBILE RADIOLOCATION Amateur 664 751 ~~752~~	
USA/12/193 MOD	**2 300 - ~~2 450~~2 310** FIXED Amateur Mobile Radiolocation ~~664~~ 743A ~~752~~	**2 300 - ~~2 450~~2 310** FIXED MOBILE RADIOLOCATION Amateur ~~664 751 752~~	
EUR/20/119 MOD	**2 300 - 2 450** FIXED MOBILE Amateur ~~Mobile~~ Radiolocation 664 ~~743A~~ 752	**2 300 - 2 450** FIXED MOBILE RADIOLOCATION Amateur 664 751 752	
CAN/23/70 MOD	**2 300 - 2 450** FIXED Amateur ~~Mobile~~ MOBILE Radiolocation 664 743A 752	**2 300 - 2 450** FIXED MOBILE RADIOLOCATION Amateur 664 751 752	
USA/12/194 MOD	~~2 300~~2 310 - ~~2 450~~2 360 BROADCASTING-SATELLITE (sound) BROADCASTING 751A ~~FIXED~~ Fixed 751B Amateur Mobile Radiolocation ~~664~~ 743A ~~752~~	~~2 300~~2 310 - ~~2 450~~2 360 BROADCASTING-SATELLITE (sound) BROADCASTING 751A ~~FIXED~~ Fixed 751B ~~MOBILE~~ Mobile 751C ~~RADIOLOCATION~~ Radiolocation 751D Amateur ~~664~~ 751 ~~752~~	

MHz
1 700 - 2 450 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/195 MOD	~~2 300~~2 360 - ~~2 450~~2 390 FIXED Amateur Mobile Radiolocation ~~664~~ 743A ~~752~~	~~2 300~~2 360 - ~~2 450~~2 390 FIXED MOBILE RADIOLOCATION Amateur ~~664~~ 751 ~~752~~	
USA/12/94 MOD	~~2 300~~2 390 - ~~2 450~~2 430 MOBILE-SATELLITE (Earth-to-space) Amateur ~~FIXED~~ Fixed 752A Mobile Radiolocation 664 743A 752	~~2 300~~2 390 - ~~2 450~~2 430 MOBILE-SATELLITE (Earth-to-space) Amateur ~~FIXED~~ Fixed 752A ~~MOBILE~~ Mobile 752C ~~RADIOLOCATION~~ Radiolocation 752B 664 ~~751~~ 752	
USA/12/95 MOD	~~2 300~~2 430 - 2 450 FIXED Amateur Mobile Radiolocation 664 743A 752	~~2 300~~2 430 - 2 450 FIXED MOBILE RADIOLOCATION Amateur 664 ~~751~~ 752	

EUR/20/86
SUP **743A** **Mob-87** Consequential upon elevating the mobile service in Region 1 from secondary to primary status.

KOR/8/18
ADD **746A** The band 1 875 - 2 025 MHz and 2 110 - 2 200 MHz are designated on a world-wide basis for the use by the future public land mobile telecommunication systems having characteristics in accordance with the Recommendations of the CCIR.

USA/12/82
ADD **746A** The band 1 850 - 1 990 MHz is also allocated to the mobile-satellite service on a primary basis.

EUR/20/84
ADD **746A** The frequency band 1 900 - 2 025 MHz is designated and shall be made available from the year 2000 as required for Future Public Land Mobile Telecommunications Systems (FPLMTS), the technical characteristics of which are being studied by the CCIR. The frequency band 2 110 - 2 200 MHz is also designated for this purpose and shall be made available from the year 2010 as required for the development and operation of the FPLMTS.

CAN/23/58
ADD **746A** Use of the band 1 900 - 1 960 MHz by the mobile service is designated on a worldwide basis for personal public land mobile telecommunications systems having characteristics in accordance with the Recommendations of the CCIR. The band 1 900 - 1 930 MHz shall be available for such use commencing in 1998 and the band 1 930 - 1 960 MHz shall be made available after the year 2003. Use of these bands by these systems has priority over other mobile uses of the bands.

FNL/29/1
ADD **746A**

The frequency band 1 700 MHz - 1 950 MHz is designated and shall be made available from the year 2000 as required for Future Public Land Mobile Telecommunications Systems (FPLMTS), the technical characteristics of which are being studied by the CCIR.

Reference to this footnote is proposed to be added to the part of Article 8, Section IV which gives allocations to services within the band 1 700 MHz - 1 710 MHz and 1 710 MHz - 2 290 MHz.

B/30/37
ADD **746A** The band 1 880 - 1 940 MHz is designated, on a worldwide basis, effective from 1 January 2000, for the operation of the personal stations of the Future Public Land Mobile Telecommunications Systems (FPLMTS), whose technical characteristics are to be defined by the CCIR.

KOR/8/19
ADD **746B** The bands mentioned in 746A may also be used for space techniques in connection with the future public land mobile telecommunication systems in accordance with the Recommendations of the CCIR.

EUR/20/85
ADD **746B** In the bands mentioned in ADD 746A, the use of space techniques, in accordance with the recommendations of the CCIR, may also be authorised in connection with the FPLMTS.

CAN/23/59
ADD **746B** After 1 January 2003, the band 1 960 - 1 990 MHz is also allocated to the mobile-satellite service (Earth-to-space) on a primary basis and (space-to-Earth) on a secondary basis.

CAN/23/60
ADD **746C** After 1 January 2003, in the bands 1 960 - 1 990 MHz and 2 140 - 2 170 MHz, the fixed service shall not cause harmful interference to nor claim protection from the mobile-satellite service. The provisions of No. 435 do not apply between the fixed service and the mobile service in this band.

URS/7/65
MOD **747** ~~Subject to agreement obtained under the procedure set forth in Article 14, t~~The band 2 025 - 2 110 MHz may ~~also~~ be used for Earth-to-space and space-to-space transmissions in the space research, space operation and earth exploration-satellite services. The services using space-to-space transmissions shall operate in accordance with the provisions of Nos. 2557 to 2560 ~~and shall not cause harmful interference to the other space services~~.

CAN/23/62
MOD **747**

In ~~Subject to agreement obtained under the procedure set forth in Article 14~~ the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz, ~~may also be used for Earth-to-space and space-to-space transmissions in~~ the space research, space operation and Earth exploration-satellite services~~. The services using space-to-space transmissions~~ shall operate in accordance with the provisions of Article 28. ~~Nos. 2557 to 2560 and~~ The services using space-to-space transmissions shall not cause harmful interference to the other space services. The fixed service shall operate in accordance with the provisions of Article 27. Any claim for protection from harmful interference between a space station and a station in the fixed service is limited to interference which may arise if these limits are exceeded.

J/27/38
MOD **747**

Subject to agreement obtained under the procedure set forth in Article 14, the band 2 025 - ~~2 110~~2 070 MHz may also be used for Earth-to-space and space-to-space transmissions in the space research, space operation and earth exploration-satellite services. The services using space-to-space transmissions shall operate in accordance with the provisions of Nos. 2557 to 2560 and shall not cause harmful interference to other space services.

USA/12/83
EUR/20/89
B/30/42
SUP **747**

EUR/20/88
ADD **747A**

The mobile service in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz is limited to systems which comply with the limits specified in ADD 2509bis. See also Resolution No. EEE.

CAN/23/63
ADD **747A**

In the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz, the Earth exploration-satellite and the space research services are limited to the transfer of data between stations, and not to the primary collection of information through the use of active or passive sensors. No. 953 does not apply in the use of space services in these bands.

USA/12/86
B/30/42
SUP **748**

KOR/8/20
USA/12/87
CAN/23/64
J/27/39
B/30/44
SUP **749**

CAN/23/65
ADD **749A**

Allocation: After 1 January 2003, the band 2 140 - 2 170 MHz is allocated to the mobile-satellite service (space-to-Earth) on a primary basis. The power flux-density at the Earth's surface shall not exceed -133 dBW/m^2 in any 4 kHz band for all angles of arrival.

URS/7/66
MOD **750**

~~Subject to agreement obtained under the procedure set forth in Article 14, t~~The band 2 200 - 2 290 MHz may also be used for space-to-Earth and space-to-space transmissions in the space research, space operation and earth exploration-satellite services. These services shall operate in accordance with the provisions of Nos. 2557 to 2560~~; the space-to-space transmissions shall not cause harmful interference to the other space services~~.

J/27/40
MOD **750**

Subject to agreement obtained under the procedure set forth in Article 14, the band 2 200 - ~~2 290~~2 250 MHz may also be used for space-to-Earth and space-to-space transmissions in the space research, space operations and earth exploration-satellite services. These services using space-to-space transmissions shall operate in accordance with the provisions of Nos. 2557 to 2560 ~~of the space-to-space transmissions~~ and shall not cause harmful interference to the other ~~space~~ services.

USA/12/92
EUR/20/90
CAN/23/66
B/30/42
SUP **750**

J/27/41
ADD **750A**

The frequency bands 1 995 - 2 010 MHz and 2 170 - 2 200 MHz are designated for Future Public Land Mobile Telecommunication Systems (FPLMTS) from 1 July 1998, and the band 2 010 - 2 025 MHz from 1 January 2005.

B/30/43
ADD **750A**

The bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz may also be used for space-to-space transmissions in the space research, space operation, and earth exploration-satellite services. These transmissions shall be in accordance with the provisions of Nos. 2557 to 2560 and shall not cause harmful interference to Earth-to-space and space-to-Earth transmissions of these space services.

USA/12/196
ADD **751A**

The broadcasting service is complementary to the broadcasting-satellite (sound) service.

USA/12/197
ADD **751B**

The fixed service may continue to operate in a specific service area in the band 2 310 - 2 360 MHz on a primary basis until 1 January 1997 or until a broadcasting-satellite (sound) service or complementary broadcasting service has been brought into use in such a manner as to affect or be affected by the fixed service in that service area, whichever is later.

USA/12/198
ADD **751C**

The mobile service may continue to operate in a specific service area in the band 2 310 - 2 360 MHz on a primary basis until 1 January 1997 or until a broadcasting-satellite (sound) service or complementary broadcasting service has been brought into use in such a manner as to affect or be affected by the mobile service in that service area, whichever is later.

USA/12/199
ADD **751D**

The radiolocation service may continue to operate in a specific service area in the band 2 310 - 2 360 MHz on a primary basis until 1 January 1997 or until a broadcasting-satellite (sound) service or complementary broadcasting service has been brought into use in such a manner as to affect or be affected by the radiolocation service in that service area, whichever is later.

USA/12/96
ADD **752A**

The fixed service may continue to operate in a specific service area in the band 2 390 - 2 430 MHz on a primary basis until 1 January 1997 or until a mobile-satellite service (Earth-to-space) has been brought into use in such a manner as to affect or be affected by the fixed service in that service area, whichever is later.

USA/12/97
ADD **752B** The radiolocation service may continue to operate in a specific service area in the band 2 390 - 2 430 MHz on a primary basis until 1 January 1997 or until a mobile-satellite service (Earth-to-space) has been brought into use in such a manner as to affect or be affected by the radiolocation service in that service area, whichever is later.

USA/12/98
ADD **752C** The mobile service may continue to operate in a specific service area in the band 2 390 - 2 430 MHz on a primary basis until 1 January 1997 or until a mobile-satellite (Earth-to-space) has been brought into use in such a manner as to affect or be affected by the mobile service in that service area, whichever is later.

MHz
2 450 - 2 655

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/99 **MOD**	**2 483.5 - 2 500** FIXED MOBILE RADIODETERMINATION-SATELLITE (space-to-Earth) 753A MOBILE-SATELLITE (space-to-Earth) Radiolocation ~~733F~~ 733Z 752 ~~753A~~ 753B ~~753C~~ 753E	**2 483.5 - 2 500** FIXED MOBILE RADIODETERMINATION-SATELLITE (space-to-Earth) 753A MOBILE-SATELLITE (space-to-Earth) RADIOLOCATION 733Z 752 753D	**2 483.5 - 2 500** FIXED MOBILE RADIODETERMINATION-SATELLITE (space-to-Earth) 753A ~~Radiodetermination-Satellite (space-to-Earth) 753A~~ MOBILE-SATELLITE (space-to-Earth) RADIOLOCATION 733Z 752 ~~753C~~
CAN/23/71 **MOD**	**2 483.5 - 2 500** FIXED MOBILE Radiolocation MOBILE-SATELLITE (space-to-Earth) 732D ~~733F~~752 ~~753A~~ ~~753B 753C~~753E 753G	**2 483.5 - 2 500** FIXED MOBILE ~~RADIODETERMINATION-SATELLITE (space-to-Earth) 753A~~ ~~RADIOLOCATION~~ MOBILE-SATELLITE (space-to-Earth) 732D Radiolocation 752 753D 753G	**2 483.5 - 2 500** FIXED MOBILE RADIOLOCATION ~~Radiodetermination Satellite (space-to-Earth) 753A~~ MOBILE-SATELLITE (space-to-Earth) 732D 752 ~~753C~~753G

MHz
2 450 - 2 655 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/20/39	In the band 2 500 - 2 570 MHz remove all allocations to the broadcasting-satellite service, the associated Footnote RR 757 and the references to RR 760		
	2 500 - 2 655 FIXED 762 763 764 MOBILE except aeronautical mobile **URS/7/39 MOD** BROADCASTING-SATELLITE MOD 757 <u>757A</u> 760 **URS/7/40 MOD** 720 753 756 758 MOD 759	**2 500 - 2 655** FIXED 762 764 FIXED-SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 <u>757A</u> 760 720 755	**2 500 - 2 535** FIXED 762 764 FIXED-SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 <u>757A</u> 760 754 754A **2 535 - 2 655** FIXED 762 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE MOD 757 <u>757A</u> 760 720
USA/12/101 MOD	**2 500 - 2 655** FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 720 753 <u>MOD 754</u> 756 758 759	**2 500 - 2 655** FIXED 762 764 FIXED-SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 720 755	**2 500 - 2 535** FIXED ~~762 764~~ FIXED-SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOD 754 ~~754A~~ **2 535 - 2 655** FIXED 762 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 720

MHz
2 450 - 2 655 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/75 MOD	**2 500 - ~~2 655~~2 535** FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOBILE-SATELLITE (space-to-Earth) ~~720~~753 753G 756 758 759	**2 500 - ~~2 655~~2 535** FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) ~~720~~753G~~755~~	**2 500 - 2 535** FIXED 762 764 FIXED-SATELLITE (space-to-Earth) MOD 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOBILE-SATELLITE (space-to-Earth) 753G ~~754 754A~~
J/27/42 MOD	**2 500 - ~~2 655~~2 535** FIXED 762 MOD 763 MOD 764 MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) (except aeronautical mobile-satellite (R)) 754B ~~BROADCASTING SATELLITE 757 760~~ ~~720~~753 756 MOD 758 MOD 759	**2 500 - ~~2 655~~2 535** FIXED 762 MOD 764 FIXED SATELLITE (space-to-Earth) MOD 761 MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) (except aeronautical mobile-satellite (R)) 754B ~~BROADCASTING SATELLITE 757 760~~ ~~720~~755	**2 500 - 2 535** FIXED 762 MOD 764 FIXED SATELLITE (space-to-Earth) MOD 761 MOBILE except aeronautical mobile MOBILE-SATELLITE (space-to-Earth) (except aeronautical mobile-satellite (R)) 754B ~~BROADCASTING SATELLITE 757 760~~ ~~754~~754A
EUR/20/123 MOD	**~~2 500~~2 520 - ~~2 655~~2 535** FIXED 762 763 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 760A ~~720 753~~ 756 758 759	**~~2 500~~2 520 - ~~2 655~~2 535** FIXED 762 MOD 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 760A ~~720~~ 755	**~~2 500~~2 520 - 2 535** FIXED 762 MOD 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING SATELLITE 757 760~~ MOBILE-SATELLITE (space-to-Earth) 760A ~~754~~ 754A

MHz
2 450 - 2 655 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/20/124 MOD	~~2 500~~2 535 - ~~2 655~~2 570 FIXED 762 763 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ LAND MOBILE-SATELLITE (space-to-Earth) 760A MARITIME MOBILE-SATELLITE (space-to-Earth) 760A ~~720~~ 753 ~~756 758~~ 759	~~2 500~~2 535 - ~~2 655~~2 570 FIXED 762 MOD 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE~~ 757 760 LAND MOBILE-SATELLITE (space-to-Earth) 760A MARITIME MOBILE-SATELLITE (space-to-Earth) 760A ~~720~~ 755	2 535 - ~~2 655~~2 570 FIXED 762 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ LAND MOBILE-SATELLITE (space-to-Earth) 760A MARITIME MOBILE-SATELLITE (space-to-Earth) 760A ~~720~~
CAN/23/81 MOD	~~2 500~~2 535 - ~~2 655~~2 638.5 FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 ~~720~~753 756 758 759	~~2 500~~2 535 - ~~2 655~~2 638.5 FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720 755~~	2 535 - ~~2 655~~2 638.5 FIXED 762 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 ~~720~~
J/27/43 MOD	~~2 500~~2 535 - ~~2 655~~2 565 FIXED 762 MOD 763 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~-753 756 MOD 758 MOD 759	~~2 500~~2 535 - ~~2 655~~2 565 FIXED 762 MOD 764 FIXED SATELLITE (space-to-Earth) MOD 761 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~-755	2 535 - ~~2 655~~2 565 FIXED 762 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ ~~720~~

MHz
2 450 - 2 655 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
J/27/44 MOD	~~2 500~~2 565 - ~~2 655~~2 625 ~~FIXED~~ 762 MOD 763 MOD 764 ~~MOBILE except aeronautical mobile~~ BROADCASTING-SATELLITE ~~757 760~~ BROADCASTING Fixed Mobile except aeronautical mobile ~~720 753~~ 756 ~~758 759~~ 759A	~~2 500~~2 565 - ~~2 655~~2 625 ~~FIXED~~ 762 MOD 764 ~~FIXED SATELLITE (space to Earth) 761~~ ~~MOBILE except aeronautical mobile~~ BROADCASTING-SATELLITE ~~757 760~~ BROADCASTING Fixed Fixed-satellite (space-to-Earth) Mobile except aeronautical mobile ~~720 755~~759A	~~2 535~~2 565 - ~~2 655~~2 625 ~~FIXED~~ 762 MOD 764 ~~MOBILE except aeronautical mobile~~ BROADCASTING-SATELLITE ~~757 760~~ BROADCASTING Fixed Mobile except aeronautical mobile ~~720~~759A
EUR/20/40 MOD	~~2 500~~2 570 - ~~2 655~~2 620 FIXED 762 763 MOD 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE ~~757 760~~ 757A 757B 757C	~~2 500~~2 570 - ~~2 655~~2 620 FIXED 762 MOD 764 ~~FIXED SATELLITE (space to Earth) 761~~ MOBILE except aeronautical mobile BROADCASTING-SATELLITE ~~757 760~~ 757A 757B 757C	~~2 500 - 2 535~~ ~~FIXED 762 764~~ ~~FIXED SATELLITE (space to Earth) 761~~ ~~MOBILE except aeronautical mobile~~ ~~BROADCASTING-SATELLITE 757 760~~ ~~754 754A~~
EUR/20/41 MOD			~~2 535~~2 570 - ~~2 655~~2 620 FIXED 762 MOD 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE ~~757 760~~ 757A 757B 757C
	720 753 756 ~~758~~ 759	720 755	720
EUR/20/42	In the band 2 620 - 2 690 MHz remove all allocations to the broadcasting-satellite service, the associated Footnote RR 757 and the reference to RR 760		

MHz
2 450 - 2 655 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
J/27/45 MOD	~~2 500~~2 625 - 2 655 FIXED 762 MOD 763 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ 720 ~~753 756~~ MOD 758 MOD 759	~~2 500~~2 625 - 2 655 FIXED 762 MOD 764 FIXED-SATELLITE (space-to-Earth) MOD 761 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ 720~~755~~	~~2 535~~2 625 - 2 655 FIXED 762 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ 720
CAN/23/82 MOD	~~2 500~~2 638.5 - 2 655 FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOBILE-SATELLITE (Earth-to-space) 720 753 753G ~~756~~758 759	~~2 500~~2 638.5 - 2 655 FIXED 762 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (Earth-to-space) 720 753G~~755~~	~~2 535~~2 638.5 - 2 655 FIXED 762 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOBILE-SATELLITE (Earth-to-space) 720 753G
EUR/20/126 MOD	~~2 500~~2 640 - 2 655 FIXED 762 ~~763~~ MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (Earth-to-space) 760A	~~2 500~~2 640 - 2 655 FIXED 762 MOD 764 ~~FIXED SATELLITE (space-to-Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (Earth-to-space) 760A	~~2 500 - 2 535~~ ~~FIXED 762 764~~ ~~FIXED SATELLITE (space-to-Earth) 761~~ ~~MOBILE except aeronautical mobile~~ ~~BROADCASTING-SATELLITE 757 760~~ ~~754 754A~~
EUR/20/127 MOD	720 ~~753 756 758~~ 759	720 ~~755~~	~~2 535~~2 640 - 2 655 FIXED 762 MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ MOBILE-SATELLITE (Earth-to-space) 760A 720

CAN/23/72
SUP **753A**

CAN/23/73
SUP **753B**

USA/12/100
CAN/23/74
SUP **753C**
Mob-87

CAN/23/76
ADD **753G** After 1 January 2003, in the bands 2 483.5 - 2 535 MHz and 2 638.5 - 2 690 MHz, stations of other services shall not cause harmful interference to the mobile-satellite service.

USA/12/102
MOD **754** Subject to agreement obtained under the procedure set forth in Article 14, the band 2 500 - 2 535 MHz may also be used in Regions 1 and 3 for the mobile-satellite (space-to-Earth), ~~except aeronautical mobile-satellite,~~ service for operation limited to within national boundaries.

CAN/23/77
J/27/47
SUP **754**

CAN/23/78
SUP **754A**

J/27/48
ADD **754B** The use of the band for the mobile-satellite service, except the aeronautical mobile-satellite (R) service, is limited to national and regional systems.

CAN/23/79
SUP **755**

URS/7/41
MOD **757** The use of the band 2 500 - 2 690 MHz, with the exception of the portion indicated in No. 757A, by the broadcasting-satellite service is limited to national and regional systems for community reception and such use shall be subject to agreement obtained under the procedure described in Article 14. The power flux density at the Earth's surface shall not exceed the values given in Nos. 2561 to 2564.

EUR/20/46
J/27/49
SUP **757**

URS/7/42
ADD **757A** The band [up to 60 MHz] is used on a world-wide basis for the design and development of equipment in the broadcasting-satellite service (sound) and the associated low-power terrestrial broadcasting transmitters designed for the extension, where necessary, of broadcasting-satellite service 0areas. Until the entry into force of the relevant Plan, the bringing into operation of broadcasting satellite systems shall be subject to a special procedure similar to that described in Resolution No. 33. The criteria for the sharing of this band by the broadcasting-satellite service with the other services to which it is allocated shall be established in the preparatory planning process.

EUR/20/43
ADD **757A** The use of the band 2 570 - 2 620 MHz by the broadcasting-satellite service is limited to the broadcasting-satellite (sound) service only.

EUR/20/44
ADD **757B** Additional allocation: The band 2 570 - 2 620 MHz is also allocated on a primary basis to the terrestrial broadcasting service; broadcasting stations in this band shall be limited to those which are complementary to the broadcasting-satellite (sound) service in the same band.

EUR/20/45
ADD **757C** The allocations to the broadcasting-satellite (sound) service and to the broadcasting service shall come into effect from 1 January 2005. See Resolution No. BBB.

J/27/50
MOD **758** Alternative allocation: in the Federal Republic of Germany and Greece, the band 2 500 - 2 565 MHz and 2 625 - 2 690 MHz ~~is~~ are allocated to the fixed service on a primary basis.

EUR/20/47
SUP **758**

URS/7/43
MOD **759** Alternative allocation: in Bulgaria and the USSR, the band 2 500 - 2 690 MHz, with the exception of the portion indicated in No. 757A, is allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

J/27/51
MOD **759** Alternative allocation: in Bulgaria and the U.S.S.R., the bands 2 500 - 2 565 MHz and 2 625 - 2 690 MHz ~~is~~ are allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis.

J/27/52
ADD **759A** The fixed service, the mobile (except aeronautical mobile) service, and the fixed-satellite service (space-to-Earth) in Region 2, will be primary until 31 December 1999.

EUR/20/48
J/27/53
SUP **760**

EUR/20/125
ADD **760A** The allocations to the mobile-satellite services on a primary basis shall be effective from 1 January 2005 for the bands 2 520 - 2 545 MHz and 2 640 - 2 665 MHz, and from 1 January 2010 for the bands 2 545 - 2 570 MHz and 2 665 - 2 690 MHz. For the bands 2 520 - 2 545 MHz and 2 640 - 2 665 MHz the mobile-satellite services shall be on a secondary basis for the period from 1 January 2000 to 1 January 2005. After the date on which the allocations to the mobile-satellite services become primary, and until mobile-satellite systems are introduced in these bands, the allocations to the fixed and mobile except aeronautical mobile services shall remain on a primary basis and shall become secondary thereafter.

CAN/23/80
MOD **761** The use of the bands ~~2 500 - 2 690 MHz in Region 2 and~~ 2 500 - 2 535 MHz and 2 655 - 2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems; such use shall be subject to agreement obtained under the procedure set forth in Article 14, giving particular attention to the broadcasting-satellite service in Region 1. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Nos. 2561 to 2564.

J/27/54
MOD **761** The use of the bands 2 500 - 2 565 MHz, 2 625 - 2 690 MHz in Region 2 and 2 500 - 2 535 MHz and 2 655 - 2 690 MHz in Region 3 by the fixed-satellite service is limited to national and regional systems; such use shall be subject to agreement obtained under the procedure set forth in Article 14, ~~giving particular attention to the broadcasting-satellite service in Region 1~~. In the direction space-to-Earth, the power flux-density at the Earth's surface shall not exceed the values given in Nos. 2561 to 2564.

J/27/55
MOD **763** Subject to agreement obtained under the procedure set forth in Article 14, the bands 2 500 - 2 565 MHz, 2 625 - 2 690 MHz may be used for tropospheric scatter systems in Region 1.

EUR/20/49
MOD **764** When planning new tropospheric scatter radio-relay links in the band 2 500 - 2 690 MHz, all possible measures shall be taken to avoid interference to ~~directing the antennas of these links towards the geostationary-satellite orbit~~ the space services.

J/27/56
MOD **764** When planning new tropospheric scatter radio-relay links in the bands 2 500 - 2 565 MHz and 2 625 - 2 690 MHz, all possible measures shall be taken to avoid directing the antennae of these links towards the geostationary-satellite orbit.

MHz
2 655 - 3 300

	Allocation to Services		
	Region 1	Region 2	Region 3
	2 655 - 2 690	**2 655 - 2 690**	**2 655 - 2 690**
	FIXED 762 763 764	FIXED 762 764	FIXED 762 764
	MOBILE except aeronautical mobile	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 761	FIXED-SATELLITE (Earth-to-space) 761
	BROADCASTING-SATELLITE 757 760	MOBILE except aeronautical mobile	MOBILE except aeronautical mobile
	Earth Exploration-Satellite (passive)	BROADCASTING-SATELLITE 757 750	BROADCASTING-SATELLITE 757 760
	Radio Astronomy	Earth Exploration-Satellite (passive)	Earth Exploration-Satellite (passive)
	Space Research (passive)	Radio Astronomy	Radio Astronomy
		Space Research (passive)	Space Research (passive)
USA/12/103 MOD	758 759 765 MOD 766	765	765 MOD 766

MHz
2 655 - 3 300 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/20/128 MOD	**2 655 - 2 690** FIXED 762 ~~763~~ MOD 764 MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ LAND MOBILE-SATELLITE (Earth-to-space) 760A MARITIME MOBILE SATELLITE (Earth-to-space) 760A Earth Exploration-Satellite (passive) Radioastronomy Space Research (passive) ~~758~~ 759 765	**2 655 - 2 690** FIXED 762 MOD 764 ~~FIXED SATELLITE (Earth to space) (space to Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ LAND MOBILE SATELLITE (Earth-to-space) 760A MARITIME MOBILE SATELLITE (Earth-to-space) 760A Earth Exploration-Satellite (passive) Radioastronomy Space Research (passive) 765	**2 655 - 2 690** FIXED 762 MOD 764 ~~FIXED SATELLITE (Earth to space) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ LAND MOBILE-SATELLITE (Earth-to-space) 760A MARITIME MOBILE-SATELLITE (Earth-to-space) 760A Earth Exploration-Satellite (passive) Radioastronomy Space Research (passive) 765 766
CAN/23/83 MOD	**2 655 - 2 690** FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) MOBILE-SATELLITE (Earth-to-space) 753G 758 759 765	**2 655 - 2 690** FIXED 762 764 ~~FIXED SATELLITE (Earth to space) (space to Earth) 761~~ MOBILE except aeronautical mobile ~~BROADCASTING-SATELLITE 757 760~~ Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) MOBILE-SATELLITE (Earth-to-space) 753G 765	**2 655 - 2 690** FIXED 762 764 FIXED-SATELLITE (Earth-to-space) MOD 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 Earth Exploration-Satellite (passive) Radio Astronomy Space Research (passive) MOBILE-SATELLITE (Earth-to-space) 753G 765~~766~~

MHz
2 655 - 3 300 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
J/27/46 MOD	**2 655 - 2 690**	**2 655 - 2 690**	**2 655 - 2 690**
	FIXED 762 MOD 763 MOD 764	FIXED 762 MOD 764	FIXED 762 MOD 764
	MOBILE except aeronautical mobile	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) MOD 761	FIXED-SATELLITE (Earth-to-space) MOD 761
	MOBILE-SATELLITE (Earth-to-space) (except aeronautical mobile-satellite (R)) 754B	MOBILE except aeronautical mobile	MOBILE except aeronautical mobile
	~~BROADCASTING-SATELLITE 757 760~~	MOBILE-SATELLITE (Earth-to-space) (except aeronautical mobile-satellite (R)) 754B	MOBILE-SATELLITE (Earth-to-space) (except aeronautical mobile-satellite (R)) 754B
	Earth Exploration-Satellite (passive)	~~BROADCASTING-SATELLITE 757 760~~	~~BROADCASTING-SATELLITE 757 760~~
	Radio Astronomy	Earth Exploration-Satellite (passive)	Earth Exploration-Satellite (passive)
	Space Research (passive)	Radio Astronomy	Radio Astronomy
		Space Research (passive)	Space Research (passive)
		765	765 ~~766~~
	MOD 758 MOD 759 765		

USA/12/104
MOD **766**

Subject to agreement obtained under the procedure set forth in Article 14, the band 2 655 - 2 690 MHz may also be used in Regions 1 and 3 for the mobile-satellite (space-to-Earth) ~~, except aeronautical mobile-satellite,~~ service for operation limited to within national boundaries.

CAN/23/84
J/27/57
SUP **766**

The following proposals also concern the frequency bands

dealt with in this document:

ZWE/6/2

Zimbabwe believes that the new services requiring spectrum are many and that existing and planned services are essential services. As indicated in the introduction, Zimbabwe is concerned about the effect of introducing the services covered by these items within 500 - 3 000 MHz especially considering that the services require different radio frequency spectrum for operation while it may be argued by proponents that the only way forward is to free up spectrum for the new services. Zimbabwe would welcome such a move if adequate protection is given to existing services used nationally or notified to the IFRB.

ZWE/6/3

Zimbabwe asked the Secretary-General to have this item included in the agenda of the Conference by having Zimbabwe added to Footnote 635.

NIG/9/3

Several services make use of the frequency ranges listed within the band 1 - 3 GHz in Nigeria, in accordance with the Radio Regulations. Major services in operation are: fixed microwave terrestrial, radar (primary and secondary), aeronautical mobile, meteorological satellite, maritime mobile, maritime mobile-satellite and broadcasting-satellite systems.

Services that are not yet in operation, but which are envisaged will come up in the near future in view of the rate of acquisition of the new technologies which are: earth exploration, radioastronomy, space research and radiolocation systems.

With regard to the demand for growth of mobile services, Nigeria recognizes the need for increased spectrum allocation.

NIG/9/4

This Administration proposes the balancing up of the frequency bandwidths between the up-link and down-link allocations to the maritime mobile-satellite service in the vicinity of 1.6/1.5 GHz band with a recommendation that the bands 1 626.5 to 1 645.5 MHz and 1 525 to 1 544 MHz be allocated to Earth-to-space and space-to-Earth, respectively.

NIG/9/5

It is also proposed that 50 MHz, within the range 2 640 to 2 690 MHz, be allocated to this service.

NIG/9/6

The APC system is a laudable programme for which Nigeria is interested in view of the large volume of air traffic in and out of the country. However, Nigeria operates quite a number of fixed services within the range 1 710 to 2 200 MHz in accordance with the existing regulations. It is important to ensure good protection to these services if the mobile is to be up-graded as a primary service as with the fixed service.

NIG/9/7

Nigeria registers its interest in FPLMTS but adequate protection should be provided for existing and future fixed services

NIG/9/10

Meteorological radars operating below 1 000 MHz are currently in operation in Nigeria. The wind profiler is recognized as a useful meteorological aid. This Administration supports that studies be continued by the CCIR to find out the appropriate part of the radio spectrum that will accommodate this service without interference to other services.

KEN/13/7

The Conference may consider and make an allocation in the frequency band 2 500 - 2 690 MHz for use by experimental systems of the broadcasting-satellite service (sound). The operation of such systems should be subject to the following conditions:

i) Be on experimental basis, and that this matter be reviewed at a future competent WARC.

ii) Be specifically tied to RR 342

iii) Be implemented using spot beams only and global beams be prohibited.

iv) That they adhere strictly to RR 2666.

For the feeder links of this service, the provisions of RR 835 could be expanded to cover the stations of the broadcasting-satellite service (sound) as well.

KEN/13/9

The Kenyan Administration favours the retention of provisions RR 747 and 750 which govern the use of the frequency 2 025 - 2 110 MHz and 2 200 - 2 290 MHz.

EUR/20/122
NOC

No change (NOC) to any of the existing allocations to the individual mobile-satellite services in the Table of Frequency Allocations between 1 530 MHz and 1 660.5 MHz.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Corrigendum 2 to
Revision 1 to
Document DT/1A3-E
14 February 1992
English only

Note by the Secretary-General

PROPOSALS RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS ABOVE 3 GHZ)

Replace pages 14 to 17 by the attached pages.

GHz
24.25 - 31.3

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/113 MOD	**24.25 - ~~25.25~~24.55**	RADIONAVIGATION	
EUR/20/57 MOD	**24.25 - 25.25**	~~RADIONAVIGATION~~ FIXED	
J/27/60 MOD	**24.25 - ~~25.25~~24.65**	RADIONAVIGATION	
CAN/23/150 MOD	**24.25 - ~~25.25~~24.75**	MULTIPURPOSE-SATELLITE (space-to-Earth) ~~RADIONAVIGATION~~	
USA/12/114 MOD	**~~24.25~~24.55 - ~~25.25~~24.65**	~~RADIONAVIGATION~~ RADIOLOCATION-SATELLITE	
USA/12/115 MOD	**~~24.25~~24.65 - 25.25**	~~RADIONAVIGATION~~ BROADCASTING-SATELLITE	
J/27/61 MOD	**~~24.25~~24.65 - 25.25**	~~RADIONAVIGATION~~ BROADCASTING-SATELLITE 881A	
CAN/23/151 MOD	**~~24.25~~24.75 - 25.25**	RADIONAVIGATION	
USA/12/116 MEX/63/68 MOD	**25.25 - 27**	FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space)	
CAN/23/152 MOD	**25.25 - 27**	FIXED MOBILE SPACE-COMMUNICATIONS (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~ Standard Frequency and Time Signal-Satellite (Earth-to-space)	
J/27/63 MOD	**25.25 - 27**	FIXED MOBILE INTER-SATELLITE 881B Earth Exploration-Satellite (space-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space)	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/5 MOD	**25.25 - 27**	FIXED MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~ Standard Frequency and Time Signal-Satellite (Earth-to-space)	
USA/12/117 MEX/63/69 MOD	**27 - 27.5** FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	
CAN/23/153 MOD	**27 - 27.5** FIXED MOBILE ~~Earth Exploration-Satellite (space-to-space)~~ SPACE-COMMUNICATIONS (space-to-Earth)	**27 - 27.5** FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE ~~Earth Exploration-Satellite (space-to-space)~~ SPACE-COMMUNICATIONS (space-to-space)	
J/27/64 MOD	**27 - 27.5** FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	
AUS/31/48 MOD	**27 - 27.5** FIXED MOBILE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE Earth Exploration-Satellite (space-to-space)	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/6 MOD	**27 - 27.5** FIXED MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~ 881A	
URS/7/2 MOD	**27.5 - ~~29.5~~ 28.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE SPACE RESEARCH (space-to-Earth) 881A	
USA/12/118 AUS/31/49 ALG/40/30 TUN/99/30 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE	
CAN/23/154 MOD	**27.5 - 28~~29.5~~**	FIXED FIXED-SATELLITE (Earth-to-space) 882A MOBILE MULTI-PURPOSE SATELLITE (Earth-to-space)	
EUR/46/8 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 882A	
J/27/66 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 881C MOBILE	
CAN/23/155 MOD	**~~27.5~~28 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE	
URS/7/3 MOD	**~~27.5~~ 28.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881B ~~MOBILE~~ MOBILE-SATELLITE (Earth-to-space)	
URS/7/4 MOD	**29.5 - 30**	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 882A 882 883	
USA/12/120 MOD	**29.5 - 30**	~~FIXED-SATELLITE (Earth-to-space)~~ GENERAL-SATELLITE (Earth-to-space) ~~Mobile-Satellite (Earth-to-space)~~ 882 883	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
MEX/63/70 MOD	**29.5 - 30**	~~FIXED-SATELLITE (Earth-to-space)~~ MULTI-PURPOSE SATELLITE (Earth-to-space) ~~Mobile-Satellite (Earth-to-space)~~ 882 883	
CAN/23/107 MOD	**29.5 - 30**	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) ~~882~~882A ~~883~~	
URS/7/5 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) Earth Exploration-Satellite (Earth-to-space) 882A 883	
AUS/31/50 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) 881A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 883	
EUR/46/9 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 882A 883	

URS/7/6
ADD **881A** The frequency band 27.5 - 28.5 GHz in the space research service is intended for data transmission from very long-distance radiointerferometry space stations.

USA/12/119
ADD **881A** Beacon transmissions in the fixed-satellite (space-to-Earth) service are also permitted for the purpose of up-link power control.

J/27/62
ADD **881A** The band 24.65 - 25.25 GHz is allocated to the radionavigation service on a primary basis up to 30 April 2008.

AUS/31/51
ADD **881A** In the bands 27 to 27.001 GHz (in Regions 2 and 3) [, 27.5 to 27.501 GHz (in Region 1)] and 30.999 to 31 GHz, transmissions by beacons in the fixed-satellite (space-to-Earth) service are also permitted for the purpose of up-link power control.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Corrigendum 1 to
Revision 1 to
Document DT/1A3-E
English only
12 February 1992

Note by the Secretary-General

PROPOSALS RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS ABOVE 3 GHZ)

Replace page 16 by the attached page.

GHz

24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/6 MOD	**27 - 27.5** FIXED MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~ 881A	
URS/7/2 MOD	**27.5 - ~~29.5~~ 28.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE SPACE RESEARCH (space-to-Earth) 881A	
USA/12/118 AUS/31/49 ALG/40/30 TUN/99/30 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE	
CAN/23/106 EUR/46/8 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 882A	
J/27/66 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 881C MOBILE	
URS/7/3 MOD	**~~27.5~~ 28.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881B ~~MOBILE~~ MOBILE-SATELLITE (Earth-to-space)	
URS/7/4 MOD	**29.5 - 30**	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 882A 882 883	
USA/12/120 MOD	**29.5 - 30**	~~FIXED-SATELLITE (Earth-to-space)~~ GENERAL-SATELLITE (Earth-to-space) ~~Mobile-Satellite (Earth-to-space)~~ 882 883	

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Revision 1 to
Document DT/1A3
English only
12 February 1992

Note by the Secretary-General

PROPOSALS

RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS

OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS ABOVE 3 GHz)

TZA/74/15
NOC **797B**

J/27/58
MOD **797B**
Mob-87

Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Japan, Jordan, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14 and in Japan, this band is also allocated to the fixed service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

POR/77/1
MOD **797B**
Mob-87

Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Morocco, Norway, the Netherlands, Pakistan, Portugal, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

BEL/LUX/115/1
MOD **797B**
Mob-87

Additional allocations: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Luxembourg, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

KRE/15/5
MOD **819**

Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guinea, Guyana, Indonesia, Iran, Iraq, Israel, Jamaica, Kuwait, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, Qatar, Syria, Senegal, Singapore, Somalia, Sri Lanka, Tanzania, Chad, Thailand, Dem. People's Rep. of Korea, Togo and Tunisia, the band 8 500 - 8 750 MHz is also allocated to the fixed and mobile services on a primary basis.

KRE/15/6
MOD **830**

Additional allocation: in the Federal Republic of Germany, Angola, China, Ecuador, Spain, Japan, Kenya, Morocco, Nigeria, Dem. People's Rep. 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.

MHz

3 300 - 4 500

	Allocation to Services		
	Region 1	Region 2	Region 3
B/30/45 MOD	**3 400 - 3 600** FIXED FIXED-SATELLITE (space-to-Earth) Mobile Radiolocation 781 ~~782 785~~	**3 400 - 3 500** FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile Radiolocation ~~784~~ 664 783	
		3 500 - 3 700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation ~~784~~ 786	
B/30/46 MOD	**3 600 - 4 200** FIXED FIXED-SATELLITE (space-to-Earth) Mobile		
		3 700 - 4 200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 787	

KRE/15/3
MOD **779** Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, China, the Congo, the United Arab Emirates, India, Indonesia, Iran, Iraq, Israel, Japan, Kuwait, the Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Dem. People's Rep. of Korea, Syria, Singapore, Sri Lanka and Thailand, the band 3 300 - 3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.

B/30/47
SUP **782, 784 and 785**

MHz
5 470 - 7 250

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/85 **MOD**	**5 925 - 7 075**	FIXED FIXED-SATELLITE (Earth-to-space) 792A 809A MOBILE 791 809	

KRE/15/4
MOD **803** Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Cameroon, the Central African Republic, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, the Lebanon, Libya, Madagascar, Malaysia, Malawi, Malta, Niger, Nigeria, Pakistan, the Philippines, Qatar, Dem. People's Rep. of Korea, Syria, Singapore, Sri Lanka, Tanzania, Chad, Thailand, and Yemen (P.D.R. of), the band 5 650 - 5 850 MHz is also allocated to the fixed and mobile services on a primary basis.

YEM/41/21
MOD **803** Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Cameroon, the Central African Republic, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, the Lebanon, Libya, Madagascar, Malaysia, Malawi, Malta, Niger, Nigeria, Pakistan, the Philippines, Qatar, Syria, Singapore, Sri Lanka, Tanzania, Chad, Thailand and Yemen ~~(P.D.R. of)~~, the band 5 650 - 5 850 MHz is also allocated to the fixed and mobile services on a primary basis.

CAN/23/86
ADD **809A** Administrations are urged to use the fixed-satellite service in the band 7 025 - 7 075 MHz for feeder links to stations of the broadcasting-satellite service in the band 1 441 - 1 515 MHz.

YEM/41/22
MOD **826** Different category of service: in Afghanistan, Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Ethiopia, Guyana, India, Indonesia, Iran, Iraq, Israel, Jamaica, Japan, Jordan, Kuwait, the Lebanon, Liberia, Malaysia, Nigeria, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Thailand, Trinidad and Tobago, and Yemen ~~(P.D.R. of)~~, the allocation of the band 9 800 - 10 000 MHz to the fixed service is on a primary basis (see No. 425).

GHz
10.7 - 12.75

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/44 MOD	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 792 MOD 835 MOBILE except aeronautical mobile	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) 792A MOBILE except aeronautical mobile	
EUR/20/50 MOD	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 792A MOD 835 MOBILE except aeronautical mobile	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) 792A (Earth-to-space) MOD 835 MOBILE except aeronautical mobile	

GHz
10.7 - 12.75 (continued)

Allocation to Services		
Region 1	Region 2	Region 3
11.7 - 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE 838A Mobile except aeronautical mobile 838	**11.7 - 12.1** FIXED 837 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile 836 839 **12.1 - 12.2** FIXED-SATELLITE (space-to-Earth) 836 839 842 **12.2 - 12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838A 839 844 846 **12.7 - 12.75** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	**11.7 - 12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838A 838 **12.2 - 12.5** FIXED MOBILE except aeronautical mobile BROADCASTING 838 845
12.5 - 12.75 FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 848 849 850		**12.5 - 12.75** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING-SATELLITE 847

USA/12/105
EQA/45/20
MOD

USA/12/106
EQA/45/21
MOD

KRE/15/7
MOD **834** Additional allocation: in Saudi Arabia, Bahrain, Bulgaria, Cameroon, China, Colombia, the Republic of Korea, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Hungary, Iran, Iraq, Israel, Japan, Kuwait, the Lebanon, Mongolia, Pakistan, Poland, Qatar, the German Democratic Republic, Dem. People's Rep. of Korea, Roumania, Czechoslovakia, the U.S.S.R. and Yugoslavia, the band 10.68 - 10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

URS/7/45
MOD **835** In Region 1, the use of the band 10.7 - 11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service, including systems of the broadcasting-satellite service (sound) operating in accordance with the Plan established under No. 757A.

EUR/20/51
MOD **835** ~~In Region 1, the~~ The use of the band 10.7 - 11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

USA/12/107
ADD **838A** When implementing broadcasting satellite systems in this band, administrations should bear in mind the possible use of this band for wide-RF band high definition television via satellite.

EQA/45/22
ADD **838A** Use of this band by the broadcasting-satellite service permits operation of wide RF-band high-definition television.

KRE/15/8
MOD **857** Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Cameroon, China, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Lesotho, the Lebanon, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Pakistan, the Philippines, Qatar, Dem. People's Rep. of Korea, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Swaziland, Tanzania, Chad, Thailand and Yemen (P.D.R. of), the band 14 - 14.3 GHz is also allocated to the fixed service on a primary basis.

YEM/41/23
MOD **857** Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Cameroon, China, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Lesotho, the Lebanon, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Swaziland, Tanzania, Chad, Thailand and Yemen ~~(P.D.R. of)~~, the band 14 - 14.3 GHz is also allocated to the fixed service on a primary basis.

GHz
14.4 - 16.6

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/108 **NZL/26/21** **AUS/31/42** **NOC**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) 863 MOBILE Space Research	
B/30/48 **IND/34/34** **ALG/40/26** **TUN/99/26** **MOD**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 MOBILE Space Research	
CUB/65/11 **MOD**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 863A MOBILE Space Research	

USA/12/109
NZL/26/22
INS/52/7
NOC **863**
Orb-88

KOR/8/21
MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~gives priority to feeder links for the broadcasting-satellite service. ~~This use is reserved for countries outside Europe.~~Fixed-satellite services other than those for the feeder links of broadcasting-satellite services may use the band on a secondary basis, subject to the provision set forth in Article 15A.

J/27/59
MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~ shall not cause harmful interference to existing plans for feeder links for the broadcasting-satellite service. This use by feeder links for the broadcasting-satellite service is reserved for countries outside Europe.

IND/34/35
MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. However, this band may also be used by fixed-satellite service (Earth-to-space) subject to the condition that no harmful interference shall be caused to the broadcasting-satellite service feeder link plan of Appendix 30A.

ALG/40/27
MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~by feeder links for the broadcasting-satellite service~~. This use~~ is reserved for countries outside Europe. The frequency assignments specified in Appendix 30A to the Radio Regulations shall receive adequate protection against harmful interference.

B/30/49
EAQ/45/32
MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~shall not cause harmful interference to feeder links for the broadcasting-satellite service operating in accordance with the provisions of Appendix 30A. ~~This use is reserved for countries outside Europe.~~

CHN/61/18
MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service and should not cause any harmful interference to the assignments appearing in Appendix 30A of the Radio Regulations. This use is reserved for countries outside Europe.

CUB/65/12
MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited ~~to feeder links for the broadcasting-satellite service. This use is reserved~~ to countries outside Europe.

TUN/99/27
MOD **863** The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~by feeder links for the broadcasting-satellite service~~. This use~~ is reserved for countries outside Europe. The frequency assignments specified in Appendix 30A shall be duly protected against harmful interference.

CUB/65/13
ADD **863A** In the band 14.5 - 14.8 GHz those feeder links for the broadcasting-satellite service which operate in accordance with Appendix 30A shall have priority over other uses of the fixed-satellite service.

YEM/41/24
MOD **866** Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, Iran, Kuwait, Libya, Malaysia, Malawi, Malta, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Tanzania, Chad, Thailand, Yemen ~~(P.D.R. of)~~ and Yugoslavia, the band 15.7 - 17.3 GHz is also allocated to the fixed and mobile services on a primary basis.

GHz
16.6 - 18.8

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/87 **MOD**	**17.3 - 17.7**	FIXED-SATELLITE (Earth-to-space) 869 BROADCASTING-SATELLITE Radiolocation 868 868A	
B/30/50 **MOD**	**17.3 - 17.7**	FIXED-SATELLITE (Earth-to-space) 869 BROADCASTING-SATELLITE Radiolocation 868	
CAN/23/88 **MOD**	**17.7 - ~~18.1~~17.8**	~~FIXED~~ FIXED-SATELLITE ~~(space-to-Earth)~~ (Earth-to-space) 869 BROADCASTING-SATELLITE ~~MOBILE~~ 868A 869A 869B	
B/30/51 **MOD**	**17.7 - ~~18.1~~17.8**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 BROADCASTING-SATELLITE MOBILE	
CAN/23/89 **MOD**	**~~17.7~~17.8 - 18.1**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 MOBILE	
B/30/52 **MOD**	**~~17.7~~17.8 - 18.1**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 MOBILE	
F/54/1 **MOD**	**18.1 - 18.6**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 870A MOBILE 870	

CAN/23/90
ADD **868A** In the band 17.3 - 17.8 GHz sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of Section 1 of Annex 4 of Appendix 30A.

CAN/23/91

ADD **869A** Additional allocation: The band 17.7 - 17.8 GHz may also be used for space-to-Earth transmissions in the fixed-satellite service on a primary basis; this use of the band shall protect and shall not claim protection from existing and future operating systems in the broadcasting-satellite service.

CAN/23/92

ADD **869B** Additional allocation: The band 17.7 - 17.8 GHz may also be used by networks in the fixed and mobile services on a primary basis; such uses of the band shall protect and shall not claim protection from existing and future operating systems in the broadcasting-satellite service.

F/54/2

ADD **870A** The use of the band 18.1 - 18.6 GHz by the FSS (Earth-to-space) is limited to feeder links for BSS. The allocation shall come into force on 1 April 2005. However, before that date, experimental and operational BSS (HDTV) systems may be introduced in the band provided that they do not cause harmful interference to existing services operating in the band in accordance with the Table of Frequency Allocations. The interim procedures for the introduction of experimental and operational BSS (HDTV) systems before that date (1 April 2005) and for the introduction of BSS (HDTV) systems after that date are contained in Resolution No. ABC (Document 20 - Part III, proposal EUR/20/59).

GHz
18.8 - 22.5

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/110 MOD	**19.7 - 20.2**	~~FIXED-SATELLITE (space-to-Earth)~~ GENERAL-SATELLITE (space-to-Earth) ~~Mobile-Satellite (space-to-Earth)~~ 873	
CAN/23/93 NOC	**19.7 - 20.2**	FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth) 873	
MEX/63/65 MOD	**19.7 - 20.2**	~~FIXED-SATELLITE (space-to-Earth)~~ ~~Mobile-Satellite (space-to-Earth)~~ MULTI-PURPOSE SATELLITE (space-to-Earth) 873	
URS/7/46 EUR/20/56 ALG/40/28 TUN/99/28 MOD	**21.4 - 22**	FIXED MOBILE BROADCASTING-SATELLITE 873A	
USA/12/111 MEX/63/66 MOD	**21.4 - ~~22~~21.7**	FIXED MOBILE	
CAN/23/94 MOD	**21.4 - 22**	FIXED FIXED-SATELLITE (Earth-to-space) 875A MOBILE	
AUS/31/44 IND/34/36 MOD	**21.4 - 22**	FIXED MOBILE BROADCASTING-SATELLITE	
USA/12/112 MOD	**~~21.4~~21.7 - 22**	FIXED INTER-SATELLITE MOBILE	
MEX/63/67 MOD	**~~21.4~~21.7 - 22**	FIXED MOBILE INTER-SATELLITE	
CAN/23/95 MOD	**22 - ~~22.21~~22.2**	FIXED FIXED-SATELLITE (Earth-to-space) 875A MOBILE except aeronautical mobile 874	
CAN/23/96 MOD	**~~22~~22.2 - 22.21**	FIXED MOBILE except aeronautical mobile 874	

TZA/74/2
NOC **873**

MEX/63/65A
MOD **873** Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Bangladesh, Brazil, Cameroon, China, the Congo, the Republic of Korea, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Pakistan, the Philippines, Qatar, Syria, Singapore, Somalia, Sudan, Sri Lanka, Tanzania, Chad, Thailand, Togo, Tunisia and Zaire, the band ~~19.7~~20.2 - 21.2 GHz is also allocated to the fixed and mobile services on a primary basis. This additional use shall not impose any limitation on the power flux-density of space stations in the fixed-satellite service.

URS/7/47
ADD **873A** The band 21.4 - 22 GHz is used on a world-wide basis by the broadcasting-satellite service for the transmission of wideband high-definition television signals. Until the relevant Plan is adopted, the bringing into operation of high-definition television satellite systems shall be subject to a special procedure similar to that described in Resolution No. 33. The criteria for the sharing of this band by the broadcasting-satellite service with the other services to which it is allocated shall be established before the beginning of the planning process.

EUR/20/58
ADD **873A** The allocation to the broadcasting-satellite service in the band 21.4 - 22 GHz is intended for use by wide RF-band high-definition television (HDTV). The allocation shall come into effect on 1 April 2005, however, before that date experimental and operational BSS (HDTV) systems may be introduced into the band provided that they do not cause harmful interference to existing services operating in the band in accordance with the Table of Frequency Allocations. The interim procedures for the introduction of experimental and operational BSS (HDTV) systems before 1 April 2005, and for the introduction of BSS (HDTV) systems after that date are contained in Resolution No. ABC. After 1 April 2005 existing services may continue to operate on the basis that they shall neither cause harmful interference to BSS (HDTV) systems nor claim protection from such systems.

ALG/40/29
ADD **873A** The band 21.4 - 22 GHz is used by the broadcasting-satellite service for the transmission of wideband high-definition television (HDTV) signals in accordance with the plan to be established for that purpose. In preparing the plan, due account shall be taken of the criteria for sharing with the other services to which the band is also allocated.

TUN/99/29
ADD **873A** The band 21.4 - 22 GHz shall be used by the broadcasting-satellite service for the transmission of wideband high-definition television (HDTV) signals in conformity with the plan drawn up to that effect. The latter shall take due account of sharing criteria with other services to which the band is allocated.

CAN/23/97
ADD **875A** In the band 21.4 - 22.2 GHz, feeder links to broadcasting-satellite space stations have priority over other uses of the fixed-satellite service. Other assignments within the fixed-satellite service shall protect and shall not claim protection from existing and future operating feeder link networks to such broadcasting-satellite stations.

GHz
22.5 - 24.25

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/98 **AUS/31/45** **IND/34/37** **MOD**	**22.5 - 22.55** FIXED MOBILE	**22.5 - 22.55** FIXED MOBILE ~~BROADCASTING-SATELLITE 877~~ 878	
CAN/23/99 **AUS/31/46** **IND/34/38** **MOD**	**22.55 - 23** FIXED INTER-SATELLITE MOBILE 879	**22.55 - 23** FIXED INTER-SATELLITE MOBILE ~~BROADCASTING-SATELLITE 877~~ 878 879	
CAN/23/100 **NOC**	**23 - 23.55**	FIXED INTER-SATELLITE MOBILE 879	

CAN/23/100A
AUS/31/47
IND/34/39
SUP **877**

GHz
24.25 - 31.3

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/113 MOD	**24.25 - ~~25.25~~24.55**	RADIONAVIGATION	
EUR/20/57 MOD	**24.25 - 25.25**	~~RADIONAVIGATION~~ FIXED	
J/27/60 MOD	**24.25 - ~~25.25~~24.65**	RADIONAVIGATION	
CAN/23/101 MOD	**24.25 - ~~25.25~~24.75**	MULTIPURPOSE-SATELLITE (Earth-to-space) ~~RADIONAVIGATION~~ 732A	
USA/12/114 MOD	**~~24.25~~24.55 - ~~25.25~~24.65**	~~RADIONAVIGATION~~ RADIOLOCATION-SATELLITE	
USA/12/115 MOD	**~~24.25~~24.65 - 25.25**	~~RADIONAVIGATION~~ BROADCASTING-SATELLITE	
J/27/61 MOD	**~~24.25~~24.65 - 25.25**	~~RADIONAVIGATION~~ BROADCASTING-SATELLITE 881A	
CAN/23/102 MOD	**~~24.25~~24.75 - 25.25**	RADIONAVIGATION	
USA/12/116 MEX/63/68 MOD	**25.25 - 27**	FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space)	
CAN/23/103 MOD	**25.25 - 27**	FIXED MOBILE SPACE-COMMUNICATIONS ~~Earth Exploration Satellite (space-to-space)~~ Standard Frequency and Time Signal-Satellite (Earth-to-space) 732A	
J/27/63 MOD	**25.25 - 27**	FIXED MOBILE INTER-SATELLITE 881B Earth Exploration-Satellite (space-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space)	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/5 MOD	**25.25 - 27**	FIXED MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~ Standard Frequency and Time Signal-Satellite (Earth-to-space)	
USA/12/117 MEX/63/69 MOD	**27 - 27.5** FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	
CAN/23/104 MOD	**27 - 27.5** FIXED MOBILE ~~Earth Exploration-Satellite (space-to-space)~~ SPACE-COMMUNICATIONS MULTIPURPOSE-SATELLITE (space-to-Earth) 732A 881A	**27 - 27.5** FIXED ~~FIXED-SATELLITE (Earth-to-space)~~ MOBILE ~~Earth Exploration-Satellite (space-to-space)~~ SPACE-COMMUNICATIONS MULTIPURPOSE-SATELLITE (space-to-Earth) 732A 881A	
J/27/64 MOD	**27 - 27.5** FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	
AUS/31/48 MOD	**27 - 27.5** FIXED MOBILE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE Earth Exploration-Satellite (space-to-space)	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/6 MOD	**27 - 27.5** FIXED MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration Satellite (space-to-space)~~	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration Satellite (space-to-space)~~ 881A	
URS/7/2 MOD	**27.5 - ~~29.5~~ 28.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space Research (space-to-Earth) 881A	
USA/12/118 AUS/31/49 ALG/40/30 TUN/99/30 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE	
CAN/23/106 EUR/46/8 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 882A	
J/27/66 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 881C MOBILE	
URS/7/3 MOD	**~~27.5~~ 28.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881B ~~MOBILE~~ MOBILE-SATELLITE (Earth-to-space)	
URS/7/4 MOD	**29.5 - 30**	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 882A 882 883	
USA/12/120 MOD	**29.5 - 30**	~~FIXED-SATELLITE (Earth-to-space)~~ GENERAL-SATELLITE (Earth-to-space) ~~Mobile-Satellite (Earth-to-space)~~ 882 883	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
MEX/63/70 MOD	**29.5 - 30**	~~FIXED-SATELLITE (Earth-to-space)~~ MULTI-PURPOSE SATELLITE (Earth-to-space) ~~Mobile-Satellite (Earth-to-space)~~ 882 883	
CAN/23/107 MOD	**29.5 - 30**	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) ~~882~~882A ~~883~~	
URS/7/5 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) Earth Exploration-Satellite (Earth-to-space) 882A 883	
AUS/31/50 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) 881A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 883	
EUR/46/9 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 882A 883	

URS/7/6
ADD **881A** The frequency band 27.5 - 28.5 GHz in the space research service is intended for data transmission from very long-distance radiointerferometry space stations.

USA/12/119
ADD **881A** Beacon transmissions in the fixed-satellite (space-to-Earth) service are also permitted for the purpose of up-link power control.

CAN/23/105
ADD **881A**

In the band 27.0 - 27.5 GHz, transmissions of space stations in the space-communications service shall not produce a power flux-density at the Earth's surface greater than -125 dBW/m^2 in any 1 MHz band for all angles of arrival.

J/27/62
ADD **881A** The band 24.65 - 25.25 GHz is allocated to the radionavigation service on a primary basis up to 30 April 2008.

AUS/31/51
ADD **881A** In the bands 27 to 27.001 GHz (in Regions 2 and 3) [, 27.5 to 27.501 GHz (in Region 1)] and 30.999 to 31 GHz, transmissions by beacons in the fixed-satellite (space-to-Earth) service are also permitted for the purpose of up-link power control.

ALG/40/31

ADD **881A** The band 28.5 - 29.5 GHz is also used for the feeder links of satellite high-definition television systems operated in accordance with the plan referred to in No. 873A.

EUR/46/7

ADD **881A** In the band 27 - 27.5 GHz provision No. 2613 shall not be applicable.

TUN/99/31

ADD **881A** The band 28.5 - 29.5 shall also be used for feeder links for HDTV satellite systems operated in conformity with the plan referred to in No. 873A.

URS/7/7

ADD **881B** The frequency band 28.5 - 29.5 GHz may be used for feeder links in high-definition television satellite systems operating in accordance with the Plan under No. 873A.

J/27/65

ADD **881B** The power flux-density at the Earth's surface in the territory of Japan shall not exceed the value which is 10 dB lower than that given in No. 2578 up to 31 December 1999.

J/27/67

ADD **881C** The use of the band 27.5 - 29.5 GHz by the fixed-satellite service (space-to-Earth) is limited to beacon transmissions for the purpose of up-link power control.

URS/7/8

ADD **882A** The use of the frequency bands 29.5 - 31 and 37.5 - 40.5 GHz in the earth exploration-satellite service is restricted to systems for the collection and transmission of data relating to the state of the environment.

CAN/23/108

ADD **882A** The bands 27.500 - 27.501 and 29.999 - 30.000 GHz are also allocated on a primary basis to the fixed-satellite service (space-to-Earth). Such space-to-Earth transmissions shall not produce a power flux-density in excess of the values in No. 2578 on the Earth's surface, and shall not exceed an effective isotropically radiated power (e.i.r.p.) of + 10 dBW in the direction of neighbouring satellites on the geostationary satellite orbit.

EUR/46/10

ADD **882A** The bands 27.500 - 27.502 GHz and 30.998 - 31.000 GHz may also be used for transmission of beacon frequencies in the space-to-Earth direction for power up-link control of transmitting satellite earth stations.

GHz
31.3 - 33.4

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/121 **AUS/31/52** **MOD**	**31.8 - 32**	RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890~~ 891 892	
MEX/63/71 **MOD**	**31.8 - 32**	RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890 891~~ 892	
USA/12/122 **AUS/31/53** **MOD**	**32 - 32.3**	INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890~~ 891 892 893	
MEX/63/72 **MOD**	**32 - 32.3**	INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890 891~~ 892 893	

USA/12/123
AUS/31/54
MEX/63/73
SUP **890**

MEX/63/73A
SUP **891**

GHz
33.4 - 40.5

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/124 **AUS/31/55** **MOD**	**34.2 - ~~35.2~~34.7**	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) Space Research ~~895~~ 896 894	
MEX/63/74 **MOD**	**34.2 - ~~35.2~~34.7**	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) ~~Space Research 895 896~~ 894	
USA/12/125 **AUS/31/56** **MOD**	**~~34.2~~34.7 - 35.2**	RADIOLOCATION Space Research ~~895~~ 896 894	
MEX/63/75 **MOD**	**~~34.2~~34.7 - 35.2**	RADIOLOCATION Space Research ~~895 896~~ 894	
USA/12/127 **MOD**	**37 - 37.5**	FIXED MOBILE SPACE RESEARCH (space-to-Earth) 899	
EUR/46/11 **MOD**	**37 - 37.5**	FIXED MOBILE SPACE RESEARCH (space-to-Earth) EARTH EXPLORATION-SATELLITE (space-to-Earth) ~~899~~	
MEX/63/78 **MOD**	**37 - 37.5**	FIXED MOBILE SPACE RESEARCH (space-to-Earth) ~~899~~	
URS/7/9 **MOD**	**37.5 - 39.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth Exploration-Satellite (space-to-Earth) 882A 899	
USA/12/128 **MEX/63/79** **MOD**	**37.5 - ~~39.5~~38**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) 899	

GHz
33.4 - 40.5 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/12 MOD	**37.5 - 39.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE ~~899~~	
MEX/63/80 MOD	**~~37.5~~38.0 - 39.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	
MEX/63/81 MOD	**39.5 - 40.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space)	
USA/12/129 MOD	**~~37.5~~38 - 39.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 899	
URS/7/10 MOD	**39.5 - 40.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth Exploration-satellite (space-to-Earth) 882A	
USA/12/130 MOD	**39.5 - 40.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space)	
EUR/46/13 MOD	**39.5 - ~~40.5~~40**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
EUR/46/14 MOD	**~~39.5~~40 - 40.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space)	

USA/12/126
AUS/31/57
MEX/63/76
SUP 895

MEX/63/77
SUP **896**

EUR/46/15
MEX/63/80A

SUP **899**

GHz
66 - 86

Allocation to Services		
Region 1	Region 2	Region 3
74 - 75.5	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space Research (space-to-Earth) 912A	
75.5 - 76	AMATEUR AMATEUR-SATELLITE Space Research (space-to-Earth) 912A	

URS/7/11
MOD

URS/7/12
MOD

GHz
66 - 86 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
	76 - 81	RADIOLOCATION Amateur Amateur-Satellite Space Research (space-to-Earth) 912A 912	
URS/7/13 MOD			
	81 - 84	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Space Research (space-to-Earth) 912A	
URS/7/14 MOD			

URS/7/15
ADD **912A** The frequency band 74 - 84 GHz in the space research service is reserved on a world-wide basis for the use and development of equipment for the transmission of wideband radioastronomical data from space stations to earth stations using very long-distance radiointerferometry.

GHz
151 - 185

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/134 MOD	**151 - ~~164~~156**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	
USA/12/135 MOD	**~~151~~156 - ~~164~~158**	~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ EARTH EXPLORATION-SATELLITE (passive)	
USA/12/136 MOD	**~~151~~158 - 164**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	

The following proposals also concern the frequency bands

dealt with in this document:

NIG/9/2

In the consideration of the frequency range 12.75 - 23 GHz for the choice of an appropriate band for high-definition television (HDTV), it will be necessary to take into consideration the high rain attenuation in the tropical region. Hence, it may be desirable to assign the lower end of the frequency range 12.75 to 23 GHz given cognizance to the existing services in such bands and ensuring no interference problems. If it becomes necessary to reallocate services in the band, sufficient long-term notice should be given in order to prevent losses to operators. This Administration supports the continuation of studies on the long range future suitability of the 11.7 to 12.7 GHz band for high-definition television (HDTV).

NIG/9/8

At present the frequency 14.5 to 14.8 GHz is allocated to the fixed-satellite services (FSS) including other services. However, the use of the band for the fixed-satellite service is limited to the broadcasting-satellite service (BSS) feeder links. This use is reserved for countries outside Europe.

The use of a satellite for communication purposes in Africa is expected to expand and in particular the RASCOM project may require the use of the KU-band for the fixed-satellite service Earth-to-satellite purposes. This Administration supports the use of the band 14.5 to 14.8 GHz for the fixed-satellite service including the Earth-to-space link without the current restriction in order to remove the imbalance between the up link and down link. This will also permit the use of the contiguous band of up to 800 MHz (14.5 to 14.8 GHz).

KEN/13/8

The Kenyan Administration favours the allocation of this frequency band to the Fixed-Satellite Service (Earth-to-space) with due protection of the assignment appearing in Appendix 30A of the Radio Regulations.

EUR/20/130

a) that there be no change (NOC) to the allocations, status of these allocations or the associated footnote (RR 863) in the band 14.5 - 14.8 GHz;

b) that the attached Resolution No. RRR be adopted for reference to the Administrative Council and inclusion of the question of balancing the FSS up-link and down-link allocations in the agenda of a future WARC.

AUS/31/43

Australia supports the thrust of draft Resolution No. RRR submitted by the CEPT countries concerning the 14.5 - 14.8 GHz band (Document 20, proposal EUR/20/131).

In order to facilitate the use of HDTV on a worldwide basis and in the light of the results of studies of propagation in the Tropical Zone linked to precipitations:

MLI/39/7

Our Administration is in favour of continued CCIR studies in this connection in the two bands 11.7 - 12.7 GHz and 12.75 - 23 GHz. We consider that the studies carried out in the band 21.4 - 22 GHz may yield useful results provided that the sharing criteria between the different services, the technical parameters and the transitional period - which we feel should be at least 20 years - can be determined.

The associated feeder links should be accommodated in the band 17.3 - 18.1 GHz.

For this allocation, we propose that the considerable imbalance contained in the Ku band should be reduced.

MLI/39/11

This supplementary allocation of the band 14.5 - 14.8 GHz to the fixed-satellite service would have a number of advantages: it is adjacent to the up-link band at present in use; it can be successfully shared with the mobile and fixed services; and it can be operated while at the same time offering adequate protection for the assignments contained in Appendix 30A of the Radio Regulations.

It should be noted that the future Regional African Satellite Communication System (RASCOM) will use the Ku band.

MLI/39/13

The Administration of Mali considers that Footnote 797B should be maintained and that the coordination provided for in Article 14 should be required so as to avoid harmful interference to the aeronautical radionavigation systems operating in the band 5 000 - 5 250 MHz.

PAK/44/3

For the feeder links to the BSS (Sound), use of frequency bands between 10.7 - 11.7 GHz (Earth-to-space) is proposed. The use of up link FSS in this band be limited to feeder links for BSS (Sound) for all the three Regions by modifying footnote 835 of Article 8.

BFA/49/4

For this purpose, Burkina Faso proposes the 21.4 - 22 GHz band. The feeder links might use the 17 GHz band allocated to the fixed-satellite service.

BFA/49/7

Burkina Faso is in favour of the allocation of the frequency band 14.5 - 14.8 GHz to the fixed-satellite service (Earth-to-space) to remedy the present imbalance between the bandwidth allocated to up links and that allocated to down links.

This allocation will contribute to the effective use of the frequency spectrum allocated to the fixed-satellite service in the band Ku.

BFA/49/8

However, the protection of the assignments specified in Appendix 30A of the Radio Regulations must be assured.

ISR/51/7

Israel will give favourable consideration to the proposal to add the 14.5 -14.8 GHz band for the general use of FSS, that is to say, to remove the limitation on using this band to feeder links of the BSS in areas outside Europe.

This could be achieved by cancelling RR 863.

INS/52/4

For implementation of HDTV BSS for the future, Indonesia supports the proposed spectrum below 23 GHz for both down-link and feeder-link HDTV due to rain attenuation in the Tropical Zone.

THA/56/5

Thailand supports the allocation of the 600 MHz spectrum in the band higher than 14 GHz for W-HDTV. Thailand is located in the heavy rain climatic zone and therefore the rain attenuation on the high frequency band must be considered. Thailand

- supports the proposed spectrum below 23 GHz for both down link and feeder link in view of rain attenuation in the tropical zone.

CTI/57/3

Another possibility for relieving the congestion in the HF broadcasting bands is offered by the forthcoming implementation of satellite sound broadcasting between 0.5 GHz and 3 GHz. It is strongly recommended that the Conference allocate an appropriate frequency band for that purpose.

CLN/62/4

Allocation of a frequency band for HDTV on a frequency band above 20 GHz on a worldwide allocation is supported.

LUX/64/3

The LUX Administration supports the allocation of a small band that would not be readily usable for wide bandwidth services. The band 7 025 - 7 075 MHz would appear to meet this requirement.

LUX/64/5

It is proposed that the items included in the attached Resolution No. YYY be used as the basis for restructuring the use of frequency bands allocated to the broadcasting-satellite service near 12 GHz.

TZA/74/1

a) Tanzania proposes the allocation of frequency bands above 20 GHz for new spaces applications provided that due consideration is given to those bands already allocated to various terrestrial services with a view to protecting them.

TZA/74/7

Tanzania proposes that frequency range 21.4 - 22.21 GHz be considered for the choice of an appropriate band for HDTV. In choosing the band for HDTV due account must be taken of other services with allocations in the band and of existing systems already operating in the band.

TZA/74/12

Tanzania is of the view that it is possible for the fixed satellite service (Earth-to-space) to share with the terrestrial services in the 14.5 - 14.8 GHz band. A major advantage of this band is that it is contiguous to the current FSS up-link band, a fact which provides for the least expensive implementation of new earth segment and space segment equipment modification and retrofitting of existing earth stations.

ZMB/91/2

Zambia proposes that suitable bands be allocated to the BSS (Sound) around 2.5 - 2.6 GHz.

ZMB/91/3

Owing to attenuation of signals above 20 GHz, Zambia supports proposals for the allocation of a frequency band for HDTV around 17 GHz.

ZMB/91/4

Zambia supports the proposals to allocate the band 14.5 - 14.8 GHz to the FSS (Earth-to-space).

TUR/101/7

Broadly, the ECP submitted by some European countries on the matter (Part III of WARC-92, Document 20) has been supported by Turkey. However, for the feeder links, the band 18.1 - 18.6 GHz is preferred.

Also, the 1977 BSS frequency plan should be revieved by reserving the allocated band for future use of HDTV, when it starts to use narrow-band (e.g. 27 MHz) techniques.

BEN/111/2

The Administration of Benin is in favour of this allocation, provided that it takes account of existing and planned requirements for the services currently operated in this part of the spectrum.

BEN/111/5

Benin therefore proposes that the band 21.4 - 22 GHz be allocated to the service and the band 17.3 - 18.1 GHz to the associated feeder links, provided that:

- the frequency band in question is allocated on a worldwide basis;
- the band in question is subsequently planned to ensure equitable use by all countries.

BEN/111/9

Benin proposes that the frequency band 14.5 - 14.8 GHz be opened up to all FSS applications, while nevertheless providing due protection for assignments for feeder links of the broadcasting-satellite service contained in Appendix 30A to the Radio Regulations. This solution, at the same time as reducing the prevailing imbalance in band Ku between up links and down links, would make it possible to satisfy more effectively the ever increasing demand for services in band Ku.

BEN/111/10

Footnote No. 863 to the Table of Frequency Allocations should be amended accordingly.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/1A3-E
31 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS

OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS ABOVE 3 GHz)

Attachment : Proposals by Administrations.

YEM/41/21
MOD **803** Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Cameroon, the Central African Republic, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, the Lebanon, Libya, Madagascar, Malaysia, Malawi, Malta, Niger, Nigeria, Pakistan, the Philippines, Qatar, Syria, Singapore, Sri Lanka, Tanzania, Chad, Thailand and Yemen ~~(P.D.R. of)~~, the band 5 650 - 5 850 MHz is also allocated to the fixed and mobile services on a primary basis.

YEM/41/22
MOD **826** Different category of service: in Afghanistan, Algeria, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Ethiopia, Guyana, India, Indonesia, Iran, Iraq, Israel, Jamaica, Japan, Jordan, Kuwait, the Lebanon, Liberia, Malaysia, Nigeria, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Thailand, Trinidad and Tobago, and Yemen ~~(P.D.R. of)~~, the allocation of the band 9 800 - 10 000 MHz to the fixed service is on a primary basis (see No. 425).

GHz
10.7 - 12.75

EQA/45/20
MOD

EQA/45/21
MOD

Allocation to Services		
Region 1	Region 2	Region 3
11.7 - 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE 838A Mobile except aeronautical mobile	**11.7 - 12.1** FIXED 837 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile 836 839	**11.7 - 12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838A
	12.1 - 12.2 FIXED-SATELLITE (space-to-Earth) 836 839 842	838
838	**12.2 - 12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838A 839 844 846	**12.2 - 12.5** FIXED MOBILE except aeronautical mobile BROADCASTING 838 845
12.5 - 12.75 FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 848 849 850	**12.7 - 12.75** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	**12.5 - 12.75** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING-SATELLITE 847

EQA/45/22

ADD **838A** Use of this band by the broadcasting-satellite service permits operation of wide RF-band high-definition television.

YEM/41/23

MOD **857** Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Cameroon, China, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Lesotho, the Lebanon, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Pakistan, the Philippines, Qatar, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Swaziland, Tanzania, Chad, Thailand and Yemen ~~(P.D.R. of)~~, the band 14 - 14.3 GHz is also allocated to the fixed service on a primary basis.

GHz
14.4 - 16.6

	Allocation to Services		
	Region 1	Region 2	Region 3
NZL/26/21 **AUS/31/42** **NOC**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) 863 MOBILE Space Research	
IND/34/34 **ALG/40/26** **MOD**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 MOBILE Space Research	

NZL/26/22
INS/52/7
NOC **863**
Orb-88

IND/34/35

MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. However, this band may also be used by fixed-satellite service (Earth-to-space) subject to the condition that no harmful interference shall be caused to the broadcasting-satellite service feeder link plan of Appendix 30A.

ALG/40/27

MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~by feeder links for the broadcasting-satellite service~~. This use~~ is reserved for countries outside Europe. The frequency assignments specified in Appendix 30A to the Radio Regulations shall receive adequate protection against harmful interference.

EQA/45/32

MOD **863**
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~ shall not cause harmful interference to feeder links for the broadcasting-satellite service operating in accordance with Appendix 30A. ~~This use is reserved for countries outside Europe.~~

YEM/41/24
MOD **866** Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Austria, Bahrain, Bangladesh, Cameroon, Costa Rica, Egypt, El Salvador, the United Arab Emirates, Finland, Guatemala, India, Indonesia, Iran, Kuwait, Libya, Malaysia, Malawi, Malta, Morocco, Mozambique, Nepal, Nicaragua, Oman, Pakistan, Qatar, Singapore, Somalia, Sudan, Sri Lanka, Sweden, Tanzania, Chad, Thailand, Yemen ~~(P.D.R. of)~~ and Yugoslavia, the band 15.7 - 17.3 GHz is also allocated to the fixed and mobile services on a primary basis.

GHz
16.6 - 18.8

F/54/1
MOD

Allocation to Services		
Region 1	Region 2	Region 3
18.1 - 18.6	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 870A MOBILE 870	

F/54/2
ADD **870A** The use of the band 18.1 - 18.6 GHz by the FSS (Earth-to-space) is limited to feeder links for BSS. The allocation shall come into force on 1 April 2005. However, before that date, experimental and operational BSS (HDTV) systems may be introduced in the band provided that they do not cause harmful interference to existing services operating in the band in accordance with the Table of Frequency Allocations. The interim procedures for the introduction of experimental and operational BSS (HDTV) systems before that date (1 April 2005) and for the introduction of BSS (HDTV) systems after that date are contained in Resolution No. ABC (Document 20 - Part III, proposal EUR/20/59).

GHz
18.8 - 22.5

ALG/40/28
MOD

Allocation to Services		
Region 1	Region 2	Region 3
21.4 - 22	FIXED MOBILE BROADCASTING-SATELLITE 873A	

AUS/31/44
IND/34/36
MOD

21.4 - 22	FIXED MOBILE BROADCASTING-SATELLITE	

ALG/40/29
ADD **873A** The band 21.4 - 22 GHz is used by the broadcasting-satellite service for the transmission of wideband high-definition television (HDTV) signals in accordance with the plan to be established for that purpose. In preparing the plan, due account shall be taken of the criteria for sharing with the other services to which the band is also allocated.

GHz
22.5 - 24.25

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/45 **IND/34/37** **MOD**	**22.5 - 22.55** FIXED MOBILE	**22.5 - 22.55** FIXED MOBILE ~~BROADCASTING-SATELLITE 877~~ 878	
AUS/31/46 **IND/34/38** **MOD**	**22.55 - 23** FIXED INTER-SATELLITE MOBILE 879	**22.55 - 23** FIXED INTER-SATELLITE MOBILE ~~BROADCASTING-SATELLITE 877~~ 878 879	

AUS/31/47
IND/34/39
SUP **877**

GHz
24.25 - 31.3

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/5 **MOD**	**25.25 - 27**	FIXED MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration-Satellite (space-to-space)~~ Standard Frequency and Time Signal-Satellite (Earth-to-space)	
AUS/31/48 **MOD**	**27 - 27.5** FIXED MOBILE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE Earth Exploration-Satellite (space-to-space)	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/6 MOD	**27 - 27.5** FIXED MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration Satellite (space-to space)~~	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE SPACE RESEARCH (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-space) ~~Earth Exploration Satellite (space-to-space)~~ 881A	
AUS/31/49 ALG/40/30 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE	
EUR/46/8 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 882A	
AUS/31/50 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) 881A MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 883	
EUR/46/9 MOD	**30 - 31**	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) 882A 883	

AUS/31/51
ADD **881A** In the bands 27 to 27.001 GHz (in Regions 2 and 3) [, 27.5 to 27.501 GHz (in Region 1)] and 30.999 to 31 GHz, transmissions by beacons in the fixed-satellite (space-to-Earth) service are also permitted for the purpose of up-link power control.

ALG/40/31
ADD **881A** The band 28.5 - 29.5 GHz is also used for the feeder links of satellite high-definition television systems operated in accordance with the plan referred to in No. 873A.

EUR/46/7
ADD **881A** In the band 27 - 27.5 GHz provision No. 2613 shall not be applicable.

EUR/46/10
ADD **882A** The bands 27.500 - 27.502 GHz and 30.998 - 31.000 GHz may also be used for transmission of beacon frequencies in the space-to-Earth direction for power up-link control of transmitting satellite earth stations.

GHz
31.3 - 33.4

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/52 **MOD**	**31.8 - 32**	RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890~~ 891 892	
AUS/31/53 **MOD**	**32 - 32.3**	INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890~~ 891 892 893	

AUS/31/54
SUP **890**

GHz
33.4 - 40.5

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/55 **MOD**	**34.2 - ~~35.2~~34.7**	RADIOLOCATION SPACE RESEARCH (Deep Space) (Earth-to-space) Space Research ~~895~~ ~~896~~ 894	
AUS/31/56 **MOD**	**34.7~~34.2~~ - 35.2**	RADIOLOCATION Space Research ~~895~~ ~~896~~ 894	

GHz
33.4 - 40.5 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/46/11 MOD	**37 - 37.5**	FIXED MOBILE SPACE RESEARCH (space-to-Earth) EARTH EXPLORATION-SATELLITE (space-to-Earth) ~~899~~	
EUR/46/12 MOD	**37.5 - 39.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE ~~899~~	
EUR/46/13 MOD	**39.5 - ~~40.5~~40**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth)	
EUR/46/14 MOD	**~~39.5~~40 - 40.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space)	

AUS/31/57
SUP **895**

EUR/46/15
SUP **899**

GHz
51.4 - 66

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/58 MOD	**59 - ~~64~~60.7**	FIXED INTER-SATELLITE MOBILE MOD 909 RADIOLOCATION MOD 910 ~~911~~	

GHz
51.4 - 66 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/59 **MOD**	~~59~~60.7 - ~~64~~60.8	~~FIXED~~ EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE ~~MOBILE 909~~ ~~RADIOLOCATION 910~~ ~~911~~	
AUS/31/60 **MOD**	~~59~~60.8 - 64	FIXED INTER-SATELLITE MOBILE MOD 909 RADIOLOCATION MOD 910 911	

AUS/31/61
MOD **909** In the bands 54.25 - 58.2 GHz, ~~59 - 64~~59 - 60.7 GHz, 60.8 - 64 GHz, 116 - 134 GHz, 170 - 182 GHz and 185 - 190 GHz, stations in the aeronautical mobile service may be operated subject to not causing harmful interference to the inter-satellite service (see No. 435).

AUS/31/62
MOD **910** In the bands ~~59 - 64~~59 - 60.7 GHz, 60.8 - 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. 435).

GHz
151 - 185

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/63 **MOD**	151 - ~~164~~156	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	
AUS/31/64 **MOD**	~~151~~156 - ~~164~~158	~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ EARTH EXPLORATION-SATELLITE (passive)	
AUS/31/65 **MOD**	~~151~~158 - 164	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	

The following proposals also concern the frequency bands

dealt with in this document:

AUS/31/43

Australia supports the thrust of draft Resolution No. RRR submitted by the CEPT countries concerning the 14.5 - 14.8 GHz band (Document 20, proposal EUR/20/131).

MLI/39/7

In order to facilitate the use of HDTV on a worldwide basis and in the light of the results of studies of propagation in the Tropical Zone linked to precipitations:

Our Administration is in favour of continued CCIR studies in this connection in the two bands 11.7 - 12.7 GHz and 12.75 - 23 GHz. We consider that the studies carried out in the band 21.4 - 22 GHz may yield useful results provided that the sharing criteria between the different services, the technical parameters and the transitional period - which we feel should be at least 20 years - can be determined.

The associated feeder links should be accommodated in the band 17.3 - 18.1 GHz.

MLI/39/11

For this allocation, we propose that the considerable imbalance contained in the Ku band should be reduced.

The supplementary allocation of the band 14.5 - 14.8 GHz to the fixed-satellite service would have a number of advantages: it is adjacent to the up-link band at present in use; it can be successfully shared with the mobile and fixed services; and it can be operated while at the same time offering adequate protection for the assignments contained in Appendix 30A of the Radio Regulations.

It should be noted that the future Regional African Satellite Communication System (RASCOM) will use the Ku band.

MLI/39/13

The Administration of Mali considers that Footnote 797B should be maintained and that the coordination provided for in Article 14 should be required so as to avoid harmful interference to the aeronautical radionavigation systems operating in the band 5 000 - 5 250 MHz.

PAK/44/3

For the feeder links to the BSS (Sound), use of frequency bands between 10.7 - 11.7 GHz (Earth-to-space) is proposed. The use of up link FSS in this band be limited to feeder links for BSS (Sound) for all the three Regions by modifying footnote 835 of Article 8.

BFA/49/4

For this purpose, Burkina Faso proposes the 21.4 - 22 GHz band. The feeder links might use the 17 GHz band allocated to the fixed-satellite service.

BFA/49/7

Burkina Faso is in favour of the allocation of the frequency band 14.5 - 14.8 GHz to the fixed-satellite service (Earth-to-space) to remedy the present imbalance between the bandwidth allocated to up links and that allocated to down links.

This allocation will contribute to the effective use of the frequency spectrum allocated to the fixed-satellite service in the band Ku.

BFA/49/8

However, the protection of the assignments specified in Appendix 30A of the Radio Regulations must be assured.

ISR/51/7

Israel will give favourable consideration to the proposal to add the 14.5 -14.8 GHz band for the general use of FSS, that is to say, to remove the limitation on using this band to feeder links of the BSS in areas outside Europe.

This could be achieved by cancelling RR 863.

INS/52/4

For implementation of HDTV BSS for the future, Indonesia supports the proposed spectrum below 23 GHz for both down-link and feeder-link HDTV due to rain attenuation in the Tropical Zone.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/1A3-E
17 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO THE TABLE OF FREQUENCY ALLOCATIONS

OF THE RADIO REGULATIONS (ARTICLE 8)

(BANDS ABOVE 3 GHz)

Attachment : Proposals by Administrations.

KRE/15/3

MOD **779**

Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, China, the Congo, the United Arab Emirates, India, Indonesia, Iran, Iraq, Israel, Japan, Kuwait, the Lebanon, Libya, Malaysia, Oman, Pakistan, Qatar, Dem. People's Rep. of Korea, Syria, Singapore, Sri Lanka and Thailand, the band 3 300 - 3 400 MHz is also allocated to the fixed and mobile services on a primary basis. The countries bordering the Mediterranean shall not claim protection for their fixed and mobile services from the radiolocation service.

B/30/47

SUP **782, 784 and 785**

J/27/58

MOD **797B** **Mob-87**

Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Japan, Jordan, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14 and in Japan, this band is also allocated to the fixed service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

KRE/15/4

MOD **803**

Additional allocation: in Afghanistan, Saudi Arabia, Bahrain, Bangladesh, Cameroon, the Central African Republic, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kuwait, the Lebanon, Libya, Madagascar, Malaysia, Malawi, Malta, Niger, Nigeria, Pakistan, the Philippines, Qatar, Dem. People's Rep. of Korea, Syria, Singapore, Sri Lanka, Tanzania, Chad, Thailand, and Yemen (P.D.R. of), the band 5 650 - 5 850 MHz is also allocated to the fixed and mobile services on a primary basis.

CAN/23/86

ADD **809A**

Administrations are urged to use the fixed-satellite service in the band 7 025 - 7 075 MHz for feeder links to stations of the broadcasting-satellite service in the band 1 441 - 1 515 MHz.

KRE/15/5

MOD **819**

Additional allocation: in Saudi Arabia, Bahrain, Bangladesh, Burundi, Cameroon, China, the Congo, Costa Rica, Egypt, the United Arab Emirates, Gabon, Guinea, Guyana, Indonesia, Iran, Iraq, Israel, Jamaica, Kuwait, Libya, Malaysia, Mali, Morocco, Mauritania, Nepal, Niger, Nigeria, Oman, Pakistan, Qatar, Syria, Senegal, Singapore, Somalia, Sri Lanka, Tanzania, Chad, Thailand, Dem. People's Rep. of Korea, Togo and Tunisia, the band 8 500 - 8 750 MHz is also allocated to the fixed and mobile services on a primary basis.

KRE/15/6

MOD **830**

Additional allocation: in the Federal Republic of Germany, Angola, China, Ecuador, Spain, Japan, Kenya, Morocco, Nigeria, Dem. People's Rep. 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.

MHz
3 300 - 4 500

	Allocation to Services		
	Region 1	Region 2	Region 3
B/30/45 **MOD**	**3 400 - 3 600** FIXED FIXED-SATELLITE (space-to-Earth) Mobile Radiolocation 781 ~~782 785~~	**3 400 - 3 500** FIXED FIXED-SATELLITE (space-to-Earth) Amateur Mobile Radiolocation ~~784~~ 664 783	
		3 500 - 3 700 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile Radiolocation ~~784~~ 786	
B/30/46 **MOD**	**3 600 - 4 200** FIXED FIXED-SATELLITE (space-to-Earth) Mobile		
		3 700 - 4 200 FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 787	

MHz
5 470 - 7 250

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/85 **MOD**	**5 925 - 7 075**	FIXED FIXED-SATELLITE (Earth-to-space) 792A <u>809A</u> MOBILE 791 809	

GHz
10.7 - 12.75

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/44 MOD	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 792 MOD 835 MOBILE except aeronautical mobile	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) 792A MOBILE except aeronautical mobile	
EUR/20/50 MOD	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 792A MOD 835 MOBILE except aeronautical mobile	**10.7 - 11.7** FIXED FIXED-SATELLITE (space-to-Earth) 792A (Earth-to-space) MOD 835 MOBILE except aeronautical mobile	

GHz
10.7 - 12.75 (continued)

Allocation to Services		
Region 1	Region 2	Region 3
11.7 - 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE 838A Mobile except aeronautical mobile 838	**11.7 - 12.1** FIXED 837 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile 836 839 **12.1 - 12.2** FIXED-SATELLITE (space-to-Earth) 836 839 842 **12.2 - 12.7** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838A 839 844 846 **12.7 - 12.75** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile	**11.7 - 12.2** FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838A 838 **12.2 - 12.5** FIXED MOBILE except aeronautical mobile BROADCASTING 838 845 **12.5 - 12.75** FIXED FIXED-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile BROADCASTING-SATELLITE 847
12.5 - 12.75 FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 848 849 850		

USA/12/105
MOD

USA/12/106
MOD

KRE/15/7
MOD **834** Additional allocation: in Saudi Arabia, Bahrain, Bulgaria, Cameroon, China, Colombia, the Republic of Korea, Costa Rica, Cuba, Egypt, the United Arab Emirates, Ecuador, Hungary, Iran, Iraq, Israel, Japan, Kuwait, the Lebanon, Mongolia, Pakistan, Poland, Qatar, the German Democratic Republic, Dem. People's Rep. of Korea, Roumania, Czechoslovakia, the U.S.S.R. and Yugoslavia, the band 10.68 - 10.7 GHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a primary basis. Such use is limited to equipment in operation by 1 January 1985.

URS/7/45
MOD **835** In Region 1, the use of the band 10.7 - 11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service, including systems of the broadcasting-satellite service (sound) operating in accordance with the Plan established under No. 757A.

EUR/20/51
MOD **835** ~~In Region 1, the~~ The use of the band 10.7 - 11.7 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service.

USA/12/107
ADD **838A** When implementing broadcasting satellite systems in this band, administrations should bear in mind the possible use of this band for wide-RF band high definition television via satellite.

KRE/15/8
MOD **857** Additional allocation: in Afghanistan, Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Cameroon, China, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Kenya, Kuwait, Lesotho, the Lebanon, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Pakistan, the Philippines, Qatar, Dem. People's Rep. of Korea, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Swaziland, Tanzania, Chad, Thailand and Yemen (P.D.R. of), the band 14 - 14.3 GHz is also allocated to the fixed service on a primary basis.

GHz
14.4 - 16.6

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/108 **NOC**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) 863 MOBILE Space Research	
B/30/48 **MOD**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 MOBILE Space Research	

USA/12/109
NOC **863** **Orb-88**

KOR/8/21
MOD **863** **Orb-88** The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~gives priority to feeder links for the broadcasting-satellite service. ~~This use is reserved for countries outside Europe.~~ Fixed-satellite services other than those for the feeder links of broadcasting-satellite services may use the band on a secondary basis, subject to the provision set forth in Article 15A.

J/27/59
MOD **863** **Orb-88** The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~ shall not cause harmful interference to existing plans for feeder links for the broadcasting-satellite service. This use by feeder links for the broadcasting-satellite service is reserved for countries outside Europe.

B/30/49
MOD **863** **Orb-88** The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~shall not cause harmful interference to feeder links for the broadcasting-satellite service operating in accordance with the provisions of Appendix 30A. ~~This use is reserved for countries outside Europe.~~

GHz
16.6 - 18.8

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/87 **MOD**	**17.3 - 17.7**	FIXED-SATELLITE (Earth-to-space) 869 BROADCASTING-SATELLITE Radiolocation 868 868A	
B/30/50 **MOD**	**17.3 - 17.7**	FIXED-SATELLITE (Earth-to-space) 869 BROADCASTING-SATELLITE Radiolocation 868	
CAN/23/88 **MOD**	**17.7 - ~~18.1~~17.8**	~~FIXED~~ FIXED-SATELLITE ~~(space-to-Earth)~~ (Earth-to-space) 869 BROADCASTING-SATELLITE ~~MOBILE~~ 868A 869A 869B	
B/30/51 **MOD**	**17.7 - ~~18.1~~17.8**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 BROADCASTING-SATELLITE MOBILE	
CAN/23/89 **MOD**	**~~17.7~~17.8 - 18.1**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 MOBILE	
B/30/52 **MOD**	**~~17.7~~17.8 - 18.1**	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 MOBILE	

CAN/23/90
ADD **868A** In the band 17.3 - 17.8 GHz sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service shall also be in accordance with the provisions of Section 1 of Annex 4 of Appendix 30A.

CAN/23/91
ADD **869A** Additional allocation: The band 17.7 - 17.8 GHz may also be used for space-to-Earth transmissions in the fixed-satellite service on a primary basis; this use of the band shall protect and shall not claim protection from existing and future operating systems in the broadcasting-satellite service.

CAN/23/92
ADD **869B** Additional allocation: The band 17.7 - 17.8 GHz may also be used by networks in the fixed and mobile services on a primary basis; such uses of the band shall protect and shall not claim protection from existing and future operating systems in the broadcasting-satellite service.

GHz
18.8 - 22.5

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/110 **MOD**	**19.7 - 20.2**	~~FIXED-SATELLITE (space-to-Earth)~~ GENERAL-SATELLITE (space-to-Earth) ~~Mobile-Satellite (space-to-Earth)~~ 873	
CAN/23/93 **NOC**	**19.7 - 20.2**	FIXED-SATELLITE (space-to-Earth) Mobile-satellite (space-to-Earth) 873	
URS/7/46 **EUR/20/56** **MOD**	**21.4 - 22**	FIXED MOBILE BROADCASTING-SATELLITE 873A	
USA/12/111 **MOD**	**21.4 - ~~22~~21.7**	FIXED MOBILE	
CAN/23/94 **MOD**	**21.4 - 22**	FIXED FIXED-SATELLITE (Earth-to-space) 875A MOBILE	
USA/12/112 **MOD**	**~~21.4~~21.7 - 22**	FIXED INTER-SATELLITE MOBILE	
CAN/23/95 **MOD**	**22 - ~~22.21~~22.2**	FIXED FIXED-SATELLITE (Earth-to-space) 875A MOBILE except aeronautical mobile 874	
CAN/23/96 **MOD**	**~~22~~22.2 - 22.21**	FIXED MOBILE except aeronautical mobile 874	

URS/7/47
ADD **873A** The band 21.4 - 22 GHz is used on a world-wide basis by the broadcasting-satellite service for the transmission of wideband high-definition television signals. Until the relevant Plan is adopted, the bringing into operation of high-definition television satellite systems shall be subject to a special procedure similar to that described in Resolution No. 33. The criteria for the sharing of this band by the broadcasting-satellite service with the other services to which it is allocated shall be established before the beginning of the planning process.

EUR/20/58
ADD **873A** The allocation to the broadcasting-satellite service in the band 21.4 - 22 GHz is intended for use by wide RF-band high-definition television (HDTV). The allocation shall come into effect on 1 April 2005, however, before that date experimental and operational BSS (HDTV) systems may be introduced into the band provided that they do not cause harmful interference to existing services operating in the band in accordance with the Table of Frequency Allocations. The interim procedures for the introduction of experimental and operational BSS (HDTV) systems before 1 April 2005, and for the introduction of BSS (HDTV) systems after that date are contained in Resolution No. ABC. After 1 April 2005 existing services may continue to operate on the basis that they shall neither cause harmful interference to BSS (HDTV) systems nor claim protection from such systems.

CAN/23/97
ADD **875A** In the band 21.4 - 22.2 GHz, feeder links to broadcasting-satellite space stations have priority over other uses of the fixed-satellite service. Other assignments within the fixed-satellite service shall protect and shall not claim protection from existing and future operating feeder link networks to such broadcasting-satellite stations.

GHz
22.5 - 24.25

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/98 **MOD**	**22.5 - 22.55** FIXED MOBILE	**22.5 - 22.55** FIXED MOBILE ~~BROADCASTING-SATELLITE 877~~ 878	
CAN/23/99 **MOD**	**22.55 - 23** FIXED INTER-SATELLITE MOBILE 879	**22.55 - 23** FIXED INTER-SATELLITE MOBILE ~~BROADCASTING-SATELLITE 877~~ 878 879	
CAN/23/100 **NOC**	**23 - 23.55**	FIXED INTER-SATELLITE MOBILE 879	

CAN/23/100A
SUP **877**

GHz
24.25 - 31.3

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/113 MOD	**24.25 - ~~25.25~~24.55**	RADIONAVIGATION	
EUR/20/57 MOD	**24.25 - 25.25**	~~RADIONAVIGATION~~ FIXED	
J/27/60 MOD	**24.25 - ~~25.25~~24.65**	RADIONAVIGATION	
CAN/23/101 MOD	**24.25 - ~~25.25~~24.75**	MULTIPURPOSE-SATELLITE (Earth-to-space) ~~RADIONAVIGATION~~ 732A	
USA/12/114 MOD	**~~24.25~~24.55 - ~~25.25~~24.65**	~~RADIONAVIGATION~~ RADIOLOCATION-SATELLITE	
USA/12/115 MOD	**~~24.25~~24.65 - 25.25**	~~RADIONAVIGATION~~ BROADCASTING-SATELLITE	
J/27/61 MOD	**~~24.25~~24.65 - 25.25**	~~RADIONAVIGATION~~ BROADCASTING-SATELLITE 881A	
CAN/23/102 MOD	**~~24.25~~24.75 - 25.25**	RADIONAVIGATION	
USA/12/116 MOD	**25.25 - 27**	FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space)	
CAN/23/103 MOD	**25.25 - 27**	FIXED MOBILE SPACE-COMMUNICATIONS ~~Earth Exploration-Satellite (space-to-space)~~ Standard Frequency and Time Signal-Satellite (Earth-to-space) 732A	
J/27/63 MOD	**25.25 - 27**	FIXED MOBILE INTER-SATELLITE 881B Earth Exploration-Satellite (space-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space)	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/117 MOD	**27 - 27.5** FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED ~~FIXED SATELLITE (Earth-to-space)~~ MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	
CAN/23/104 MOD	**27 - 27.5** FIXED MOBILE ~~Earth Exploration Satellite (space-to-space)~~ SPACE- COMMUNICATIONS MULTIPURPOSE-SATELLITE (space-to-Earth) 732A 881A	**27 - 27.5** FIXED ~~FIXED SATELLITE (Earth-to-space)~~ MOBILE ~~Earth Exploration Satellite (space-to-space)~~ SPACE-COMMUNICATIONS MULTIPURPOSE-SATELLITE (space-to-Earth) 732A 881A	
J/27/64 MOD	**27 - 27.5** FIXED MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE INTER-SATELLITE Earth Exploration-Satellite (space-to-space)	
URS/7/2 MOD	**27.5 - ~~29.5~~ 28.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space Research (space-to-Earth) 881A	
USA/12/118 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) 881A MOBILE	
CAN/23/106 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 882A	
J/27/66 MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 881C MOBILE	

GHz
24.25 - 31.3 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/3 MOD	~~27.5~~ 28.5 - 29.5	FIXED FIXED-SATELLITE (Earth-to-space) 881B ~~MOBILE~~ MOBILE-SATELLITE (Earth-to-space)	
URS/7/4 MOD	29.5 - 30	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 882A 882 883	
USA/12/120 MOD	29.5 - 30	~~FIXED-SATELLITE (Earth-to-space)~~ GENERAL-SATELLITE (Earth-to-space) ~~Mobile-Satellite (Earth-to-space)~~ 882 883	
CAN/23/107 MOD	29.5 - 30	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) ~~882~~882A ~~883~~	
URS/7/5 MOD	30 - 31	FIXED-SATELLITE (Earth-to-space) MOBILE-SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (space-to-Earth) Earth Exploration-Satellite (Earth-to-space) 882A 883	

URS/7/6
ADD **881A** The frequency band 27.5 - 28.5 GHz in the space research service is intended for data transmission from very long-distance radiointerferometry space stations.

USA/12/119
ADD **881A** Beacon transmissions in the fixed-satellite (space-to-Earth) service are also permitted for the purpose of up-link power control.

CAN/23/105
ADD **881A**

In the band 27.0 - 27.5 GHz, transmissions of space stations in the space-communications service shall not produce a power flux-density at the Earth's surface greater than -125 dBW/m^2 in any 1 MHz band for all angles of arrival.

J/27/62
ADD **881A** The band 24.65 - 25.25 GHz is allocated to the radionavigation service on a primary basis up to 30 April 2008.

URS/7/7
ADD **881B** The frequency band 28.5 - 29.5 GHz may be used for feeder links in high-definition television satellite systems operating in accordance with the Plan under No. 873A.

J/27/65
ADD **881B** The power flux-density at the Earth's surface in the territory of Japan shall not exceed the value which is 10 dB lower than that given in No. 2578 up to 31 December 1999.

J/27/67
ADD **881C** The use of the band 27.5 - 29.5 GHz by the fixed-satellite service (space-to-Earth) is limited to beacon transmissions for the purpose of up-link power control.

URS/7/8
ADD **882A** The use of the frequency bands 29.5 - 31 and 37.5 - 40.5 GHz in the earth exploration-satellite service is restricted to systems for the collection and transmission of data relating to the state of the environment.

CAN/23/108
ADD **882A** The bands 27.500 - 27.501 and 29.999 - 30.000 GHz are also allocated on a primary basis to the fixed-satellite service (space-to-Earth). Such space-to-Earth transmissions shall not produce a power flux-density in excess of the values in No. 2578 on the Earth's surface, and shall not exceed an effective isotropically radiated power (e.i.r.p.) of + 10 dBW in the direction of neighbouring satellites on the geostationary satellite orbit.

GHz
31.3 - 33.4

Allocation to Services		
Region 1	Region 2	Region 3
31.8 - 32	RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890~~ 891 892	
32 - 32.3	INTER-SATELLITE RADIONAVIGATION SPACE RESEARCH (deep space) (space-to-Earth) ~~Space Research~~ ~~890~~ 891 892 893	

USA/12/121
MOD

USA/12/122
MOD

USA/12/123
SUP **890**

GHz
33.4 - 40.5

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/124 MOD	**34.2 - ~~35.2~~34.7**	RADIOLOCATION SPACE RESEARCH (deep space) (Earth-to-space) Space Research ~~895~~ 896 894	
USA/12/125 MOD	**~~34.2~~34.7 - 35.2**	RADIOLOCATION Space Research ~~895~~ 896 894	
USA/12/127 MOD	**37 - 37.5**	FIXED MOBILE SPACE RESEARCH (space-to-Earth) 899	
URS/7/9 MOD	**37.5 - 39.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE Earth Exploration-Satellite (space-to-Earth) 882A 899	
USA/12/128 MOD	**37.5 - ~~39.5~~38**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE SPACE RESEARCH (space-to-Earth) 899	
USA/12/129 MOD	**~~37.5~~38 - 39.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 899	
URS/7/10 MOD	**39.5 - 40.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Earth Exploration-satellite (space-to-Earth) 882A	
USA/12/130 MOD	**39.5 - 40.5**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) SPACE RESEARCH (Earth-to-space)	

USA/12/126
SUP **895**

GHz
51.4 - 66

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/131 **MOD**	**59 - ~~64~~60.7**	FIXED INTER-SATELLITE MOBILE 909 RADIOLOCATION 910 911	
USA/12/132 **MOD**	**~~59~~60.7 - ~~64~~60.8**	~~FIXED~~ EARTH EXPLORATION-SATELLITE (passive) INTER-SATELLITE ~~MOBILE 909~~ ~~RADIOLOCATION 910~~ ~~911~~	
USA/12/133 **MOD**	**~~59~~60.8 - 64**	FIXED INTER-SATELLITE MOBILE 909 RADIOLOCATION 910 911	

GHz
66 - 86

	Allocation to Services		
	Region 1	Region 2	Region 3
URS/7/11 **MOD**	**74 - 75.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE Space Research (space-to-Earth) 912A	
URS/7/12 **MOD**	**75.5 - 76**	AMATEUR AMATEUR-SATELLITE Space Research (space-to-Earth) 912A	

GHz
66 - 86 (continued)

	Allocation to Services		
	Region 1	Region 2	Region 3
	76 - 81	RADIOLOCATION Amateur Amateur-Satellite Space Research (space-to-Earth) 912A 912	
URS/7/13 MOD			
	81 - 84	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE MOBILE-SATELLITE (space-to-Earth) Space Research (space-to-Earth) 912A	
URS/7/14 MOD			

URS/7/15
ADD **912A** The frequency band 74 - 84 GHz in the space research service is reserved on a world-wide basis for the use and development of equipment for the transmission of wideband radioastronomical data from space stations to earth stations using very long-distance radiointerferometry.

GHz
151 - 185

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/134 MOD	**151 - ~~164~~156**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	
USA/12/135 MOD	**~~151~~156 - ~~164~~158**	~~FIXED~~ ~~FIXED-SATELLITE (space-to-Earth)~~ ~~MOBILE~~ EARTH EXPLORATION-SATELLITE (passive)	
USA/12/136 MOD	**~~151~~158 - 164**	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE	

The following proposals also concern the frequency bands

dealt with in this document:

NIG/9/2

In the consideration of the frequency range 12.75 - 23 GHz for the choice of an appropriate band for high-definition television (HDTV), it will be necessary to take into consideration the high rain attenuation in the tropical region. Hence, it may be desirable to assign the lower end of the frequency range 12.75 to 23 GHz given cognizance to the existing services in such bands and ensuring no interference problems. If it becomes necessary to reallocate services in the band, sufficient long-term notice should be given in order to prevent losses to operators. This Administration supports the continuation of studies on the long range future suitability of the 11.7 to 12.7 GHz band for high-definition television (HDTV).

NIG/9/8

At present the frequency 14.5 to 14.8 GHz is allocated to the fixed-satellite services (FSS) including other services. However, the use of the band for the fixed-satellite service is limited to the broadcasting-satellite service (BSS) feeder links. This use is reserved for countries outside Europe.

The use of a satellite for communication purposes in Africa is expected to expand and in particular the RASCOM project may require the use of the KU-band for the fixed-satellite service Earth-to-satellite purposes. This Administration supports the use of the band 14.5 to 14.8 GHz for the fixed-satellite service including the Earth-to-space link without the current restriction in order to remove the imbalance between the up link and down link. This will also permit the use of the contiguous band of up to 800 MHz (14.5 to 14.8 GHz).

KEN/13/8

The Kenyan Administration favours the allocation of this frequency band to the Fixed-Satellite Service (Earth-to-space) with due protection of the assignment appearing in Appendix 30A of the Radio Regulations.

EUR/20/130

a) that there be no change (NOC) to the allocations, status of these allocations or the associated footnote (RR 863) in the band 14.5 - 14.8 GHz;

b) that the attached Resolution No. RRR be adopted for reference to the Administrative Council and inclusion of the question of balancing the FSS up-link and down-link allocations in the agenda of a future WARC.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/1B1-E
31 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO ARTICLES 55 AND 56

OF THE RADIO REGULATIONS

Attachment : Proposals by Administrations.

NZL/26/25
NOC

ARTICLE 55

NZL/26/26
NOC Mob-87

Certificates for Personnel of Ship Stations and Ship Earth Stations

NZL/26/27
NOC

ARTICLE 56

NZL/26/28
NOC Mob-87

Personnel of Stations in the Maritime Mobile and the Maritime Mobile-Satellite Service

NZL/26/29
NOC Mob-87

Section I. Personnel of Coast Stations and Coast Earth Stations

NZL/26/30
NOC 3979 Mob-87

NZL/26/31
NOC Mob-87

Section II. Class and Minimum Number of Operators of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter IX and for Public Correspondence

NZL/26/32
NOC 3980 to 3986

NZL/26/33
NOC Mob-87

Section III. Class and Minimum Number of Personnel for Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter N IX and for Public Correspondence

NZL/26/34
NOC 3987 Mob-87 to 3989 Mob-87

NZL/26/35
MOD 3990 Mob-87

a) for stations on board ships which sail within or beyond the range of MF coast stations, noting the provisions of No. N 2932: a holder of a first- or second-class radio electronic certificate or a general operator's certificate;

AUS/31/66
MOD 3990 Mob-87

a) for stations on board ships which sail beyond the range of ~~MF~~VHF GMDSS coast stations, noting the provisions of No. N2932: a holder of a first- or second-class radio electronic certificate or a general operator's certificate;

NZL/26/36
AUS/31/67
SUP **3991**
Mob-87

b)

NZL/26/37
(MOD) **3992**
Mob-87

~~c)~~b) for ship stations on board ships which sail within the range of VHF coast stations: a holder of a first- or second-class radio electronic certificate or a general operator's certificate or a restricted operator's certificate.

AUS/31/68
MOD **3992**
Mob-87

~~c)~~b) for ship stations on board ships which sail solely within the range of VHF GMDSS coast stations, noting the provisions of No. N2932: a holder of a first- or second-class radio electronic certificate or a general operator's certificate or a restricted operator's certificate.

The following proposal concerns also the regulatory provisions

dealt with in this document:

INS/52/8

Indonesia considers that Articles 55 and 56 should be slightly amended to reflect the harmonization between WARC MOB-87 and the SOLAS Convention.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/1B1-E
17 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO ARTICLES 55 AND 56

OF THE RADIO REGULATIONS

Attachment : Proposals by Administrations.

CHAPTER XI

Maritime Mobile Service and Maritime Mobile-Satellite Service

EUR/20/63
NOC

ARTICLE 55

EUR/20/64
NOC Mob-87

Certificates for Personnel of Ship Stations and Ship Earth Stations

Section I. General Provisions

NIG/9/9
MOD 3867

(2) When it is necessary to employ a person without a certificate but having adequate knowledge of the equipment on board the ship or an operator not holding an adequate certificate as a temporary operator, his performance as such must be limited solely to signals of distress, distress alerting, urgency and safety, messages relating thereto, messages relating directly to the safety of life and urgent messages relating to the movement of the ship. Persons employed in these cases are bound by the provisions of No. 3877 regarding the secrecy of correspondence.

USA/12/145
CAN/23/143
SUP 3870

USA/12/146
(MOD) 3871

USA/12/147
(MOD) 3872

USA/12/148
MOD 3876

d) the issuing or recognizing administration.

Mob-87

Section IIA. Categories of Certificates for Personnel of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter N IX and for Public Correspondence

USA/12/149
B/30/55
MOD 3890A
Mob-87

§ 7A. (1) There are ~~four~~ two categories of certificates for personnel of ship stations and ship earth stations using the frequencies and techniques prescribed in Chapter N IX:

USA/12/150
B/30/56
SUP 3890B
Mob-87

USA/12/151
B/30/57
SUP 3890C
Mob-87

USA/12/152
B/30/58
(MOD) 3890D
Mob-87

~~c)~~ a) General Operator's Certificate;

USA/12/153
B/30/59
(MOD) 3890E
Mob-87

~~d)~~ b) Restricted Operator's Certificate.

USA/12/154
B/30/60
(MOD) 3890F
Mob-87

(2) The holder of one of the certificates specified in Nos. ~~3890B, 3890C,~~ 3890D and 3890E may carry out the service of ship stations or ship earth stations using the frequencies and techniques prescribed in Chapter N IX.

Mob-87

Section IIIA. Conditions for the Issue of Certificates for Personnel of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter N IX and for Public Correspondence

USA/12/155
B/30/61
SUP **3949A**
Mob-87
to
3949AI
Mob-87

USA/12/156
B/30/62
SUP **3949B**
Mob-87
to
3949BI
Mob-87

USA/12/157
(MOD) **3949C**
Mob-87

~~C.~~ A. General Operator's Certificate

USA/12/158
(MOD) **3949CA**
Mob-87

§ ~~18C.~~ 18A. The General Operator's Certificate is issued to candidates who have given proof of the knowledge and qualifications enumerated below:

USA/12/159
(MOD) **3949D**
Mob-87

~~D.~~ B. Restricted Operator's Certificate

USA/12/160
(MOD) **3949DA**
Mob-87

§ ~~18D.~~ 18B. The Restricted Operator's Certificate is issued to candidates who have given proof of the knowledge and qualifications enumerated below:

EUR/20/65
NOC

ARTICLE 56

EUR/20/66
NOC Mob-87

Personnel of Stations in the Maritime Mobile and the Maritime Mobile-Satellite Service

EUR/20/67
NOC Mob-87

Section I. Personnel of Coast Stations and Coast Earth Stations

USA/12/161
EUR/20/68
NOC 3979
Mob-87

§ 1. Administrations shall ensure that the staff on duty in coast stations and in coast earth stations are adequately qualified to operate the stations efficiently.

EUR/20/69
NOC Mob-87

Section II. Class and Minimum Number of Operators of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter IX and for Public Correspondence

EUR/20/70
NOC 3980 to 3986

EUR/20/71
NOC Mob-87

Section III. Class and Minimum Number of Personnel for Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter N IX and for Public Correspondence

USA/12/162
EUR/20/72
NOC 3987
Mob-87

§ 4. Administrations shall ensure that the personnel of ship stations and ship earth stations are adequately qualified to enable efficient operation of the station, and shall take steps to ensure the operational availability and maintenance of equipment for distress and safety communications in accordance with the relevant international agreements.

USA/12/163
EUR/20/72
NOC 3988
Mob-87

§ 5. An adequately qualified person shall be available to act as a dedicated communications operator in cases of distress.

USA/12/164
EUR/20/73
CAN/23/144
NOC 3989
Mob-87

§ 6. The personnel of ship stations for which a radio installation is compulsory under international agreements and which use the frequencies and techniques prescribed in Chapter N IX shall, with respect to the provisions of Article 55, include at least:

J/27/75
MOD **3990**
Mob-87

a) for stations on board ships which sail within the range or beyond the range of MF coast stations: a holder of a first- or second-class radio electronic certificate or a general operator's certificate;

EUR/20/74
MOD **3990**
Mob-87

a) for stations on board ships which sail within or beyond the range of MF coast stations: taking into account the provisions of the Convention for the Safety of Life at Sea and other applicable conventions: a holder of a first- or second-class radio electronic certificate or a general operator's certificate;

CAN/23/145
MOD **3990**
Mob-87

a) for stations on board ships which sail beyond the range of MF coast stations: a holder of a first- or second-class radio electronic certificate or a general operator's certificate;

USA/12/165
SUP **3990**
Mob-87

USA/12/166
MOD **3991**
Mob-87

~~b)~~ a) for stations on board ships which sail ~~within~~beyond the range of ~~MF~~VHF coast stations: a holder of a ~~first or second class radio electronic certificate or a~~general operator's certificate;

EUR/20/75
CAN/23/146
J/27/76
SUP **3991**
Mob-87

USA/12/167
MOD **3992**
Mob-87

~~c)~~ b) for ~~ship~~stations on board ships which sail within the range of VHF coast stations: a holder of a ~~first or second class radio electronic certificate or a~~general operator's certificate or a restricted operator's certificate.

EUR/20/76
CAN/23/147
J/27/77
(MOD) **3992**
Mob-87

~~c)~~ b) for ship stations on board ships which sail within the range of VHF coast stations: a holder of a first- or second-class radio electronic certificate or a restricted operator's certificate.

USA/12/168
EUR/20/77
NOC **3993**
Mob-87

§ 7. The personnel of ship stations for which a radio installation is not compulsory under international agreements and which use the frequencies and techniques prescribed in Chapter N IX shall be adequately qualified and certificated in accordance with the administration's requirements.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/1B2-E
31 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO ARTICLES 27 AND 28

AND APPENDIX 3

OF THE RADIO REGULATIONS

Attachment : Proposals by Administrations.

ARTICLE 27

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section II. Power Limits

IND/34/40
MOD **2509**

(5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service, the space research service, the space operation service, the earth exploration-satellite service and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

~~1 626.5~~1 610 - 1 645.5 MHz		(for countries mentioned in No. 730)
1 646.5	- 1 660 MHz	(for countries mentioned in No. 730)
1 765	- 1 775 MHz	
2 025	- 2 110 MHz	
2 200	- 2 290 MHz	
2 655	- 2 690 MHz[1]	(for Regions 2 and 3)
5 725	- 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755	- 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850	- 7 075 MHz	
7 900	- 8 400 MHz	

EUR/46/16
MOD **2511**

(7) The limits given in Nos. 2505 and 2508 apply in the following frequency bands allocated to the fixed-satellite service, the space research service and the earth exploration-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

17.7 - 18.1 GHz	
25.25 - 29.5 GHz	
~~27.0 - 27.5 GHz~~[2]	~~(for Regions 2 and 3)~~
~~27.5 - 29.5 GHz~~	

EUR/46/17
SUP **2511.2**

EUR/46/18
ADD **2512**

Sites for transmitting stations, in the fixed or mobile service, employing maximum values of equivalent isotropic power (e.i.r.p.) exceeding +45 dBW in the frequency band 25.25 - 27.5 GHz should be selected so that the direction of maximum radiation of any antenna will be at least 1.5 degrees away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction.

ARTICLE 28

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

Section IV. Limits of Power Flux-Density from Space Stations

IND/34/41
MOD **2558** **Mob-87**

b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) (space-to-space);
- space operation service (space-to-Earth) (space-to-space);
- earth exploration-satellite service (space-to-Earth) (space-to-space);
- mobile satellite-service (space to Earth);

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service, and to the

- radiodetermination-satellite service (space-to-Earth).

IND/34/42
MOD **2559** **Mob-87**

1 515	- 1 525 MHz	
1 525	- 1 530 MHz[1]	(for Regions 1 and 3)
1 530	- 1 535 MHz[1]	(for Regions 1 and 3, up to 1st January 1990)
1 670	- 1 690 MHz	
1 690	- 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700	- 1 710 MHz	
2 025	- 2 110 MHz	
2 290 2 200	- 2 300 MHz	
2 483.5	- 2 500 MHz	

EUR/46/19
MOD **2581**

(8) Power flux-density limits between 31.025.25 GHz and 40.5 GHz.

EUR/46/20
MOD **2583**

b) The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service, the earth exploration-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

EUR/46/21
MOD **2584**

25.25	-	27.502 GHz	
31.0	-	31.3 GHz	
34.2	-	35.2 GHz	(for space-to-Earth transmissions under Nos. 895 and 896 on the territory of countries mentioned in No. 894)

37.537.0 - 40.5 GHz

APPENDIX 3

Orb-88

Notices Relating to Space Radiocommunications and Radio Astronomy Stations

EUR/46/2
MOD

Appendix 3, Section 2.A.4b - Orbital information - shall be modified to include the following additional orbital information: argument of the perigee, right ascension, the separation of time and (where appropriate) the active service arc. For stabilized, non-geostationary-satellite orbits, the terrestrial projections of the orbits shall also be given.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/1B2-E
17 January 1992

Note by the Secretary-General

PROPOSALS

RELATING TO ARTICLES 11, 13, 27, 28, 29 AND 30

AND APPENDICES 30 AND 30A

OF THE RADIO REGULATIONS

Attachment : Proposals by Administrations.

ARTICLE 11

Coordination of Frequency Assignments to Stations in a Space Radiocommunication Service Except Stations in the Broadcasting-Satellite Service and to Appropriate Terrestrial Stations[1, 2, 3]

Section I. Procedure for the Advance Publication of Information on Planned Satellite Networks[4]

EUR/20/94
NOC **1041 to 1046**

CAN/23/109
ADD **1044A**

(4) Additionally, on receipt of the complete information sent under Nos. 1042 and 1043 concerning non-geostationary satellite networks, the Board shall endeavour to identify administrations whose services might be affected[3], and shall include the names of those administrations it is able to identify in the special section of its weekly circular and in the circular telegram of No. 1044.

CAN/23/110
ADD **1044A.1**

[3] The frequency assignments to be taken into account by the Board shall be those of Nos. 1061 to 1065.

EUR/20/95
MOD **1047 Orb-88**

§ 2. If, after studying the information published under No. 1044, any administration is of the opinion that interference which may be unacceptable may be caused to assignments of its existing or planned satellite networks[1], it shall within four months after the date of the weekly circular containing the complete information listed in Appendix 4, send the administration concerned its comments on the particulars of the interference to its existing or planned satellite systems. A copy of these comments shall also be sent to the Board. If no such comments are received from an administration within the period mentioned above, it may be assumed that the administration has no basic objections to the planned satellite network(s) of that system on which details have been published.

CAN/23/111
MOD **1047 Orb-88**

§ 2. If, after studying the information published under No. 1044, any administration including any of those identified by the Board under No. 1044A, is of the opinion that interference which may be unacceptable may be caused to assignments of its existing or planned satellite networks, it shall, within four months after the date of the weekly circular containing the complete information listed in Appendix 4, send the administration concerned its comments on the particulars of the interference to its existing or planned satellite systems. A copy of these comments shall also be sent to the Board. If no such comments are received from an administration within the period mentioned above, it may be assumed that the administration has no basic objections to the planned satellite network(s) of that system on which details have been published.

EUR/20/96
NOC **1047A Orb-88**

1047B Orb-88

1048

CAN/23/112
MOD **1047A Orb-88**

An administration sending information, on its planned geostationary-satellite network, under No. 1042 and No. 1043 may request the assistance of the Board in determining, with the aid of Appendix 29, if its planned network could affect or be affected by other geostationary-satellite networks for which complete Appendix 4 information has been received by the Board.

CAN/23/113
MOD **1047B**

An administration receiving information on a planned geostationary-satellite network published under No. 1044 may request the assistance of the Board in identifying with the aid of Appendix 29, whether its existing or planned geostationary networks for which complete Appendix 4 information has been sent to the Board could affect or be affected by the planned network.

EUR/20/97
MOD **1049**
Orb-88

§ 3. (1) An administration receiving comments sent in accordance with No. 1047 and administrations sending such comments shall endeavour to resolve any difficulties that may arise~~.~~[1], and shall provide any additional information that may be available.

EUR/20/98
ADD **(1)** **1047.1**
(1) **1049.1**

(1) The coordination procedure of Section II is limited to geostationary-satellite networks, therefore, the identification and resolution of difficulties involving non-geostationary satellite networks of the space operations, space research and Earth exploration satellite services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz shall be undertaken in the procedures of Section I of this Article. (See also No. 1084.1.)

CAN/23/114
MOD **1050**

(2) In case of difficulties arising with regard to ~~when~~ any planned satellite network of a system ~~is intended to use the geostationary satellite orbit~~:

CAN/23/115
MOD **1051**
Orb-88

a) the administration responsible for the planned network shall first explore all possible means of meeting its requirements, taking into account the characteristics of the ~~geostationary~~ satellite networks of other systems, and without considering the possibility of adjustment to networks of other administrations. If no such means can be found, the administration concerned may then request other administrations, either bilaterally or multilaterally, or in exceptional circumstances through the convening of multilateral meetings similar to that provided for in No. 1085C, to mutually help resolve these difficulties~~.~~;

CAN/23/116
MOD **1052**

b) an administration receiving a request under No. 1051 shall, in consultation with the requesting administration, explore all possible means of meeting the requirements of the requesting administration, for example, by relocating or modifying the orbital characteristics of one or more of its own ~~geostationary~~ space stations involved, or by changing the emissions, frequency usage (including changes in frequency bands) or other technical or operational characteristics;

CAN/23/117
MOD **1053**
Orb-88

c) if, after following the procedure described in Nos. 1051 and 1052, there are unresolved difficulties, the administrations concerned shall together make every possible effort to resolve these difficulties by means of mutually acceptable adjustments, for example, to ~~geostationary~~ space station locations or orbital characteristics and to other characteristics of the networks involved in order to provide for the normal operation of both the planned and existing networks.

CAN/23/118
MOD **1058B**
Orb-88

a) the information required for the network coordination of a frequency assignment to a station pertaining to a ~~geostationary~~ satellite network in accordance with the provisions of No. 1074, including the copy of the request for coordination sent to any other administration; this information will be treated in accordance with the provisions of Section II of this Article; or

CAN/23/119
MOD **1058C**
Orb-88

b) the information required for notification of a frequency assignment to a station of a ~~geostationary~~ satellite network when coordination for that assignment is not required; ~~or~~

CAN/23/120
SUP **1058D**
Orb-88

CAN/23/121
MOD
Orb-88

Section II. Coordination of Frequency Assignments to a Space Station ~~on a Geostationary Satellite~~ or an Earth Station Communicating with Such a Space Station using Frequency Bands other than Those Covered by the Fixed-Satellite Service Allotment Plan in Relation to Stations of Other ~~Geostationary~~ Satellite Networks*

EUR/20/99
NOC
1059
to
1065
Orb-88

CAN/23/122
MOD
1060
Orb-88
§ 6. (1) Before an administration (or one acting on behalf of one or more named administrations) notifies to the Board or brings into use any frequency assignment to a space station ~~on a geostationary satellite~~ or to an earth station that is to communicate with a space station ~~on a geostationary satellite~~, it shall, except in the cases described in Nos. 1066 to 1071, effect coordination of the assignment with any other administration whose assignment, for a space station ~~on a geostationary satellite~~ or for an earth station that communicates with a space station ~~on a geostationary satellite~~, might be affected.[1]

EUR/20/100
NOC
1066

EUR/20/101
NOC
1066A
Orb-88
to
1071
Orb-88

CAN/23/123
MOD
1067
Orb-88
b) when the use of a new frequency assignment to a geostationary-satellite network will cause ~~,~~:
1) to any geostationary space service of another administration, an increase in the noise temperature of any space station receiver or earth station receiver, or an increase in the equivalent satellite link noise temperature, as appropriate, calculated in accordance with the method given in Appendix 29, which does not exceed the threshold value defined therein;
2) to any non-geostationary space service of another administration, an increase in the interference probability which does not require an increase in the angular separation between the planned assignments to the geostationary-satellite network and those of the non-geostationary-satellite networks identified pursuant to No. 1061.

CAN/23/124
ADD
1067A
ba) when the notifying administration of a non-geostationary-satellite network has not received any response under No. 1047 from any administration including any of those reported by the Board under No. 1044A with regard to the information published under No. 1044;

EUR/20/102
ADD
1071A
g) when non-geostationary satellite networks are involved (see ADD 1047.1/1049.1).

ARTICLE 13

Notification and Recording in the Master International Frequency Register of Frequency Assignments[1] to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service[2, 3, 4]

Orb-88

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

CAN/23/125

SUP 1515

CAN/23/126

SUP 1516

PART B

CHAPTER VIII

Provisions Relating to Groups of Services and to Specific Services and Stations*

ARTICLE 27

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section I. Choice of Sites and Frequencies

EUR/20/103
NOC **2501 to 2504**

Section II. Power Limits

USA/12/137
EUR/20/104
MOD **2509**

(5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service and the mobile-satellite service, the space operations service, the space research service and the Earth exploration satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

1 626.5 - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
2 025 - 2 110 MHz	
2 200 - 2 290 MHz	
2 665 - 2 690 MHz[1]	(for Regions 2 and 3)
5 725 - 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755 - 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850 - 7 075 MHz	
7 900 - 8 400 MHz	

CAN/23/127

MOD **2509**

(5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service, ~~and~~ the mobile-satellite service, the space operations service, the space research service and the earth exploration-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

1 626.5	-	1 645.5	MHz	(for countries mentioned in No. 730)
1 646.5	-	1 660	MHz	(for countries mentioned in No. 730)
1 960	-	1 990	MHz	
2 025	-	2 110	MHz	
2 200	-	2 290	MHz	
2 638.5~~2 655~~	-	2 690	MHz[1]	~~(for Regions 2 and 3)~~
5 725	-	5 755	MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755	-	5 850	MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850	-	7 075	MHz	
7 900	-	8 400	MHz	

EUR/20/105

ADD **2509A**

In the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz the mobile service shall comply with the following additional limitations:

a) Maximum e.i.r.p. 28 dBW;

b) Minimum transmitting antenna gain 24 dBi.

CAN/23/128

MOD **2511**
Orb-88

(7) The limits given in Nos. 2505 and 2508 apply in the following frequency bands allocated to the fixed-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

17.7 - 18.1 GHz

21.4 - 22.2 GHz

27.0 - 27.5 GHz[2] (for Regions 2 and 3)

27.5 - 29.5 GHz

USA/12/138

ADD **2512**

For the protection of the satellites operating in the inter-satellite service in the 25.25 - 27.50 GHz band, e.i.r.p. density of a terrestrial system should not exceed -36 dBW/Hz in any 1 MHz bandwidth.

ARTICLE 28

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

EUR/20/106
NOC

Section I. Choice of Sites and Frequencies

EUR/20/107
NOC 2539

EUR/20/108
NOC

Section II. Power Limits

EUR/20/109
NOC 2540 to 2548A

USA/12/200
MOD 2548A Mob-87

(10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service or the mobile-satellite service in the band 1 610 - 1 626.5 MHz shall not exceed -3 dBW in any 4 kHz band.

CAN/23/129
SUP 2548A Mob-87

EUR/20/110
NOC

Section III. Minimum Angle of Elevation

EUR/20/111
NOC 2549 to 2551

EUR/20/112
NOC

Section IV. Limits of Power Flux-Density from Space Stations

EUR/20/113
NOC 2552 to 2555

EUR/20/114
NOC 2556

CAN/23/130
MOD 2556

(2) Power flux-density limits between 1 525 MHz and ~~2 500~~2 300 MHz.

EUR/20/115
NOC 2557

USA/12/139
EUR/20/116
J/27/68
MOD **2558**
Mob-87

b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) (space-to-space);
- space operation service (space-to-Earth) (space-to-space);
- earth exploration-satellite service (space-to-Earth) (space-to-space);

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service, and to the

- radiodetermination-satellite service (space-to-Earth).

CAN/23/131
MOD **2558**
Mob-87

b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) (space-to-space);
- space operation service (space-to-Earth) (space-to-space);
- earth exploration-satellite service (space-to-Earth) (space-to-space);

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service~~, and to the~~

- ~~radiodetermination-satellite service (space-to-Earth)~~.

B/30/53
MOD **2558**
Mob-87

b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth);
- space operation service (space-to-Earth);
- earth exploration-satellite service (space-to-Earth);

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service, and to the

- radiodetermination-satellite service (space-to-Earth).

USA/12/140
MOD **2559**
Mob-87

1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
1 530 - 1 535 MHz[1]	(for Regions 1 and 3, up to 1 January 1990)
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700 - 1 710 MHz	
2 025 - 2 110 MHz	
~~2 290~~2 200 - 2 300 MHz	
2 483.5 - 2 500 MHz	

EUR/20/117
MOD **2559**
Mob-87

1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
1 530 - 1 535 MHz[1]	(for Regions 1 and ~~3, up to 1st January 1990~~)
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700 - 1 710 MHz	
2 025 - 2 110 MHz	
2 200~~2 290~~ - 2 300 MHz	
2 483.5 - 2 500 MHz	

CAN/23/132
MOD **2559**
Mob-87

1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
~~1 530 - 1 535 MHz[1]~~	~~(for Regions 1 and 3, up to 1st January 1990)~~
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700 - 1 710 MHz	
2 025 - 2 110 MHz	
2 200~~2 290~~ - 2 300 MHz	
~~2 483.5 - 2 500 MHz~~	

J/27/69
MOD **2559**
Mob-87

1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
~~1 530 - 1 535 MHz[1]~~	~~(for Regions 1 and 3, up to 1st January 1990)~~
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700 - 1 710 MHz	
2 070 - 2 110 MHz	
2 250 - 2 290 MHz	
2 290 - 2 300 MHz	
2 483.5 - 2 500 MHz	

B/30/54
MOD **2559**
Mob-87

1 525- 1 530 MHz[1]	(for Regions 1 and 3)
~~1 530 - 1 535 MHz[1]~~	~~(for Regions 1 and 3, up to 1st January 1990)~~
1 670- 1 690 MHz	
1 690- 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700- 1 710 MHz	
~~2 290~~2 200 - 2 300 MHz	
2 483.5 - 2 500 MHz	

CAN/23/133
MOD **2561**

(3) Power flux-density limits between ~~2 500~~2 300 MHz and 2 690 MHz.

EUR/20/52
J/27/70
MOD **2562**
Mob-87

a) The power flux-density at the Earth's surface produced by emissions from a space station in the ~~broadcasting-satellite service or, the~~ fixed-satellite service or the radiodetermination-satellite service for all conditions and for all methods of modulation shall not exceed the following values:

-152 dB(W/m2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-152 + 0.75(\delta-5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate the power flux-density which would be obtained under assumed free-space propagation conditions.

CAN/23/134
MOD **2562**
Mob-87

a) The power flux-density at the Earth's surface produced by emissions from a space station in the broadcasting-satellite service or, the fixed-satellite service or the ~~radiodetermination~~ mobile-satellite service for all conditions and for all methods of modulation shall not exceed the following values:

-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-152 + 0.75(\delta - 5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

EUR/20/53
J/27/71
MOD **2563**
Mob-87

b) The limits given in No. 2562 apply in the frequency band:

2 500 - 2 690 MHz

which is shared by the ~~broadcasting-satellite service or the~~ fixed-satellite service with the fixed or mobile service; and in the frequency band 2 500 - 2 516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination-satellite service.

CAN/23/135
MOD **2563 Mob-87**

b) The limits given in No. 2562 apply in the frequency bands:

2 483.5 - 2 500 MHz

2 500 - 2 690 MHz

which ~~is~~ are shared by the broadcasting-satellite service or the fixed-satellite service or the mobile-satellite service with the fixed or mobile service~~; and in the frequency band 2500 - 2516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination-satellite service~~.

CAN/23/136
(MOD) **2564**

c) The power flux-density values given in No. 2562 are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the bands mentioned in No. 2563 and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

CAN/23/137
MOD **2577**

(7) Power flux-density limits between 17.7 GHz and 19.7 GHz and between 25.25 GHz and 27.5 GHz.

J/27/72
MOD **2577**

(7) Power flux-density limits between 17.7 and ~~19.7~~27.5 GHz.

CAN/23/138
MOD **2579**

b) The limits given in No. 2578 apply in the frequency bands listed in No. 2580 which ~~is~~are allocated to the following space radiocommunication services:

- fixed-satellite service (space-to-Earth)
- earth exploration-satellite including meteorological-satellite service (space-to-Earth)
- space-communications service
- multipurpose-satellite service

for transmission by space stations where ~~this~~ these bands ~~is~~ are shared with equal rights with the fixed or mobile service.

J/27/73
MOD **2579**

b) The limits given in No. 2578 apply in the frequency band listed in No. 2580 which is allocated to the following space radiocoummunication services:

- fixed-satellite service (space-to-Earth)
- earth exploration-satellite including meteorological-satellite service (space-to-Earth)
- inter-satellite service

for transmission by space stations where this band is shared with equal rights with the fixed or mobile service.

CAN/23/139
MOD **2580**

17.7 - 19.7 GHz[1]
25.25 - 27.5 GHz[2]

J/27/74
MOD **2580**

17.7 - 19.7 GHz[1]

22.55 - 23.55 GHz

25.25 - 27.5 GHz

CAN/23/140
ADD **2580.2**

[2] No. 2578 does not apply to the space-communications service in the 27.0 - 27.5 GHz band. Instead, for this service in this band the limit of No. 881A applies.

USA/12/141
MOD **2581** (8) Power flux-density limits between ~~31.0~~21.7 GHz and 40.5 GHz.

USA/12/142
MOD **2583** b) The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service, the inter-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

USA/12/143
MOD **2584**

21.7 - 22 GHz

22.55 - 23.55 GHz

25.25 - 27.50 GHz

31.0 - 31.3 GHz

34.2 - 35.2 GHz (for space-to-Earth transmissions under Nos. 895 and 896on the territory of countries mentioned in No. 894)

~~37.5~~37.0 - 40.5 GHz

CAN/23/141
(MOD) **2585** (9) The limits given in Nos. 2553, 2557, MOD 2562, 2566, 2570, 2574, 2578, 2582 and 2582.1 may be exceeded on the territory of any country the administration of which has so agreed.

ARTICLE 29

Special Rules Relating to Space Radiocommunication Services

Section II. Control of Interference to Geostationary-Satellite Systems

CAN/23/142
MOD **2613** § 2. Non-geostationary space stations shall cease or reduce to a negligible level their emissions, and their associated earth stations shall not transmit to them, whenever there is insufficient angular separation between non-geostationary satellites and geostationary satellites, and whenever there is unacceptable interference[1] to geostationary-satellite space systems ~~in the fixed satellite service~~ operating in accordance with these Regulations.

USA/12/144
ADD **2613A** § 2A. In the frequency bands 21.7 - 22 GHz, 22.55 - 23.55 GHz and 25.25 - 27.5 GHz, geostationary space stations in the inter-satellite service shall have the following restriction:

Whenever the emissions from geostationary satellites are directed to other geostationary satellites, the angular separation between such geostationary satellites, as measured from the centre of the Earth, shall be no more than 120°.

Whenever the emissions from geostationary satellites 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.

ARTICLE 30

Broadcasting Service and Broadcasting-Satellite Service

Section 1. General

EUR/20/26
MOD **2666**

(2) In principle~~, except in the frequency band 3 900-4 000 kHz,~~ broadcasting stations using frequencies below ~~5 060~~3 900 kHz or above 41 MHz shall not employ power exceeding that necessary to maintain economically an effective national service of good quality within the frontiers of the country concerned.

EUR/20/27
MOD **2669**

(2) The use by the broadcasting service of the bands listed below is restricted to the Tropical Zone:

2 300 - 2 498 kHz (Region 1)

2 300 - 2 495 kHz (Regions 2 and 3)

3 200 - 3 400 kHz (all Regions)

~~4 750 - 4 995 kHz (all Regions)~~

~~5 005 - 5 060 kHz (all Regions)~~

APPENDIX 30A (Orb-88)

Orb-88

Provisions and Associated Plans for the Feeder Links for the Broadcasting-Satellite Service (11.7 - 12.5 GHz in Region 1, 12.2 - 12.7 GHz in Region 2 and 11.7 - 12.2 GHz in Region 3) in the Frequency Bands 14.5 - 14.8 GHz[1] and 17.3 - 18.1 GHz in Regions 1 and 3, and 17.3 - 17.8 GHz in Region 2

ARTICLE 4

Procedure for Modifications to the Plans

B/30/64
ADD

4.2.1.2a having a frequency assignment in the band 14.5 - 14.8 GHz to a space station in the fixed-satellite service (Earth-to-space) which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations;

KOR/8/22
ADD

ARTICLE 6A

Procedure concerning Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignment to Stations in the fixed-satellite service (Earth-to-space) in Regions 1 and 3 in the band 14.5 - 14.8 GHz.

6A.1 The administration which intends to bring into use the frequency band 14.5 - 14.8 GHz (Regions 1 and 3) for the fixed-satellite service (Earth-to-space) other than the broadcasting-satellite service shall send to the International Frequency Registration Board the information required by Appendix 4 and follow the coordination procedure specified in Article 5 of Appendix 30A, before bringing into use the frequency band.

6A.2 In this case, the interference from the station in the fixed-satellite service other than the broadcasting-satellite service shall be limited so as not to cause harmful interference to the broadcasting-satellite service.

The C/I protection ratio of the feeder link in the broadcasting-satellite service from other fixed-satellite service up links shall be maintained greater than 40 dB.

Note - The applicable criteria and calculation methods of interference shall be referenced and/or specified in the relevant Articles of the Radio Regulations and its Annexes.

J/27/78
ADD

ARTICLE 6A

J/27/79
ADD

Procedure Concerning Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Fixed-Satellite Service (Earth-to-space) in all Regions in the band 14.5 - 14.8 GHz, when Frequency Assignments to Feeder Links for Broadcasting-Satellite Stations Appearing in the Regions 1 and 3 Plan are Involved

J/27/80
ADD

6A.1 The provisions of Articles 11 and 13 and Appendix 29 of the Radio Regulations are applicable to transmitting earth stations and receiving space stations in the fixed-satellite service in the band 14.5 - 14.8 GHz, except that in relation to feeder-link stations, the relevant criteria mentioned in Appendix 29 to the Radio Regulations are replaced by those given in Section 2 of Annex 4 to this Appendix.

ARTICLE 7

B/30/65
MOD

Procedure Concerning Coordination, Notification andRecording in the Master International Frequency Register of Frequency Assignments to Stations in the Fixed-Satellite Service (Space-to-Earth) in Regions 1 and 3 in the Band 17.7 - 18.1 GHz and in Region 2 in the Band 17.7 - 17.8 GHz or to Stations in the Fixed-Satellite Service (Earth-to-space) in Regions 1 and 3 in the Band 14.5 - 14.8 GHz, when Frequency Assignments to Feeder Links for Broadcasting-Satellite Stations Appearing in the Regions 1 and 3 Plan or the Region 2 Plan are Involved

B/30/66
ADD

7.1a The provisions of Articles 11 and 13 and Appendix 29 of the Radio Regulations are applicable to transmitting earth stations in the fixed-satellite service in the band 14.5 - 14.8 GHz, together with the provisions of Annex 4 to this Appendix, except that in relation to feeder-link stations, the relevant criteria mentioned in Appendix 29 to the Radio Regulations are replaced by those given in Section 1a of Annex 4 to this Appendix.

ANNEX 1

Limits for Determining Whether a Service of an Administration is Considered to be Affected by a Proposed Modification to One of the Regional Plans or when it is Necessary Under this Appendix to Seek the Agreement of any Other Administrations

B/30/67
ADD

5a Limits applicable to protect a frequency assignment to a receiving space station in the fixed-satellite service (Earth-to-space) in the band 14.5 - 14.8 GHz

An administration shall be considered as being affected by a proposed modification to the Regions 1 and 3 Plan when the power flux-density arriving at the receiving space station of the fixed-satellite service (Earth-to-space) would cause an increase in the noise temperature of the receiving space station which exceeds the threshold value of $\Delta T/T$ corresponding to 4%.

where:

$\Delta T/T$ is calculated in accordance with the method given in Appendix 29.

ANNEX 4

Criteria for Sharing Between Services

CAN/23/148
MOD

1. Threshold values for determining when coordination is required between ~~a~~ transmitting space stations in the fixed-satellite service or the broadcasting-satellite service and a receiving space station in the feeder-link Plans in the frequency bands ~~17.7~~17.3 - 18.1 GHz (Regions 1 and 3) and ~~17.7~~17.3 - 17.8 GHz (Region 2).

With respect to paragraph 7.1, Article 7 of this Appendix, coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service with a broadcasting-satellite feeder link in the Regions 1 and 3 Plan or the Region 2 Plan is required, for inter-satellite geocentric angular separations of less than 3° or greater than 150°, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of $\Delta T_S/T_S$ corresponding to 4%. $\Delta T_S/T_S$ is calculated in accordance with Case II of the method given in Appendix 29.

The above provision does not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service and a receiving space station in the feeder-link plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -137 dB(W/m^2/MHz) on the Earth's surface at the equatorial Earth limb.

J/27/81
MOD

2. ~~Not used.~~ Threshold values for determining when coordination is required between a transmitting earth station in the fixed-satellite service and a receiving space station in the feeder-link Plans in the frequency band 14.5 - 14.8 GHz (Regions 1 and 3)

With respect to paragraph 6A.1, Article 6A of this Appendix, coordination of a transmitting earth station in the fixed-satellite service with a broadcasting-satellite feeder link in the Regions 1 and 3 Plan is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder link station of another administration would cause an increase in the noise temperature of the feeder link space station which exceeds a threshold value of $\Delta T_S/T_S$ corresponding to 4%. $\Delta T_S/T_S$ is calculated in accordance with Case I of the method given in Appendix 29.

B/30/68
ADD

1a Threshold values for determining when coordination is required between a transmitting earth station in the fixed-satellite service and a receiving space station in the feeder-link Plans in the frequency band 14.5 - 14.8 GHz (Regions 1 and 3)

With respect to paragraph 7.1a, Article 7 of this Appendix, coordination of a transmitting earth station in the fixed-satellite service with a broadcasting-satellite service feeder link in the Regions 1 and 3 Plan is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of $\Delta T_S/T_S$ corresponding to 4%,

where:

$\Delta T_S/T_S$ is calculated in accordance with Case I of the method given in Appendix 29, except that the maximum power densities per Hertz averaged over the worst 1 MHz are replaced by power densities per Hertz averaged over the total RF-bandwidth of the feeder-link carriers (27 MHz for Regions 1 and 3).

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/1B3-E
31 January 1992

Note by the Secretary-General

OTHER PROPOSALS RELATING TO THE PROVISIONS OF THE RADIO REGULATIONS

Attachment : Proposals by Administrations.

ARTICLE 1

Terms and Definitions

Section I. General Terms

EUR/46/22
NOC **3**
4
7

Section III. Radio Services

AUS/31/1
MOD **24** 3.5 Inter-Satellite Service: A radiocommunication service providing links between artificial ~~earth~~satellites.

PRG/37/1
MOD **24** 3.5 Inter-Satellite Service: A space radiocommunication service providing links between ~~artificial earth~~ satellites.

EUR/46/22
NOC **26**
36

PRG/37/2
ADD **55A** Space Radiocommunication Service: Telecommunication service involving links set up using "space radiocommunication", including manned and unmanned spacecraft.

Any radio link between this service and the Earth is a terrestrial radiocommunication.

PRG/37/3
ADD **55B** Multi-purpose Satellite Service: A radiocommunication service by satellite using both the mobile service and the fixed service, including access to personal mobile terminals.

Section V. Operational Terms

EUR/46/22
NOC **110**
111
112
117

Section VII. Frequency Sharing

EUR/46/22
NOC **163**

Section VIII. Technical Terms Relating to Space

PRG/37/4
ADD **173A** Multi-purpose Satellite: A satellite designed with technical characteristics compatible for the fixed service and the mobile service.

PRG/37/5
MOD **177** 8.9 Inclination of an Orbit (of an earth satellite or a satellite of another celestial body): The angle determined by the plane containing the orbit and the plane of the Earth's equator, or by the plane containing the orbit and the plane of the equator of another celestial body.

PRG/37/6
MOD **179** 8.11 Altitude of the Apogee or of the Perigee: The altitude of the apogee or perigee above a specified reference surface serving to represent the surface of the Earth or the surface of another celestial body.

PRG/37/7
MOD **180** 8.12 ~~Geosynchronous~~Synchronous Satellite: ~~An earth~~ satellite whose period of revolution is equal to the period of rotation of ~~the Earth~~a celestial body about its axis.

PRG/37/8
MOD **181** 8.13 Geostationary Satellite: A ~~geosynchronous~~synchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a satellite which remains approximately fixed relative to the Earth.

PRG/37/9
ADD **181A** Stationary Satellite: A synchronous satellite whose circular and direct orbit lies in the plane of the equator of a celestial body and which thus remains fixed relative to that body.

PRG/37/10
NOC **182** 8.14

AUS/30/80
MOD

RESOLUTION No. 44 (Rev. WARC-92)

Compatibility of Equipment
Used in the Mobile-Satellite Service

AUS/31/81
MOD

Modify the **considerings** to reflect:

i) the expected rapid growth of 1.5 - 1.6 GHz mobile-satellite networks;

ii) the action taken by administrations, the CCIR, ICAO, INMARSAT and national MSS operators to develop compatible equipment;

iii) the changes made by WARC-92 to the MSS allocations in the band 1 - 3 GHz;

iv) the need for efficient use of the bands allocated to the mobile-satellite services in the bands between 1 and 3 GHz;

v) the need to ensure that the high reliability, integrity and priority required for AMS(R)S safety communications will be met in a timely manner.

AUS/31/82
MOD

Modify the **resolves** to include:

- the need for further studies by the CCIR on technical, operational and regulatory (e.g. frequency coordination) measures which can be used to achieve the objectives of ADD 729B, taking into account the above considerations.

AUS/31/83
ADD

Add a request to the Secretary-General that the contents of this revised Resolution be communicated to ICAO, IMO and INMARSAT, and inviting their participation in the studies by the CCIR.

YEM/41/3
MOD

RESOLUTION No. 517 ~~(HFBC-87)~~(Rev. WARC-92)

Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

YEM/41/4
MOD

The World Administrative Radio Conference ~~for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987),~~for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

YEM/41/5
MOD

ANNEX TO RESOLUTION No. 517 ~~(HFBC-87)~~(Rev. WARC-92)

Procedure for the Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

YEM/41/6
NOC

1. to 6.

E/35/1
EQA/45/33
MOD

RESOLUTION No. 703 (Rev. WARC-92)

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services[1]

EQA/45/34
SUP

~~[1] Replaces Resolution No. Spa2-6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.~~

E/35/2
EQA/45/35
MOD

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992), ~~Geneva, 1979,~~

considering

E/35/3
MOD

d) that, in recognition of the successful sharing of the frequency bands by space radiocommunication and terrestrial radiocommunication services, and the continuing improvements in space technology and that of the earth segment, each CCIR Plenary Assembly subsequent to the Xth Plenary Assembly (Geneva, 1963) has improved upon some of the technical criteria recommended by the preceding Plenary Assembly;

E/35/4
MOD

e) that CCIR Plenary Assemblies are held at set intervals ~~triennially~~, whereas administrative radio conferences, which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations, are in practice held less frequently and with much less regularity;

EQA/45/36
MOD

e) that CCIR Plenary Assemblies are held ~~triennially, whereas~~ more frequently and with greater regularity than Administrative Radio Conferences which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations~~, are in practice held less frequently and with much less regularity~~;

EQA/45/37
ADD

f) that the CCIR has adopted a procedure for approving Recommendations between Plenary Assemblies;

EQA/45/38
MOD

~~f)~~g) that the ~~International Telecommunication~~ Convention ~~(Malaga-Torremolinos, 1973)~~ recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned,

E/35/5
ADD

g) that the administrations keep the CCIR continually informed of practical results and experience of sharing between terrestrial and space radiocommunication services or between space services, which help to bring about significant improvements in coordination procedures, calculation methods and harmful interference thresholds, and thereby to optimize the available orbit/spectrum resources;

is of the opinion

EQA/45/39
MOD

a) that subsequent ~~Plenary Assemblies of~~ decisions taken by the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

EQA/45/40
NOC

b)

E/35/6
MOD

c) that the administrations should ~~whenever possible~~ apply the current CCIR Recommendations on sharing criteria when planning systems for use in frequency bands shared with equal rights between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

invites the CCIR

EQA/45/41
MOD

a) to request its Study Groups to prepare, at their final meetings before the Plenary Assembly, a provisional list identifying relevant parts of new or revised Recommendations approved in the interval between the Plenary Assemblies and of drafts of revised and new CCIR Recommendations affecting the calculation methods and the interference criteria and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

EQA/45/42
MOD

b) to request the Director of the CCIR to forward this list together with texts of any revised or new Recommendations approved in the interval between Plenary Assemblies and of these drafts of revised and new Recommendations to administrations and to the IFRB within thirty days following the final Study Group meetings,

resolves that

EQA/45/43
MOD

1. the IFRB shall immediately distribute the information mentioned in **invites** b) above to all administrations, so that it reaches them as soon as possible before the convening of the subsequent Plenary Assembly. This should be accompanied by a notice indicating that the enclosed texts have already been approved in the interval between the Plenary Assemblies or are subject to approval by the next CCIR Plenary Assembly;

EQA/45/44
MOD

2. a) each CCIR Plenary Assembly, ~~having adopted any or all of the relevant Recommendations and approved the appropriate portions of the list mentioned in **invites** a) above,~~ should arrange with the Secretary-General to be informed of the list and those Recommendations which affect the appropriate calculation methods and the interference criteria to be employed;

E/35/7
MOD

3. The administrations which do not reply to the Secretary-General's consultation within four months shall be sent a telegram asking for their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations. If no reply is received within thirty days from the date of dispatch of the telegram, it shall be concluded that the administration ~~does not wish to express an opinion at that time~~ agrees, to those CCIR Recommendations or specific technical criteria defined in the Recommendations referred to in paragraph 2a) above for use in the application of the pertinent provisions of the Radio Regulations;

E/35/8
MOD

4. should an administration, in its reply to the Secretary-General's consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, ~~or should an administration not reply to the Secretary-General's consultation as in paragraph 3 above,~~ the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that administration;

E/35/9
MOD

5. the Secretary-General shall publish, for the information of all administrations, a list, prepared by the IFRB on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not. ~~This consolidated list shall also include the administrations mentioned in paragraph 3 above~~;

E/35/10
SUP

7.

E/35/11
SUP

8.

E/35/12
SUP

9.

USA/12/201

RESOLUTION No. ZZZ

Relating to the Bringing into Use of Space Stations and Earth Stations Operating in the Mobile-Satellite Service in the Bands 137 - 138 MHz, 148 - 149.9 MHz and 400.15 - 401 MHz and in the Mobile-Satellite Service or Radiodetermination-Satellite Service in the Bands 1 610 - 1 626.5 MHz, 1 850 - 1 990 MHz and 2 483.5 - 2 500 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the present Conference has provided primary category of allocations to the mobile-satellite service in the bands 137 - 138 MHz, 148 - 149.9 MHz and 400.15 - 401 MHz;

b) that the present Conference has provided primary category of allocations to the mobile-satellite service or the radiodeterminiation-satellite service in the bands 1 610 - 1 626.5 MHz, 1 850 - 1 990 MHz and 2 483.5 - 2 500 MHz;

c) that some satellite systems being developed in these bands consist of multiple space stations in non-geostationary satellite orbits providing nearly continuous service throughout their service areas;

d) that such spacecraft in non-geostationary satellite orbits may pass within a few hundred kilometres of the Earth;

e) that other space and terrestrial services have primary allocations in these bands;

f) that multiple geostationary and non-geostationary satellite systems may operate in these bands;

g) that the procedures of Section I of Article 11 of the Radio Regulations apply to the advance publication of information on all satellite networks in these bands; furthermore, that these procedures can be used to achieve final coordination agreements;

h) that the procedures of Section II of Article 11 of the Radio Regulations apply to the coordination of frequency assignments to a space station on geostationary satellite or an earth station communicating with such a space station in relation to stations of other geostationary-satellite networks in these bands; furthermore, that an addition to these procedures can be used to achieve final coordination agreements between geostationary and non-geostationary satellite networks;

j) that the procedures of Section III of Article 11 of the Radio Regulations apply to coordination of mobile earth stations in relation to terrestrial stations as provided for in No. 1111, but an additional provision is needed to define coordination distances between earth stations operating below 1 GHz;

k) that an additional procedure, which may take into account relevant CCIR Recommendations, is required for coordination of frequency assignments to transmitting space stations with respect to terrestrial stations in certain bands,

resolves

1. that the following procedure shall be applied to the advance publication, coordination, notification and recording in the Master International Frequency Register of frequency assignments[1] to space stations and earth stations in the mobile-satellite service in the bands 137 - 138 MHz, 148 - 149.9 MHz and 400.15 - 401 MHz and in the mobile-satellite service or radiodetermination-satellite service in the bands 1 610 - 1 626.5 MHz, 1 850 - 1 990 MHz and 2 483.5 - 2 500 MHz as from 4 March 1992.

Section A. Procedure for the Advance Publication of Information on those Planned Satellite Networks Covered by this Resolution

2.1 An administration (or one acting on behalf of a group of named administrations) which intends to bring into use a satellite network in the bands and services subject to the Resolution shall, prior to the coordination procedure, apply the advance publication provisions of Article 11, Section I, using the information listed in Appendix 4.

2.2 If all difficulties are resolved pursuant to the Resolution of difficulties provisions in Article 11, Section I, the administration may communicate to the Board the information required for notification of each frequency assignment to a station of the network.

Section B. Coordination of Frequency Assignments to a Space Station or an Earth Station Communicating with Such a Space Station in the Bands and Services Covered by this Resolution in Relation to Stations of Other Satellite Networks

3.1 Before an administration (or one acting on behalf of one or more named administrations) notifies to the Board or brings into use any frequency assignment in the bands and services specified in **resolves** 1 to:

3.1.1 a space station on a non-geostationary satellite or to an earth station that is to communicate with a space station on a non-geostationary satellite; or

3.1.2 a space station on a geostationary satellite or to an earth station that is to communicate with a space station on a geostationary satellite;

it shall effect coordination of this assignment with any other administration whose assignment for a space station or earth station might be affected. For this purpose, the provisions of No. 1060A shall apply.

3.2 The frequency assignments to be taken into account in the application of 3.1 are those in the same frequency band as the planned assignment and which satisfy the conditions specified in Nos. 1062 to 1065.

---

1 The expression frequency assignment, whenever it appears in this Resolution, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register (hereinafter called the Master Register).

3.3 No coordination under 3.1 is required:

3.3.1 between two geostationary-satellite networks;

3.3.2 in the cases mentioned in Nos. 1066A and 1068 to 1071.

3.4 In effecting coordination under 3.1, provisions of Nos. 1072 to 1085B, 1086 to 1087A, 1088 to 1091, 1092 to 1098, and 1099 to 1103 shall be applied by administrations and the Board.

Section C. Coordination of Frequency Assignments to an Earth Station in the Mobile Satellite-Service in the Bands 137 - 138 MHz, 148 - 149.9 MHz or 400.15 - 401 MHz

4.1 Before an administration notifies to the Board or brings into use any frequency assignment to an earth station in the mobile-satellite service in the bands 137 - 138 MHz, 148 - 149.9 MHz, or 400.15 - 401 MHz, whether for transmitting or receiving, in a particular band allocated with equal rights to space and terrestrial radiocommunications services, it shall, except in the cases described in Nos. 1108 to 1111, effect coordination of the assignment with each administration whose territory lies wholly or partly within the coordination area of the planned earth station. The request for coordination concerning an earth station may specify all or some of the frequency assignments of the associated space station, but thereafter each assignment shall be dealt with individually.

4.2 For this purpose, a uniform coordination distance of 500 km for a ground-based earth station in the mobile-satellite service and 1,000 km for an airborne earth station in the mobile-satellite service shall be used for the determination of the coordination area.

4.3 In effecting coordination under 4.1, the provisions of Nos. 1112 to 1144 shall be applied by administrations and the Board.

Section D. Coordination of Frequency Assignments to a Transmitting Space Station in the Mobile-Satellite Service with Respect to Terrestrial Stations in the Bands 137 - 138 MHz, 400.15 - 401 MHz and 1 850 - 1 990 MHz

5.1 Before an administration notifies to the Board or brings into use any frequency assignment to a transmitting space station in the mobile-satellite service in the bands 137 - 138 MHz, 400.15 - 401 MHz and 1 850 - 1 990 MHz, it shall coordinate the use of this assignment with any other administration whose terrestrial radiocommunication stations may be affected. For this purpose, it shall inform the Board of all the technical characteristics of the station, as listed in the relevant sections of Appendix 3 to the Radio Regulations, which are necessary to assess the risk of interference to a terrestrial radiocommunication service.

5.2 The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administrations by circular telegram.

5.3 Any administration which considers that its terrestrial radiocommunication services may be affected shall forward its comments to the administration seeking coordination and to the Board. These comments must be forwarded within four months from the date of the relevant IFRB weekly circular. It shall be deemed that any administration which has not forwarded comments within that period considers that its terrestrial radiocommunication services are unlikely to be affected.

5.4 Any administration which has forwarded comments on the projected space station shall either give its agreement, with a copy to the Board, or, if this is not possible, send to the administration seeking coordination pertinent characteristics set forth in Appendix 1 and any other data on which its comments are based, as well as any suggestions it may be able to offer with a view to a satisfactory solution to the problem.

5.5 The administration which plans to bring into use a space station, as well as any other administration which believes that is terrestrial radiocommunication services are likely to be affected by the station in question, may request the assistance of the Board at any time during the coordination procedure.

5.6 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination had been sought, the administration seeking coordination shall, except in cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of publication of the information according to paragraph 5.2.

Section E. Notification and Recording in the Master Register of Frequency Assignments to Space Stations and Earth Stations in the Bands and Services Dealt With Under this Resolution

6.1 Any frequency assignment to a space station or an earth station in a band or service specified in **resolves** 1 shall initially be treated in accordance with Nos. 1488 to 1501.

6.2 The Board shall examine each notice in accordance with Nos. 1503 to 1513, taking into account the following provisions.

6.3 In making a finding pursuant to No. 1504 relating to the coordination of the use of the frequency assignment with the other administrations concerned vis-á-vis space radiocommunciation stations, it shall take into account conformity with the provisions of 3.1 and 5.1 of this Resolution as well as the provisions of No. 1060.

6.4 In making a finding pursuant to No. 1505 relating to the coordination of the use of the frequency assignment with the other administrations concerned vis-á-vis terrestrial radiocommunication stations, it shall take into account conformity with the provisions of 4.1 of this Resolution as well as the provisions of Nos. 1107 to 1111.

6.5 In making a finding pursuant to No. 1506, with respect to the probability of harmful interference, the Board shall also take into account those cases where coordination under the provisions of 3.1 and 5.1 of this Resolution has not been successfully effected.

6.6 In making a finding pursuant to No. 1509 with respect to the probability of harmful interference, the Board shall also take into account those cases where coordination under the provisions of 4.1 of this Resolution has not been successfully effected.

6.7 Depending upon the findings of the Board subsequent to the examination prescribed in Nos. 1503, 1504, 1505, 1506 to 1508 and 1509 to 1512, as supplemented by the provisions of 6.3 to 6.6 of this Resolution, as appropriate, further action by the Board shall be as set forth in Nos. 1515 to 1544.

6.8 If a frequency assignment is subject to both the provisions of No. 1060 relating to the coordination of the use of the frequency assignment with other administrations concerned and the provisions of **resolves** 2.1, 3.1, 4.1 or 5.1 of this Resolution, it shall not be recorded under the provisions of Nos. 1516, 1526, 1531, 1534, 1543, or 1544, as appropriate, until the coordination procedures specified in both No. 1060 and this Resolution are completed.

6.9 Thereafter, the provisions of Nos. 1547 to 1584 apply to such frequency assignments.

Section F. General Principles

7. In the absence of specific provisions relating to the evaluation of the interference, the calculation methods and the criteria should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution No. 703 or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

NZL/26/2
ADD

RESOLUTION No. [AAA]

The Need for Improved Efficiency in the Spectrum Allocated to HF Broadcasting and the Advantages of Improved Technology in the HF Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that extensive work by two HFBC Conferences and considerable intersessional activity by the IFRB and administrations have not yet been instrumental in establishing workable planning procedures;

b) that allocating additional HF spectrum to the broadcasting service will not alone overcome the difficulties brought about by congestion;

c) that the HF-bands allocated exclusively to the broadcasting service are congested, and this congestion is increasing;

d) that any additional allocation to HFBC will place burdens on the fixed, mobile and amateur services which will increase the difficulties of frequency selection and service operations;

e) that Recommendation No. 515 (HFBC-87) encourages the accelerated design and manufacture of reduced carrier single-sideband transmitters and receivers;

f) that Resolution No. 517 (HFBC-87) and Annex set out some transitional procedures for the introduction of reduced carrier single-sideband emissions in the HF broadcasting service;

g) that **resolves** 2 of Resolution No. 517 (HFBC-87) requires a periodic review of cessation dates for double-sideband full carrier emissions,

noting

a) that fixed and mobile services have progressively implemented the use of reduced carrier single-sideband emissions with a view to maximizing efficient use of their existing spectrum allocations;

b) that the use of reduced carrier single-sideband emissions offers a number of advantages in addition to decreased bandwidth requirements;

c) that these advantages accrue both to the transmission and reception of such emissions,

resolves

that users of the HF broadcasting spectrum take advantage of modern technology and concepts of improved spectrum efficiency for better utilization of spectrum currently allocated to the HF broadcasting service,

urges administrations

1) to make every effort to improve on the deadlines set for the cessation of double-sideband and encourage the use of compatible reduced carrier single-sideband;

2) to facilitate and encourage manufacturers to promulgate the use of technically suitable receivers with appropriate band coverage;

3) to use the concept of single frequencies to specific target areas consistent with propagation and other known circuit parameters,

invites the IFRB

to continue with its spectrum planning exercises and to encourage administrations to provide realistic and attainable requirements, and to apply its technical standards in the most effective manner,

invites the CCIR

to continue its investigations into receiver design, antenna design and propagation prediction methods to ensure that appropriate technical parameters are available for use,

instructs the Secretary-General

to bring the contents of this Resolution to the attention of administrations and to submit the intent of **resolves** to the next competent [Radiocommunication Conference].

AUS/31/69
ADD

RESOLUTION No. AUS-1

Future Consideration of the Plan for the Broadcasting-Satellite Service in the 11.7 - 12.5 GHz Band in Appendix 30 and Associated Feeder Link Plans in Appendix 30A

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that Article 14 of Appendix 30 indicates that the broadcasting-satellite service Plans in Appendix 30 provide for requirements until January 1994;

b) that Resolution No. 521 (Orb-88) **resolves 3** states that "while the Plans for the 11.7 - 12.7 GHz band can already be used for certain types of high-definition television, studies should be continued on the long range future suitability of these bands for HDTV without prejudice to the existing plans in this band";

c) that since the original design of the Plans in Appendix 30, significant development has occurred in satellite technology and in the modulation techniques used;

d) that a revision of the parameters reflecting these developments could provide significant improvements in the flexibility and efficiency of the Plans without reducing the quantum of assignments to each country,

resolves

1. to invite the CCIR to study the potential for improving the efficiency and flexibility of the Plans for Region[s] [1 and] 3 contained in Appendices 30 and 30A;

2. to advise the CCIR that those studies should take account of the need to maintain each country's currently assigned BSS capacity and to protect existing systems operating in accordance with those Plans;

3. to invite administrations to contribute to the studies of the CCIR, and also to consider the need for a future conference to review and, as appropriate, revise the relevant parts of Appendices 30 and 30A;

4. to invite the Secretary-General to bring this Resolution to the attention of the Administrative Council and the next Plenipotentiary Conference with a view to empowering a future conference to undertake the review and appropriate revision of the relevant parts of Appendices 30 and 30

IND/34/43
ADD

RESOLUTION No. AAA

Relating to Primary Service Requirements for Earth Exploration-Satellite and Meteorological-Satellite Services in the Bands 401 to 403 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations use frequencies in the bands 401 - 402 MHz and 402 - 403 MHz for reporting to satellites from airborne, land-based and maritime data collection platforms (DCPs);

b) that CCIR has conducted studies of the characteristics, requirements and sharing criteria necessary for compatibility with the services that are shared with these systems and the results are reported in Report 541 and Recommendation 514;

c) that the meteorological-satellite and earth exploration-satellite services in the bands 401 - 402 MHz and 402 - 403 MHz are secondary to other services in these bands and that in order for continuous reliable observations to be made, it is essential that transmission of the data be achieved without harmful interference;

d) that the CCIR has concluded that an interference problem to these systems exists,

resolves

that the next competent world administrative radio conference examines the allocations to meteorological-satellite and earth exploration-satellite services in the bands 401 - 402 MHz and 402 - 403 MHz with the intent of raising the allocation status to primary,

invites the Administrative Council

to take the necessary action to place this matter on the agenda of the next competent world administrative radio conference.

IND/34/44
ADD

RESOLUTION No. BBB

Relating to Implementation of Wind Profiler Radars in the Frequency Bands Below 1 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that wind profiler radar is an important meteorological aid to measure wind direction and speed as a function of altitude;

b) that the physics of the radar wind profiling indicate that the frequencies near 50 MHz, 400 MHz and 1 000 MHz are preferred for these systems;

c) that CCIR studies have concluded that wind profiler radars cannot be accommodated in the 402 - 406 MHz band due to their non-compatibility with the COSPAS-SARSAT distress alerting and locating system in 406 - 406.1 MHz,

considering further

that the International Meteorological Organization has incorporated the COSPAS-SARSAT system in the Global Maritime Distress and Safety System,

resolves

that the next competent world administrative radio conference considers the matter of appropriate allocations for accommodation of wind profiler radars,

invites the CCIR

to continue its studies of the characteristics and requirements of wind profiler radars and make Recommendations as to the technically suitable bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected,

urges administrations

to avoid making frequency assignments to wind profiler radars in the 402 - 406 MHz band,

invites the Administrative Council

to place this matter on the agenda of the next competent world administrative radio conference.

MLI/39/42
ADD

RESOLUTION No. XX1

Implementation of Modifications to Allocations in the Bands Between 5 730 - 19 990 kHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that a number of frequency bands between 5 730 and 19 990 kHz which were previously allocated exclusively or on a shared basis to the fixed and mobile services have been reallocated to the broadcasting service;

b) that existing assignments allocated to stations in the fixed and mobile services have to be gradually eliminated from these bands and reallocated to meet the requirements of the broadcasting services;

c) that the assignments to be moved, called "assignments to be transferred", must be accommodated in other frequency bands,

aware

of the difficulties which will be encountered by administrations and the IFRB during the changeover from the former allocations to those adopted at the present Conference,

resolves

1. that the transitional procedure set forth in Annex A* to the present Resolution shall be used with the view to ensuring an orderly and balanced transition from the former allocations to those made by the present Conference;

2. that the provisions of Article 12 of the Radio Regulations relating to the examination and entry in the Frequency Register of assignments in the fixed and mobile services in the bands between 5 730 and 19 990 kHz shall be suspended from 1 January 1995 to 30 June 1997;

3. that the interim procedure set forth in Annex B* to the present Resolution shall be used to deal with any urgent new frequency assignment in the bands concerned during the period when the provisions of Article 12 are suspended;

4. that the revision procedure set forth in Annex C* to the present Resolution shall be used for the purpose of examining, at the end of the transition period, any urgent new assignment notified during the period - referred to in operative paragraph 2 - when the provisions of Article 12 are suspended,

invites administrations

1. in endeavouring to rearrange the assignments which are to be transferred, to make every effort to find alternative assignments in the bands allocated exclusively to the fixed or mobile service concerned;

2. to facilitate cooperation by refraining from submitting notices relating to assignments in the bands concerned during the period - referred to in operative paragraph 2 - when the provisions of Article 12 are suspended, except for urgent new assignments to be dealt with under the interim procedure,

requests the IFRB

during the period - referred to in operative paragraph 2 - when the provisions of Article 12 are suspended, not to examine, in accordance with this Article, any notice in the bands concerned other than those requiring the elimination of existing assignments.

---

* Annexes A, B, and C referred to in this Resolution will be drawn up by the present WARC.

MLI/39/43
ADD

RESOLUTION No. XX2

Use of the Band 500 - 3 000 MHz by the Fixed Service in the Developing Countries (Region 1)

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations, particularly in the developing countries, use the band 500 - 3 000 MHz for the requirements of radio relay-routes and rural telephony;

b) the evident interest being shown for the use of this band for a variety of requirements for the broadcasting-satellite service, the mobile service, the mobile-satellite service, associated feeder links, public correspondence with aircraft and public land mobile telecommunication systems;

c) the limited resources of the developing countries;

d) that the CCIR must carry out an in-depth study to ascertain the possibilities for extension around the band 2.6 MHz,

resolves

to give priority for as long as possible to the use of this band for the specific requirements of the developing countries,

invites

the CCIR to carry out the in-depth studies required to permit the extension of the band 2.6 MHz.

EUR/46/1
ADD

RESOLUTION No. X

Relating to Interim Procedures for the Coordination of the Frequency Assignments of Satellite Networks in Certain Space Systems Utilizing Non-Geostationary-Satellite Orbits[1, 2]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that in several different space radiocommunication services there is increasing interest in the use of the space systems using non-geostationary-satellite orbits (non-GSO);

b) that, in order to ensure the interference-free operation of such systems and of other radio services and systems sharing the same frequency bands on the basis of equality of the relevant allocations, there is a need for procedures to regulate the frequency assignments of satellite networks in non-GSO systems;

c) that the coordination concepts and the sharing criteria required for the adoption of a fully developed coordination procedure relating to non-GSO systems are not yet available;

d) that, consequently, there is a need for interim procedures to be applied until such time as a future conference, with the benefit of further studies by the CCIR and taking account of the experience gained in practice, will be able to adopt a more permanent procedure,

considering also

e) that the Plenipotentiary Conference, Nice, 1989, initiated the formation of a Voluntary Group of Experts, one of whose tasks is to simplify the procedures of the Radio Regulations;

f) that any new procedures adopted by this present Conference must therefore be as simple as possible and should where appropriate make use of the existing procedures of the Radio Regulations;

g) that any interim procedures must take full account of the status of the allocations to services, both terrestrial and space, in any frequency bands which may be used by non-GSO systems;

h) that any interim procedures must also take full account of the interests of all countries regardless of the state of development of their terrestrial and space radiocommunication services,

---

1 This Resolution shall be applied only to satellite networks in non-GSO space systems in the mobile-satellite service, the meteorological-satellite service and the radiodetermination- satellite service and if appropriate the associated feeder links for these services.

2 For the purposes of these interim procedures a non-geostationary-satellite network shall be one with a space station outside the GSO or in a geosynchronous orbit with an inclination exceeding 5 degrees.

considering further

j) that the provisions of No. 2613 of the Radio Regulations, while necessary to safeguard GSO systems in the fixed-satellite service from interference which might be caused by non-GSO systems, would if more widely applied prejudice the development of non-GSO systems in other space radiocommunication services,

resolves

1. that pending the adoption of a more permanent procedure by a future competent conference, the use of frequency assignments by non-GSO systems in the space services to which this Resolution applies shall be regulated in accordance with the interim procedures and the associated provisions in the Annex hereto;

2. to invite all administrations concerned in or by the introduction and operation of non-GSO systems in the relevant space services to cooperate in the application of these interim procedures;

3. to invite the IFRB to cooperate in the application of these procedures;

4. to invite all those administrations which acquire experience in the operation of the annexed interim procedures to contribute to the studies of the CCIR;

5. to invite the CCIR to study and develop Recommendations on the coordination concepts and the sharing criteria required for more permanent procedures to regulate mutual interference between non-GSO systems, between non-GSO and GSO systems, and between non-GSO systems and terrestrial services sharing frequency bands in which the allocations to space services and terrestrial services have the same status;

6. to invite the Secretary-General to bring this Resolution, at an appropriate stage, to the attention of the Administrative Council with a view to inclusion of this subject in the agenda of a future conference.

ANNEX TO RESOLUTION No. X

Interim Procedures for the Coordination of Frequency Assignments for Use by Non-Geostationary-Satellite Networks in the Mobile-Satellite Service, the Meteorological-Satellite Service and the Radiodetermination-Satellite Service

Limits of Applicability of Interim Procedures

These interim procedures are intended to supplement the existing provisions of the Radio Regulations to provide for the introduction and operation of networks using non-geostationary-satellite orbits in the mobile-satellite service, the meteorological-satellite service and the radiodetermination-satellite service until a future WARC has established more permanent procedures.

Section I. Procedure for the Advance Publication of Information on Planned Networks Using Non-Geostationary-Satellite Orbits

1. The provisions of Section I of Article 11 of the Radio Regulations shall be applied. For this purpose the data to be provided shall be that contained in MOD Appendix 3. See also Nos. 1613.1 and 1615.1.

2. For the purposes of an administration sending comments under No. 1047 of the Radio Regulations, it shall be understood that such a response may also be made with respect to interference which may be unacceptable to that administration's existing or planned terrestrial services which share the frequency band concerned on an equal basis. Thereafter the case shall be handled in accordance with Nos. 1047A - 1056A.

3. In the resolution of difficulties, the administrations involved shall take particular account of the provisions of Nos. 1084.1, 1107.1 and 1118.1/1119.1.

4. If all difficulties involving terrestrial services or networks of different satellite systems are resolved under the procedure of this Section, or if there is no response within four months from the date of the relevant weekly circular, there shall be no requirement for further coordination. At this stage the definitive data used in this procedure shall then be sent to the IFRB in the form of MOD Appendix 3 for early publication.

Section II. Procedure for the Coordination of Frequency Assignments to Space Stations of Non-Geostationary-Satellite Networks in Relation to Space Stations of Geostationary Systems and in Relation to Non-Geostationary Systems With Which Difficulties Were Not Resolved Under Section I of the Interim Procedures

5. For the purposes of this section of interim procedures, the provisions of Section II of Article 11 of the Radio Regulations shall be extended to include space stations of non-geostationary-satellite networks, both as to the requirement and means to effect coordination and the right to respond to requests for coordination of frequency assignments to space stations of other networks.

6. The effective date to be taken into account by the Board when examining a notice of a frequency assignment relating to a space station of a non-geostationary-satellite network shall be the date of receipt by the Board of definitive data in the form of MOD Appendix 3. The provisions of No. 1058E shall however be applied.

Section III. Coordination of Frequency Assignments to an Earth Station Operating in a Non-Geostationary-Satellite Network in Relation to Terrestrial Stations

7. Where it is necessary under the provisions of Section III of Article 11 of the Radio Regulations to coordinate the frequency assignments of an earth station in a non-geostationary-satellite network with respect to the terrestrial stations of another administration, those provisions shall continue to be applied.

Section IV. Application of Technical and Operational Limitations in Appropriate Frequency Bands

8. In the frequency bands shared with equal rights between terrestrial radiocommunication services and space radiocommunication services employing non-geostationary-satellite networks, the relevant provisions of Articles 27 and 28 of the Radio Regulations shall be applied.

Section V. Action in the Event of a Failure to Resolve Difficulties

9. In the event of a failure to resolve difficulties arising under these interim procedures, the administration responsible for the planned non-geostationary network may authorize its introduction on an experimental basis under the provisions of Article 34 of the Radio Regulations and having regard to the relative status of the allocations to the radiocommunication services in the frequency band involved. This provision shall however be applicable only in relation to the services of an administration with which there were unresolved difficulties.

10. In such a case the administration responsible shall, before the network is introduced, inform the Board of full details of the network in the form of MOD Appendix 3, the planned date of commencement of transmissions and subsequently of the actual date of commencement.

11. In its examination under Article 13, No. 1506, of notices of frequency assignments for non-geostationary-satellite networks governed by these interim procedures, the Board shall examine the probability of harmful interference only to the services of an administration with which there were unresolved difficulties.

12. If within a period of six months from the actual date of commencement of transmissions of a non-geostationary network under Article 34 of the Radio Regulations any administrations with which there were unresolved difficulties do not report a case of harmful interference to the Board, and to the administration responsible for the network, it shall be deemed that those difficulties have been resolved. The Board shall then modify the relevant entries in the Master Register.

13. If within that six month period a case of harmful interference is reported the administration responsible for the non-geostationary network shall take such action as may be required to eliminate or reduce to an acceptable level the interference to the services of the complaining administration which are operating in accordance with the Radio Regulations. Article 22 of the Radio Regulations shall be taken as a guide in such cases.

Section VI. Supplementary Provisions

14. Recognizing that these are interim procedures to deal with cases where the technical measures required for a fully detailed coordination procedure are not yet available, all administrations are urged to cooperate to the maximum possible extent in the application of the procedures with a view to facilitating the introduction of non-geostationary-satellite networks without interference to or from other services, space or terrestrial, which share the same frequency bands on the basis of equality.

15. Recognizing also the potential value to all administrations from the developing technology of non-geostationary-satellite systems, administrations are invited to consider utilizing burden-sharing techniques as an aid to the resolution of difficulties which may arise from the operation of these interim procedures.

RECOMMENDATION No. 66 (Rev. WARC-92)

Relating to Studies of the Maximum Permitted Levels of Spurious Emissions

AUS/31/70
MOD

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, ~~Geneva, 1979~~ (Malaga-Torremolinos, 1992),

AUS/31/71
ADD

recalling

Recommendation No. 66 of the World Administrative Radio Conference, Geneva, 1979;

considering

AUS/31/72
ADD

g) that spurious emissions can cause harmful interference to passive services including the radio astronomy service in bands above 17.7 GHz;

AUS/31/73
(MOD)

~~g~~ h) that spurious emissions from earth stations also require particular study;

AUS/31/74
(MOD)

~~h~~ i) that no information is available from the CCIR regarding spurious emissions from stations employing digital modulation techniques in the frequency bands above 960 MHz;

recommends that the CCIR

AUS/31/75
ADD

5. provide a report to the next competent conference on the results of its studies with a view to reviewing and including spurious emission limits in Appendix 8 of the Radio Regulations for the bands above 17.7 GHz.

AUS/31/76
ADD

RECOMMENDATION No. AUS-A

Relating to Implementation of Wind Profiling Radars at Frequencies Near 50 MHz, 400 MHz and 1 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

referring to

a request to the Director of the CCIR and the Chairman of the IFRB from the Secretary-General of the World Meteorological Organization, in May 1989, for advice and assistance in the identification of appropriate frequencies near 50 MHz, 400 MHz, and 1 GHz in order to accommodate allocations and assignments for wind profiling radars,

considering

a) that many administrations plan to deploy wind profiler radars at sites dispersed over large geographical areas in order to improve meteorological predictions, support studies of the climate, and enhance the safety of navigation;

b) that the CCIR has studied various proposals for these meteorological aids devices and concluded that frequencies around 50 MHz, 400 MHz and 1 GHz are preferred, and that frequencies in the 400 MHz region are preferred for measurements of winds at altitudes that are of the greatest general interest;

c) that the CCIR has studied some of the sharing scenarios and concluded that sharing with other services, particularly aeronautical radionavigation, would be difficult;

d) that the characteristics of wind profiling radars differ substantially from those of other meteorological aids;

e) that some experimental wind profiling radars are operating in the 402 - 406 MHz band, but these radars cause harmful interference to the COSPAS-SARSAT system for distress alerting in the 406 - 406.1 MHz band;

f) that a total wind profiler system may require frequencies not only in the 400 MHz region but also frequencies near 50 MHz and around 1 GHz;

g) that this Conference was only empowered to develop new Recommendations and Resolutions in relation to this service;

h) that the CCIR has established Questions [AB/2] and 65/8 to continue further studies,

considering further

that the International Maritime Organization has incorporated the COSPAS-SARSAT system in the Global Maritime Distress and Safety System,

recommends

that the next competent conference should consider the allocation and/or designation of frequency bands for wind profiling radars in the meteorological aids service near 50 MHz, 400 MHz and 1 GHz,

invites the CCIR

to continue its studies of the characteristics and requirements of wind profiler radars and make Recommendations as to the technically suitable frequency bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected, and to provide a report to the Conference referred to in **recommends**,

requests the Secretary-General

1. to bring this Recommendation to the attention of the Administrative Council and the next Plenipotentiary Conference with a view to empowering a future conference to review the matters referred to in this Recommendation;

2. to bring this Recommendation to the attention of the World Meteorological Organization, the International Civil Aviation Organization, and the International Maritime Organization.

IND/34/45
ADD

RECOMMENDATION No. ZZZ

Relating to the Use of Optimum Antenna System for a Given Requirement of HF Broadcasting

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the use of an optimum antenna reduces transmitter power requirement for achieving desired service quality;

b) that a transmitting antenna with optimum technical characteristics, while providing optimum coverage of the required service area, minimizes interference potentiality;

c) that the use of optimum antenna can improve spectrum efficiency,

noting

that there is considerable congestion in the HF bands allocated exclusively to the broadcasting service,

recommends

that administrations use the optimum antenna system for the broadcasting service in HF bands to achieve desired service quality in the required service area.

IND/34/46
ADD

RECOMMENDATION No. YYY

Relating to the Use of the Minimum Number of Frequencies for a Requirement in HF Broadcasting

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that there is severe congestion in the HF bands allocated exclusively to the broadcasting service;

b) that the economical and efficient use of the HF bands allocated exclusively to the broadcasting service is necessary;

c) that the frequency bands can be economized by the use of synchronized transmitters, as appropriate,

recognizing

that the use of more than one frequency in separate bands may be necessary to improve the reliability of service in certain cases involving:

- difficult propagation paths;
- large radial service areas;
- service area limitations of highly directional antennas,

recommends

1. that only one frequency, wherever possible, should be used in accordance with Nos. 339 and 1743 for a given requirement;

2. that the use of more than one frequency in a given band should be avoided as far as possible;

3. that synchronized transmitters should be used as appropriate.

EUR/46/3
ADD

ANNEX A TO RECOMMENDATION No. PPP

Relating to Wind Profiler Radars

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that wind profiler radars have been the subject of successful experiments to measure atmospheric wind velocities in several frequency bands;

b) that some administrations plan to utilize wind profiler radars in operational networks;

c) that it is highly desirable to use wind profiler radars in frequency bands which have been generally agreed, preferably on a worldwide basis,

recognizing

d) that the operational use of such radars is necessary to assist in meteorological forecasting and climatological research and can provide information as an aid to flight safety;

e) that in order to measure wind velocities up to a height of 30 kilometres it is necessary to allocate several frequency bands for these radars in the general vicinity of 50, 400 and 1 000 MHz;

f) that in the interests of efficient spectrum utilization it is necessary to share such bands with other services and, therefore, to establish the criteria for band sharing;

g) that studies have already shown that wind profiler radars operating in the vicinity of 400 MHz must be sufficiently separated in frequency from the COSPAS/SARSAT system centred on 406.025 MHz;

h) that it is essential in the interests of safety to protect the COSPAS/SARSAT system and other safety services from harmful interference which may be caused by wind profiler radars,

recommends

1. that the CCIR should as a matter of urgency complete its studies of the technical characteristics of wind profiler radars, the preferred frequency bands for their operation, and the criteria to permit sharing of those bands with other services and to ensure the interference-free operation of services in adjacent bands;

2. that administrations and international organizations concerned with wind profiler radars, particularly ICAO and WMO, should contribute to the CCIR studies;

3. that, as an interim measure, administrations authorizing experiments with or the operational use of such radars should take all necessary action to ensure protection from harmful interference to the COSPAS/SARSAT system and other safety services for example, aeronautical radionavigation systems in the band 960 - 1 215 MHz;

4. that the Administrative Council should include in the agenda for the next WARC the question of allocating frequency bands for the operational use of wind profiler radars.

EUR/46/4
ADD

ANNEX A TO RECOMMENDATION No. FFF

Relating to Adjustments to the Fixed Service as a Consequence of Changes to the Frequency Allocations within the Range 1 - 3 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the present Conference has allocated new frequency bands in the range 1 - 3 GHz for the mobile, mobile-satellite and broadcasting-satellite services (sound);

b) that the fixed service in this range is still extensively used and will be in the future,

recognizing

that although new techniques will allow some systems in the fixed service to be transferred to higher frequency bands or to use other means of telecommunications, there are technical and economic reasons for certain systems to continue to operate in the range 1 - 3 GHz,

noting

that item 2.9.1 of the agenda for the present Conference drew attention to the need to safeguard the interests of existing services that may be affected by changes to the Table of Frequency Allocations,

recommends

1. that when administrations implement new systems in the range 1 - 3 GHz, in particular those in the mobile service, they should take full account of the continuing needs of the fixed service by appropriate choice of geographical location, frequencies and timescales;

2. that, where possible, the affected systems in the fixed service in the range 1 - 3 GHz should be transferred to higher frequency bands, or, where practicable, they should use other means of transmission such as optical fibres or satellites;

3. that the use of the bands in the range 1 - 3 GHz in which the fixed services continue to operate should be rearranged in an optimum manner, as necessary,

invites the CCIR

1. to study the sharing criteria between the fixed service and other services;

2. to prepare channelling arrangements for the fixed service in the relevant frequency bands,

urges

administrations to take part in these studies and to undertake the necessary adjustments to the fixed service within the timetable adopted by the present Conference for implementation of the new frequency allocations in the range 1 - 3 GHz.

The following proposals concern also those regulatory provisions

dealt with in the present document:

MLI/39/1

The Administration of Mali proposes that a glossary of technical terms should be included in Article 1 of the Radio Regulations.

MLI/39/14

To remedy the shortcomings, the Administration of Mali proposes that meetings should be held at sub-regional level and for each geographical region to provide information on the results of the work of the CCIR and the draft Recommendations being approved.

YEM/41/1

The Yemeni Administration believes that the implementation of definitions for certain new space applications and the revision of the relevant provisions of Article 1 of the Radio Regulations is essential.

PAK/44/7

The Administration of Pakistan generally agrees with the draft Appendix 26(Rev.92) and draft Resolution No. Aer 1, but proposes that the dates for operating on replacement frequencies and ceasing all double-sideband emission should be 31 December, 1996 and 31 December, 1999 respectively. Dates in draft Resolution No. Aer 2 should be modified accordingly. Consequential to adopting changes to Article 12 and Appendix 26, WARC-92 should suppress Recommendation No. 406 as no further action will be required.

INS/52/1

As definition will come up after other related items have been developed and have been agreed in the Conference, any proposal will be considered later. Indonesia expects WARC-92 will retain the technical terms relating to the geostationary-satellite orbit as stipulated in the Radio Regulations.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/1B3-E
17 January 1992

Note by the Secretary-General

OTHER PROPOSALS RELATING TO THE PROVISIONS OF THE RADIO REGULATIONS

Attachment : Proposals by Administrations.

PART A

CHAPTER I

Terminology

ARTICLE 1

Terms and Definitions

Section III. Radio Services

USA/12/1
ADD **22A** 3.3A General-Satellite Service: A radiocommunication service using satellites for fixed and/or mobile applications.

USA/12/2
J/27/1
MOD **24** 3.5 Inter-Satellite Service: A radiocommunication service providing links between artificial ~~earth~~ satellites.

CAN/23/1
MOD **27** 3.8 Mobile-Satellite Service: A radiocommunication service:

- between mobile earth stations and one or more space stations, or between space stations used by this service; or
- between mobile earth stations by means of one or more space stations;
- which may also be used to derive position location information.

This service may also include feeder links necessary for its operation.

USA/12/3
ADD **46A** 3.27A Radiolocation-Satellite Service: A radiodetermination-satellite service used for the purpose of radiolocation.

This service may also include feeder links necessary for its operation.

URS/7/1
MOD **48** 3.29 Earth Exploration-Satellite Service: A radiocommunication service between earth stations and one or more space stations, which may include links between space stations, in which:

- information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from active sensors or passive sensors on earth satellites;
- similar information is collected from airbone or Earth-based platforms;
- such information may be distributed to earth stations within the system concerned;
- platform interrogation may be included.

This service may also include feeder links necessary for its operation.

CAN/23/2
ADD **55A** 3.36A Multipurpose-Satellite Service: A radiocommunication service using satellites for fixed and mobile applications.

CAN/23/3
ADD **55B** 3.36B Space-Communications Service: A radiocommunication service consisting of one or more space applications involving space operation, earth exploration-satellite, or space research activities, including links between space stations carrying out these applications.

CAN/23/4
MOD **181** 8.13 Geostationary Satellite: A geosynchronous satellite whose circular and direct orbit lies ~~in~~ near the plane of the Earth's equator and ~~which~~ thus ~~remains fixed relative to the Earth; by extension~~, a satellite which remains approximately fixed relative to the Earth.

ARTICLE 61

Order of Priority of Communications in the Maritime Mobile Service and in the Maritime Mobile-Satellite Service

USA/12/169
MOD **4441** The order of priority for communications[1] in the maritime mobile service and the maritime mobile-satellite service shall be as follows, except where impracticable in a fully automated system in which, nevertheless, ~~category 1~~distress, urgency and safety communications shall receive priority:

CHAPTER XIII

ARTICLE 69

Entry into Force of the Radio Regulations

B/30/63
MOD **5195** (2) The use of the frequency bands ~~as listed in Nos. 532 and 544 of the Radio Regulations~~12 230 - 12 330 kHz, 16 360 - 16 460 kHz, 17 360 - 17 410 kHz, 18 780 - 18 900 kHz, 22 720 - 22 855 kHz, 25 110 - 25 210 kHz and 26 100 - 26 175 kHz by the maritime mobile service shall commence on 1 July 1991 at 0001 hours UTC under the conditions specified in Resolution 325 (Mob-87).
Mob-87

USA/12/170
MOD

RESOLUTION No. 517 ~~(HFBC-87)~~(WARC-92)

NOC

Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

USA/12/171
MOD

The World Administrative Radio Conference ~~for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987),~~for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

USA/12/172
MOD

ANNEX TO RESOLUTION No. 517 ~~(HFBC-87)~~(WARC-92)

NOC

Procedure for the Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

USA/12/173
MOD

1. The immediate introduction of SSB emissions is encouraged, ~~, i.e., the transition period starts immediately.~~

USA/12/174
MOD

2. All DSB emissions shall cease not later than ~~31 December 2015~~30 June 2007, at 2359 hours UTC (see also resolves 2 in the body of the Resolution).

NOC

3. SSB emissions shall comply with the characteristics specified in Appendix 45 to the Radio Regulations.

USA/12/175
MOD

4. Until ~~31 December 2015~~30 June 2007, 2359 UTC, SSB emissions intended for reception by DSB receivers with envelope demodulation, as well as by SSB receivers with synchronous demodulation, shall have a carrier reduction of 6 dB relative to peak envelope power.

USA/12/176
MOD

5. After ~~31 December 2015~~30 June 2007, 2359 hours UTC, only SSB emissions with a carrier reduction of 12 dB relative to peak envelope power shall be used.

USA/12/177
MOD

6. Until ~~31 December 2015~~30 June 2007, 2359 hours UTC, whenever an administration replaces its DSB emission by an SSB emission, it shall ensure that the level of interference is not greater than that caused by its original DSB emission (see also Appendix 45 to the Radio Regulations and Recommendation No. 517 (HFBC-87)).

E/25/13
SUP

RESOLUTION No. 520 (Orb-88)

E/25/14
SUP

RESOLUTION No. 521 (Orb-88)

RESOLUTION No. 703

USA/12/178
MOD

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services~~1~~

USA/12/179
SUP

~~1 Replaces Resolution No. Spa2-6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.~~

USA/12/180
MOD

The World Administrative Radio Conference ~~Geneva, 1979,~~ for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

USA/12/181
MOD

e) that CCIR Plenary Assemblies are held ~~triennially~~frequently and with regularity, whereas administrative radio conferences, which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations, are in practice held less frequently and with much less regularity;

USA/12/182
ADD

f) that the CCIR has adopted a procedure for the approval of Recommendations between Plenary Assemblies;

USA/12/183
MOD

~~f)~~ g) that the International Telecommunication Convention ~~(Malaga-Torremolinos, 1973)~~ recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned,

is of the opinion

USA/12/184
MOD

a) that subsequent ~~Plenary Assemblies~~decisions of the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

invites the CCIR

USA/12/185
MOD

a) to request its Study Groups to prepare, at their final meetings before the Plenary Assembly, a provisional list identifying relevant parts of approved new or revised CCIR Recommendations and drafts of revised ~~and~~or new CCIR Recommendations affecting the calculation methods and the interference criteria, and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

USA/12/186
MOD

b) to request the Director of the CCIR to forward this list together with texts of approved new or revised CCIR Recommendations and texts of ~~these~~drafts of revised ~~and~~or new Recommendations to administrations and to the IFRB within thirty days following the final Study Group meetings,

resolves that

USA/12/187
MOD

1. the IFRB shall immediately distribute the information mentioned in invites b) above to all administrations, so that it reaches them as soon as possible before the convening of the subsequent Plenary Assembly. This should be accompanied by a notice indicating that the enclosed texts have already been approved by the CCIR between Assemblies or are subject to approval at the next CCIR Plenary Assembly;

USA/12/188
MOD

2. a) each CCIR Plenary Assembly~~, having adopted any or all of the relevant Recommendations and approved the appropriate portions of the list mentioned in invites a) above,~~ should arrange for the Secretary-General to be informed of the list mentioned in invites a) above, and those Recommendations which affect the appropriate calculation methods and the interference criteria to be employed;

USA/12/189
ADD

RESOLUTION No. AAA

Relating to Implementation of Wind Profiler Radars at Frequencies Near 50 MHz, 400 MHz and 1 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

referring to

a request to the Director of the CCIR and Chairman of the IFRB from the Secretary-General of the World Meteorological Organization, in May 1989, for advice and assistance in the identification of appropriate frequencies near 50 MHz, 400 MHz, and 1 GHz in order to accommodate allocations and assignments for wind profiler radars;

considering

a) that many administrations plan to deploy wind profiler radars at sites dispersed over large geographical areas in order to improve meteorological predictions, support studies of the climate, and enhance the safety of navigation;

b) that the CCIR established Questions [AB/2] and 65/8 to promulgate the relevant studies;

c) that the characteristics of wind profiler radars differ substantially from those of other meteorological aids;

d) that some experimental wind profiler radars are operating in the 402 - 406 MHz band, but these radars cause harmful interference to the COSPAS-SARSAT system for distress alerting in the 406.0 - 406.1 MHz band;

e) that a total wind profiler system may require frequencies not only in the 400 MHz region but also frequencies near 50 MHz and around 1 GHz;

f) Recommendation No. ZZZ,

considering further

that the International Maritime Organization has incorporated the COSPAS-SARSAT system in the Global Maritime Distress and Safety System,

recognizing

that frequencies in the 400 MHz region are preferred for measurements of winds at altitudes that are of the greatest general interest,

resolves

that the next competent world administrative radio conference consider the matter of appropriate allocations for accommodation of wind profiler radars,

invites the CCIR

to continue its studies of the characteristics and requirements of wind profiler radars and make Recommendations as to the technically suitable frequency bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected,

urges administrations

to avoid making frequency assignments to wind profiler radars in the 402 - 406 MHz band,

invites the Administrative Council

to place this matter on the agenda of the next competent world administrative radio conference.

USA/12/190
ADD

RESOLUTION No. BBB

Relating to Implementation of the Changes in Allocation to the Broadcasting Service in the Bands Between 5 730 kHz and 19 680 kHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that parts of frequency bands between 5 730 kHz and 19 680 kHz that were previously allocated on an exclusive or shared basis to the fixed service or fixed and mobile services have been re-allocated to the broadcasting or amateur services;

b) that existing fixed and mobile assignments must be removed progressively from those re-allocated bands to make way for the broadcasting or amateur services;

c) that the assignments to be removed termed "displaced assignments", must be re-accommodated in the same frequency band,

recognizing

the difficulties facing administrations and the IFRB during the period of transition from the previous allocations to those made by this Conference,

resolves

1. that the transitional procedure in Annex A to this Resolution shall be used for the purpose of ensuring an orderly and equitable implementation of the changeover from the previous allocations to those made by this Conference;

2. that the provisions of No. 1242 and the associated provisions of Article 12 concerning the examination and recording in the Master Register of assignments in the bands between 5 730 kHz and 19 680 kHz allocated on an exclusive or shared basis to the fixed service or fixed and mobile services shall be suspended from 1 January 1995 to 30 June 1997;

3. that the interim procedure in Annex B to this Resolution shall be used for the purpose of dealing with any urgent new frequency assignments in the relevant bands during the period of suspension of the provisions of Article 12 as specified in resolves 2;

4. that the review procedure in Annex C to this Resolution shall be used for the purpose of examining any urgent new assignment notified during the period of suspension of the provisions of Article 12 as specified in resolves 2,

invites administrations

to cooperate by not submitting notices for assignments in the relevant bands during the period of suspension of the provisions of Article 12 as specified in resolves 2, except for urgent new assignments to be dealt with under the interim procedures of Annexes B and C,

requests the IFRB

not to examine any notices in the relevant bands under Article 12 during the period of suspension of the provisions of that Article as specified in resolves 2, other than those notices requesting deletions of existing assignments.

ANNEX A TO RESOLUTION No. BBB

Transitional Procedure for the Selection and Approval of Replacement Assignments

PART I - PREPARATORY PHASE

Section I. Preparation and Publication by the IFRB of Consolidated Proposals for Replacement Assignments

1. For the purpose of this Resolution, the term "displaced assignment" means a frequency assignment to a station in the fixed service or mobile service in the parts of the bands re-allocated from the fixed service or fixed and mobile services to the broadcasting or amateur services for which a replacement assignment shall be found in accordance with this Resolution. The expression "class of operation A (or B or C)" refers to the entry in column 7B of the Master Register (see RR 1222).

2. The Board, as soon as possible after completion of the procedure in Annex D, shall prepare consolidated proposals for replacements for all displaced assignments listed in the Provisional Section of the Master Register (see Annex D) in the bands between 5 730 kHz and 19 680 kHz which the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, Malaga-Torremolinos, 1992, has re-allocated from the fixed service or fixed and mobile services to the broadcasting or amateur services.

3. The displaced assignments shall be treated in the order of the date recorded in Column 2d of the Provisional Section of the Master Register. Furthermore, all displaced assignments which have the same Column 2d date shall be treated in the following order:

1) assignments for national use;

2) assignments for international use.

In the application of this provision, the displaced assignments shall be processed in batches without any priority being applied to the assignments of any administration.

4. The displaced assignments of class of operation C shall not be treated until all displaced assignments of class of operation A or B have been satisfied.

5. Displaced assignments of class of operation C shall be as far as possible evenly distributed throughout the bands that continue to be allocated to the fixed service or fixed and mobile services.

6. The Board, in complying with the provisions of this Section, shall for the purposes of protecting existing recorded assignments employ only the Master Register reconstructed in accordance with the procedure in Annex D.

7. The Board, on 1 July 1996, shall send to each administration a document listing all the assignments concerning that administration, identifying those that were recorded in the Provisional Section of the Master Register, and those proposed as replacements.

Section II. Examination and Approval of Proposed Assignments

8. Each administration, upon receipt of the document specified in paragraph 7, shall acknowledge receipt and shall then examine the proposed replacement assignments contained therein with regard to their acceptability, following which the administration shall advise the Board as soon as possible

- of its agreement, or
- which of the proposed assignments it finds unacceptable.

In the latter case, the administration shall inform the Board, as quickly as possible, of its reasons therefor.

The Board shall examine the responses under paragraph 8 and shall try, preferably by applying small adjustments, to satisfy the administration concerned with respect to the proposed assignments it found unacceptable. The Board shall do so in the following way:

- the Board shall collect all responses received under paragraph 8 within six months after 1 July 1996, and process them together and without any priority being applied to the reply of any administration, and then
- the Board shall collect all responses received under paragraph 8 in the period from six months to nine months after 1 July 1996, and then process this second batch in the same manner as described above for the first batch.

10. The procedure described in this Section shall terminate on 1 July 1997.

Section III. Subsequent Action by the Board

11. The Board, on termination of the procedure prescribed by Sections I and II of this Annex, shall insert in the Master Register all replacement assignments that have been agreed by administrations, with annotations to indicate:

- that they shall have the status as provided in Annex D, and
- their provisional nature in accordance with No. 1311.

12. The Board shall, for all assignments mentioned in paragraph 11, insert in Column 2d of the Master Register the appropriate date according to Annex D.

13. The Board shall then publish, in recapitulatory supplements to the International Frequency List, all replacement assignments made in accordance with the procedure prescribed in Part I of this Annex.

14. The Board, on publication of the supplements prescribed in paragraph 13, shall inform by telegram any administration having outstanding displaced assignments of class of operation A which have not been satisfied.

Section IV. Implementation of Article 12

15. As from 1 July 1997, the provisions of Article 12 shall apply to frequency bands allocated to the fixed service and fixed and mobile services between 5 730 kHz and 19 680 kHz.

16. Following that date, an administration, having been informed by the Board under paragraph 14 that certain of its displaced assignments have not been replaced under this transitional procedure, shall be free to select new assignments taking into account the assignments recorded in the Master Register under paragraph 11, and shall submit new notices to the Board in accordance with Article 12.

PART II - TRANSFER PHASE

Section V. Subsequent Action by Administrations

17. An administration, having received and accepted replacements for its recorded assignments that were displaced by decisions of the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, Malaga-Torremolinos, 1992, shall effect the changeover from the old to the new assignment not later than 1 July 2007.

18. An administration shall promptly inform the Board of the date on which the changeover from an old to a replacement assignment takes place. The Board shall remove from that replacement assignment the special symbol placed in accordance with No. 1311 (see paragraph 11) in the Master Register, thus indicating that it has been implemented, and shall enter the date of the changeover in Column 2c. The date in Column 2c, originally recorded with the displaced assignment, shall be entered in the Remarks Column.

19. 1) An administration having effected the change to a replacement assignment of class of operation A, and having experienced harmful interference or having received a complaint of harmful interference involving another class of operation A assignment:

   a) shall make every effort with any other administration concerned to resolve the problem, and, if unsuccessful,

   b) may select and submit to the Board an alternative replacement assignment[1].

   2) An administration, having effected the change to a replacement assignment of class of operation B and having experienced harmful interference for this class of operation, may select and submit to the Board an alternative replacement assignment[1].

20. Following a favourable finding by the Board on the replacement assignment selected under paragraph 19.1) b) or 19.2), the administration shall be entitled to retain the Column 2d date of the Master Register, against that assignment.

Section VI. Relevance of Dates in the Master Register

21. The relevance of the dates related to displaced assignments is referred to in Annex D and Article 12.

---

1 On request from an administration, the Board shall assist in the application of provision 19.1) b) or 19.2).

ANNEX B TO RESOLUTION No. BBB

Interim Procedure Concerning Notices Relating to Assignments in the Bands Between 5 730 kHz and 19 680 kHz Allocated to the Fixed Service and Fixed and Mobile Services

1. During the period between 1 January 1995 and 30 June 1997, an administration, having an urgent requirement which cannot possibly be delayed until the end of that period, may notify a new assignment in the bands between 5 730 kHz and 19 680 kHz allocated on an exclusive or shared basis to the fixed or mobile services. Such notices shall contain the information listed in the appropriate section of Appendix 1.

2. An administration submitting a notice in accordance with paragraph 1 above shall be deemed to accept that its assignment:

a) shall be of an interim nature, and

b) shall be subject to the review procedure contained in Annex C to this Resolution and shall then be modified if necessary to conform to the results of that review, and

c) shall not cause harmful interference to any assignments recorded in the Master Register that are entitled to protection.

3. The Board, upon receipt of a complete notice under paragraph 1, shall examine it with respect to No. 1240 and shall return to the notifying administration any notice not complying with that provision together with the reasons for this action.

4. Notices in conformity with No. 1240 shall be included in a special section of the weekly circular, where they shall be annotated to show that they are subject to both the interim and review procedures contained in this Annex and Annex C to this Resolution respectively. Assignments notified under No. 1218 shall additionally be annotated to that effect.

5. The Board shall compile and maintain a Special List of all notices dealt with under paragraph 4.

ANNEX C TO RESOLUTION No. BBB

Review Procedure Concerning Notices Relating to Assignments for Stations of the Fixed and Mobile Services in the Bands Between 5 730 kHz and 19 680 kHz

1. The Board, commencing on 1 July 1997, shall examine under the appropriate provisions of Article 12 all interim assignments contained in the Special List compiled in accordance with Annex B to this Resolution with a view to recording them in the Master Register.

2. For the purposes of this examination, interim assignments shall be processed without priority being given to the assignments of any administration; however, assignments notified under No. 1218 shall be treated first.

3. All interim assignments shall be examined by the Board with respect to the probability of harmful interference from or to assignments entered in the Master Register on a provisional basis as a result of the application of Annex A to this Resolution. Depending on the findings of the Board subsequent to this examination, further action shall be as follows:

4. Favourable finding with respect to paragraph 3 above

1) The interim assignments notified under No. 1218 shall be recorded in the Master Register, and the date 1 July 1997 shall be entered in Column 2d.

2) The other interim assignments shall be examined under No. 1242 with respect to frequency assignments recorded in the Master Register at the date of commencement of the interim procedure described in Annex B to the present Resolution. Depending on the findings of the Board, the appropriate provisions of Article 12 shall be applied. When such assignments are to be recorded, the date 1 July 1997 shall be entered in Column 2d.

5. Unfavourable finding with respect to paragraph 3 above

The Board shall, having regard to the class of operation of assignments, and the contents of the reconstructed Master Register, propose suitable replacement assignments and enter them on a provisional basis with the date of 1 July 1997 in Column 2d.

6. The Board shall, upon completion of this review, compile a Temporary List of recorded and proposed replacement assignments and publish it as an Annex to its weekly circular. A copy of this List, together with a national extract thereof, shall be sent to each administration having interim assignments in the Special List mentioned in paragraph 1 of this Annex.

7. An administration, upon receipt of the List mentioned in paragraph 6, shall consider the proposed replacements for its interim assignments and shall, within five months of the date of publication of the Temporary List, inform the Board whether the proposed assignments are acceptable. If the proposed assignments are not acceptable, the administration shall give the reasons therefor.

8. Upon acceptance of a proposed assignment, the administration shall indicate the latest date of bringing into use. This date shall be within one year of the publication of the Temporary List.

9. The Board shall examine the replies under paragraph 7 and shall try, if necessary by applying small adjustments, to satisfy the administration concerned with respect to the proposed assignments it found unacceptable and propose alternative frequencies. Simultaneously, the Board shall replace the appropriate provisional entry by the new proposed frequency.

10. If, on 1 July 1998, provisional entries made under paragraph 5 or 9 have not been accepted by the administration concerned, the Board shall replace these entries by the corresponding interim assignment appropriately annotated. As from that date neither the Special List nor the Temporary List shall be taken into consideration.

11. An administration, having an interim assignment for which no acceptable replacement assignment has been found, shall be free to select a new replacement and shall forward a new notice under the provisions of Article 12. Upon request from an administration, the Board shall assist in the application of this provision.

ANNEX D TO RESOLUTION No. BBB

Procedure for the Revision of Entries in the Master International Frequency Register of Displaced Assignments from Bands Re-Allocated to the Broadcasting or Amateur Services

1. The Board shall extract from the Master Register and shall, as soon as possible after 1 January 1993, forward to each administration an individual National List[2] of all assignments recorded in the Master Register on behalf of that administration or for which notices have been received prior to that date in the bands re-allocated to the broadcasting or amateur service (RR 521B and RR 528C).

2. Each administration, upon receiving the List mentioned in paragraph 1 above, shall so inform the Board by telegram. An administration not receiving its National List by 1 April 1993 shall promptly inform the Board, which shall forthwith send to that administration a further copy of the National List. The Board shall ensure that every administration has received the National List pertaining to its own assignments.

3. Each administration, after having acknowledged receipt of its National List, shall delete from it any of the entries no longer required and shall return its annotated National List to the Board as quickly as possible and in any event not later than 31 March 1994. The Board shall send to each administration an acknowledgement of receipt of its annotated National List.

4. On 1 October 1993, the Board shall publish a provisional section of the Master Register relating solely to the assignments in the bands allocated exclusively to the fixed and fixed and mobile services in the bands between 5 730 kHz and 19 680 kHz. This section shall contain all assignments shown in the National Lists as updated by administrations and those shown in the National Lists which have not been returned to the Board, excluding those assignments with an unfavourable finding with respect to No. 1240, without reference to No. 342. The assignments in this provisional section shall be annotated as follows:

1) all assignments in the parts of bands re-allocated to the broadcasting or amateur service shall bear the symbol "RES BBB" in Column 13c indicating that they are assignments for which replacement assignments shall be found in accordance with this Resolution, retaining the date and status afforded in 4.2) and 4.3) below;

2) for Lists returned to the Board, the date entered in Column 2d shall be the same date contained in the Master Register for that assignment;

3) for Lists not returned to the Board, the date entered in Column 2d shall be 1 January 1995.

5. As soon as possible after 1 January 1995, the Board shall:

1) publish a supplement to the provisional section of the Master Register containing those assignments for which notices were received between 1 January 1993 and 31 December 1994 and recorded in the Master Register;

2) send to administrations a copy of their National list;

3) incorporate in the Master Register the provisional section mentioned in paragraph 4 including the assignments in paragraph 5.1) above in replacement of the corresponding entries in the frequency bands concerned.

6. Following completion of the action described in this Annex, the Board shall publish a report showing the results obtained from the operation of this procedure.

---

2 The Board shall determine by prior enquiries the number of copies of the National List to be sent to each administration. The National List shall be prepared in the format of the International Frequency List but the form in which the List is forwarded may, at the request of individual administrations and with the agreement of the Board, be varied to suit different circumstances.

USA/12/191
ADD

RESOLUTION No. CCC

Relating to Primary Service Requirements for Meteorological Satellites in the Bands 401 - 403 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations use frequencies in the bands 401 to 402 MHz and 402 to 403 MHz for reporting to satellites from airborne, land-based and maritime data collection platforms (DCPs);

b) that the CCIR has conducted studies of the characteristics, requirements and sharing criteria necessary for compatibility with the services that are shared with these systems, the results are reported in CCIR Report 541-2 and Report 514-2;

c) that the meteorological-satellite service in the bands 401 to 402 MHz and 402 to 403 MHz are secondary to other services in these bands and that in order for continuous reliable observations to be made, it is essential that transmission of the data be achieved without harmful interference,

resolves

that the next competent world administrative radio conference examine the allocation to the meteorological-satellite service operations in the bands 401 to 402 MHz and 402 to 403 MHz with the intent of upgrading the allocation;

invites the Administrative Council

to take the necessary action to place this matter on the agenda of the next competent world administrative radio conference.

CTR/SLV/NCG/14/1
ADD

RESOLUTION AAA

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that WARC-92 will be examining proposals relating to the extension of allocations for HF broadcasting, which may entail reallocations to other services;

b) that the amateur service is a valuable source of public services, especially in emergency situations arising from natural disasters, and that the band 7 - 7.3 MHz is particularly necessary for amateurs in our country, by whom it is used intensively;

c) that our Administration wishes to safeguard the ability of the amateur service to offer emergency communications in the above-mentioned part of the spectrum;

d) that in Region 2 the band 7 - 7.3 MHz is currently allocated to the amateur service on an exclusive primary basis;

e) that the CCIR has recommended against frequency sharing between the amateur and broadcasting services,

resolves

1. that a band of 300 kHz in the vicinity of 7 - 7.3 MHz shall be allocated to the amateur service on a worldwide exclusive primary basis;

2. that a 15-year transitional period up to 1 January 2007 shall be adopted in respect of this worldwide allocation of 300 kHz.

EUR/20/34
ADD

RESOLUTION No. AAA

Relating to Implementation of the Changes in Frequency Allocations between 4 000 kHz and 20 000 kHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that parts of the frequency bands between 4 000 kHz and 20 000 kHz which were previously allocated on an exclusive or shared basis to the fixed and mobile services have been re-allocated to the broadcasting service;

b) that the existing fixed and mobile assignments must be removed progressively from those re-allocated bands to make way for the broadcasting or amateur services;

c) that the assignments to be removed, termed "displaced assignments", must be re-accommodated in other frequency bands,

recognizing

d) the difficulties that will face administrations and the IFRB during the period of transition from the previous allocations to those made by this Conference,

resolves

1. that the transitional procedure in Annex A to this Resolution shall be used for the purpose of ensuring an orderly and equitable implementation of the changeover from the previous allocations to those made by this Conference;

2. that the provisions of Article 12 of the Radio Regulations relating to the examination and recording in the Master Register of assignments to the fixed and mobile services in the bands between 4 000 kHz and 20 000 kHz shall be suspended from 5 March 1992 until 4 March 1994;

3. that the interim procedure in Annex B to this Resolution shall be used for the purpose of dealing with any urgent new frequency assignments in the relevant bands during the period of suspension of the provisions of Article 12 as specified in **resolves** 2;

4. that the review procedure in Annex C to this Resolution shall be used for the purpose of examining any urgent new assignments notified during the period of suspension of the provisions of Article 12 as specified in **resolves** 2,

invites administrations

1. when seeking re-accommodation of the displaced assignments for their mobile services in the bands between 4 000 kHz and 20 000 kHz which have been re-allocated to the broadcasting or amateur services, to make every effort to find replacement assignments in the bands allocated exclusively to the mobile service concerned;

2. to cooperate by not submitting notices of frequency assignments in the relevant bands during the period of suspension of the provisions of Article 12, as specified in **resolves** 2, except for urgent new assignments to be dealt with under the interim procedure,

requests the IFRB

not to examine any notices of frequency assignments in the relevant bands under Article 12 during the period of suspension of the provisions of that Article as specified in **resolves** 2 other than notices requesting deletions of existing assignments.

ANNEX A TO RESOLUTION No. AAA

Transitional Procedure for the Selection and Approval of Replacement Assignments

PART I - PREPARATORY PHASE

Section I. Preparation and Publication by the IFRB of Consolidated Proposals for Replacement Assignments

1. For the purpose of this Resolution the term "displaced assignment" means a frequency assignment to a station in the fixed and mobile service already recorded in the Master Register, in the parts of the bands between 4 000 kHz and 20 000 kHz re-allocated to the broadcasting or amateur services, for which a replaced assignment shall be found in accordance with this Resolution.

2. The Board, as soon as possible, shall prepare consolidated proposals for replacements for all displaced assignments.

3. The displaced assignments shall be treated in the order of the date recorded in Column 2d of the Master Register. Furthermore, all displaced assignments which have the same date shall be treated in the following order:

1) assignments for national use;

2) assignments for international use. In the application of this provision, the displaced assignments shall be processed in batches without any priority being applied to the assignments of any administration.

4. The displaced assignments to stations in the fixed service of class of operation C shall not be treated until all displaced assignments of classes of operation A and B have been satisfied.

5. Displaced assignments of class of operation C shall as far as possible be evenly distributed throughout the bands that continue to be allocated to the fixed service.

6. The Board on [date (as soon as possible after the Conference)] shall send to each administration a document listing all the assignments concerning that administration and those proposed as replacements.

Section II. Examination and Approval of Proposed Assignments

7. Each administration, upon receipt of the document specified in paragraph 6, shall acknowledge receipt and shall then examine the proposed replacement assignments contained therein with regard to their acceptability, following which the administration shall advise the Board as soon as possible of its agreement, or, which of the proposed assignments it finds unacceptable. In the latter case the administration shall inform the Board at the same time of its reasons therefore.

8. The Board shall examine the responses under paragraph 7 and shall try, preferably by applying small adjustments, to satisfy the administration concerned with respect to the proposed assignments it found unacceptable. The Board shall do so in the following way:

a) the Board shall collect all responses received under paragraph 7 within six months of the date after dispatch of the document specified in paragraph 6 and process them together and without any priority being applied to the reply of any administration, and then;

b) the Board shall collect all responses received under paragraph 7 in the period from six to nine months after dispatch of the document specified in paragraph 6 and then process this second batch in the same manner as prescribed for the first batch.

9. The procedure described in this Section shall terminate on 4 March 1994.

Section III. Subsequent Action by the Board

10. The Board, on termination of the procedure prescribed by Sections I and II of this Annex, shall insert in the Master Register all replacement assignments that have been agreed by administrations, with annotations to indicate:

- that they have the same common status as the assignments that were not displaced;
- their provisional status in accordance with No. 1311.

11. The Board shall, for all assignments mentioned in paragraph 10, insert in Column 2d of the Master Register the date [to be determined by the Conference].

12. The Board shall then publish all replacement assignments made in accordance with the procedure prescribed in Part I of this Annex.

13. The Board shall inform by telegram any administration having outstanding displaced assignments to stations of the fixed service of class of operation A which have not been satisfied.

Section IV. Implementation of Article 12

14. As from 4 March 1994 the provisions of Article 12 shall apply to the frequency bands allocated to the fixed or mobile service between 4 000 kHz and 20 000 kHz.

15 Following that date an administration, having been informed by the Board under paragraph 13 that certain of its displaced assignments have not been replaced under this transitional procedure, shall be free to select new assignments taking into account the assignments recorded in the Master Register under paragraph 10, and shall submit new notices to the Board in accordance with Article 12.

PART II - TRANSFER PHASE

Section V. Subsequent Action by Administrations

16. An administration, having received and agreed replacements for its displaced assignments shall effect the changeover from the old to the new assignments not later than 1 January 2000.

17. An administration shall promptly inform the Board of the date on which changeover from an old to a replacement assignment takes place. The Board shall remove from that replacement assignment the special symbol placed in accordance with No. 1311 (see paragraph 10) in the Master Register, thus indicating that it has been implemented, and shall enter the date of the changeover in Column 2c. The date in Column 2c previously recorded with the displaced assignment shall be entered in the Remarks Column.

18. An administration, having effected the changeover to a replacement assignment for a station in the fixed service of class of operation A, and having experienced harmful interference or having received a complaint of harmful interference involving another class of operation A assignment, shall:

a) make every effort with any other administration concerned to resolve the problem and, if unsuccessful;

b) may select and submit to the Board an alternative replacement assignment.

19. An administration having effected the changeover to a replacement assignment of class of operation B, and having experienced harmful interference for this class of operation, may select and submit to the Board an alternative replacement assignment.

20. Upon request from an administration, the Board shall assist in the application of the provisions of paragraphs 18 and 19.

21. Following a favourable finding by the Board on a notice of an alternative replacement assignment selected under paragraph 18 or 19, the administration concerned shall be entitled to have inserted in Column 2d of the Master Register, against that assignment, the common date of [to be determined by the Conference] for class of operation A or the date of [to be determined by the Conference] for class of operation B for the fixed service and the common date of [to be determined by the Conference] for the mobile service.

ANNEX B TO RESOLUTION No. AAA

Interim Procedure Concerning Notices Relating to Assignments in the Bands between 4 000 kHz and 20 000 kHz Allocated to the Fixed or Mobile Service

1. During the period between 5 March 1992 and 4 March 1994 an administration, having an urgent requirement which cannot possibly be delayed until the end of that period, may notify a new assignment in the bands between 4 000 kHz and 20 000 kHz allocated to the fixed or mobile service. Such notices shall contain the information listed in the appropriate section of Appendix 1.

2. An administration submitting a notice in accordance with paragraph 1 shall be deemed to accept that the assignment:

a) shall be of an interim nature;

b) shall be subject to the review procedure contained in Annex C to this Resolution and shall be modified if necessary to conform to the results of that review;

c) shall not cause harmful interference to any assignment recorded in the Master Register that are entitled to protection from such interference.

3. The Board, upon receipt of a complete notice under paragraph 1, shall examine it with respect to No. 1240 and shall return to the notifying administration any notice not complying with that provision and shall state the reasons for this action.

4. Notices in conformity with No. 1240 shall be included in special section of the weekly circular where they shall be annotated to show that they are subject to both the interim procedure and the review procedure contained in Annexes B and C to this Resolution. Assignments notified under No. 1218 shall additionally be annotated to the effect.

5. For the purposes of the review procedure of Annex C to this Resolution, the Board shall compile and maintain a Special List of all notices dealt with under paragraph 4.

ANNEX C TO RESOLUTION No. AAA

Review Procedure Concerning Notices Relating to Interim Assignments for Stations of the Fixed or Mobile Service in the Bands Between 4 000 kHz and 20 000 kHz

1. The Board, commencing on 4 March 1994, shall examine under the appropriate provisions of Article 12 all interim assignments in the Special List compiled in accordance with Annex B to this Resolution with a view to recording them in the Master Register.

2. For the purposes of this examination assignments shall be processed without any priority being given to the assignments of any administration, however, assignments notified under No. 1218 shall be treated first.

3. All interim assignments shall be examined by the Board with respect to the probability of harmful interference to or from assignments entered in the Master Register on a provisional basis as a result of the application of Annex A to this Resolution. Depending on the findings of the Board further action shall be as follows:

4. Favourable findings with respect to paragraph 3 above:

a) The interim assignment notified under No. 1218 shall be entered in the Master Register and the date 4 March 1992 shall be entered in Column 2d.

b) All other interim assignments shall be examined under No. 1242 with respect to frequency assignments recorded in the Master Register on 5 March 1992. Depending upon the findings of the Board, the appropriate provisions of Article 12 shall be applied. When such assignments are to be recorded, the date 4 March 1992 shall be entered in Column 2d.

5. Unfavourable findings with respect to paragraph 3 above. The Board, having regard to the class of operation of assignments, shall propose suitable replacements and record them in the Master Register on a provisional basis and shall enter the date 4 March 1992 in Column 2d.

6. The Board shall, upon completion of this review, compile a Temporary List of recorded and proposed replacement assignments and publish it as an Annex to its weekly circular. A copy of this List together with a national extract thereof shall be sent to each administration having interim assignments in the Special List mentioned in paragraph 1 of this Annex.

7. An administration, upon receipt of the List mentioned in paragraph 6, shall consider the proposed replacements for its interim assignments and shall, within five months of the date of publication of the Temporary List, inform the Board whether the proposed assignments are acceptable. If the proposed assignments are not acceptable the administration shall give the reasons therefor.

8. Upon acceptance of a proposed replacement the administration shall indicate the latest date of bringing it into use. This date shall be within one year of the publication of the Temporary List.

9. The Board shall examine the reply under paragraph 7 and shall try, if necessary by applying adjustments, to satisfy the administration concerned with respect to the proposed replacement it found unacceptable. If necessary the Board shall propose a new alternative and shall simultaneously replace the provisional entry in the Master Register with the new assignment.

10. If on 4 March 1995 the provisional entries in the Master Register made under paragraphs 5 or 9 have not been accepted by the administrations concerned, the Board shall replace them by the corresponding interim assignments appropriately annotated. As from that date neither the Special List nor the Temporary List shall be taken into further consideration.

11. An administration, having an interim assignment for which no acceptable replacement assignment has been found, shall be free to select a new replacement and shall forward a new notice under the provisions of Article 12. Upon request from an administration the Board shall assist in the application of this provision.

12. All administrations, having accepted proposed replacements for their interim assignments and having so informed the Board, shall promptly take them into use and cease the use of their interim assignments. The date of taking into use shall be notified to the Board which shall forthwith make the appropriate changes to the entries in the Master Register.

EUR/20/54
ADD

RESOLUTION No. BBB

Relating to the Introduction of the Broadcasting-Satellite (Sound) Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present conference has made frequency allocations in the band 2 570 - 2 620 MHz for the broadcasting-satellite (sound) service, for the complementary terrestrial broadcasting and for the associated feeder links in the band 10.7 - 11.7 GHz, that will become available for use from 1 January 2005;

b) that some administrations or groups of administrations may wish to take a lead in an early, ie before 1 January 2005, introduction of BSS (Sound) systems of an experimental nature without affecting the continued operation of existing services;

c) that after 1 January 2005, the introduction of broadcasting-satellite (sound) systems into this band must be regulated in a flexible and equitable manner until a future WARC has adopted definitive provisions for this purpose,

resolves

1. that the frequency bands concerned shall not be available for general use by BSS (Sound) until the year 2005 but for the accommodation of experimental systems starting not before 1 January 2000 the sub-band 2 580 - 2 596 MHz only should be utilized; experimental systems in this sub-band shall operate in accordance with Article 34 of the Radio Regulations, and procedures contained in Resolution No. 33 (WARC-79) shall be applied;

2. that the introduction of operational systems after 1 January 2005 shall be regulated by the Articles 11 and 13 procedures of the Radio Regulations as for the fixed-satellite service;

3. that up to the date of implementation of operational BSS (Sound) systems after 1 January 2005 the existing services in the above mentioned band shall remain with primary status, and after this event their allocation shall become secondary;

4. Administrations shall to the maximum extent possible seek to ensure that operational systems of the broadcasting-satellite (sound) service introduced into the band 2 570 - 2 620 MHz have characteristics which take into account the studies of the CCIR in preparation for a future WARC and with the understanding that these characteristics shall not limit a future Conference in establishing a flexible plan and associated procedures.

EUR/20/55
ADD

RESOLUTION No. CCC

Relating to Further Work by the CCIR Concerning the Broadcasting-Satellite (Sound) Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has made frequency allocations for the BSS (Sound) down links and associated complementary terrestrial services in the band 2 570 - 2 620 MHz, with an associated interim procedure to govern the introduction of this service;

b) that considerable further technical development is necessary for the introduction of BSS (Sound) in the frequency band mentioned above;

c) that systems in the broadcasting-satellite (sound) service could employ satellites in the geostationary-satellite orbit (GSO) or in other, non-geostationary orbits (non-GSO);

d) that the most urgent guidance required will relate to the means to be employed for coordinating and avoiding mutual harmful interference between non-GSO, and between GSO and non-GSO systems of the broadcasting-satellite (sound) service,

resolves

1. that the CCIR take an early note of this Resolution and afford the subject an appropriate place in its programme of work;

2. to invite administrations and the IFRB to participate in the work of the CCIR on this subject;

3. to invite administrations which introduce broadcasting-satellite (sound) systems to publish reports on their experience of such systems;

4. to invite the CCIR to publish periodical reports on the progress of their studies of this subject;

5. to invite the Secretary-General to bring this Resolution to the notice of the Administrative Council and the next full Plenipotentiary Conference with a view to including the subject in the agenda of an appropriate future conference.

EUR/20/59
ADD

RESOLUTION No. ABC

Relating to the Introduction of HDTV Systems of the Broadcasting-Satellite Service (BSS) in the Band 21.4 - 22.0 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has re-allocated the band 21.4 - 22.0 GHz to the broadcasting-satellite service to be implemented after 1 April 2005 and that by ADD 873A it is intended for use by the BSS for wide RF-band high-definition television (HDTV);

b) that until 1 April 2005 the existing services operating in the band 21.4 - 22.0 GHz in accordance with the Table of Frequency Allocations are therefore entitled to continue in operation without harmful interference from other services;

c) that nevertheless it is desirable to facilitate the introduction of experimental HDTV systems into this band before the year 2005 without affecting the continued operation of existing services;

d) that it also may be possible to introduce operational HDTV systems into this band before the year 2005 without affecting the continued operation of existing services;

e) that after 1 April 2005 the introduction of HDTV systems into this band must be regulated in a flexible and equitable manner until such time as a future WARC has adopted definitive provisions for this purpose;

f) that procedures are required for the three sets of circumstances envisaged in **considerings** c), d) and e) above,

resolves

1. to adopt the interim procedures contained in the Annex hereto;

2. to invite all Administrations to comply with the procedures;

3. to instruct the IFRB to apply the procedures;

4. to establish 1 April 1992 as the starting date for the application of the elements of these procedures which are relevant to the situation before 1 April 2005.

ANNEX TO RESOLUTION No. ABC

Interim Procedures for the Introduction of BSS (HDTV) Systems in the Band 21.4 - 22.0 GHz

Section I. General Provisions

1. It shall be understood that prior to 1 April 2005 all existing services in the band 21.4 - 22.0 GHz operating in accordance with the Table of Frequency Allocations shall be entitled to continue to operate. After that date they may continue to operate but only on the basis of No. 873A of the Radio Regulations; they shall neither cause harmful interference to BSS (HDTV) systems nor be entitled to claim protection from such systems. It shall be understood that prior to a future Conference the introduction of an operational BSS (HDTV) system into the band 21.4 - 22.0 GHz should be regulated by an interim procedure in a flexible and equitable manner and shall be ended when a new flexible procedure, to be adopted by this future Conference, comes into force.

Section II. Interim Procedure Relating to Experimental BSS (HDTV) Systems Introduced Before 1 April 2005

2. For the purpose of introducing experimental BSS (HDTV) systems in the band 21.4 - 22.0 GHz before 1 April 2005 under the provisions of Article 34 of the Radio Regulations, the procedures contained in Resolution No. 33 (WARC 1979) shall be applied.

Section III. Interim Procedure Relating to Operational BSS (HDTV) Systems Introduced Before 1 April 2005

3. For the purpose of introducing operational BSS (HDTV) systems in the band 21.4 - 22.0 GHz before 1 April 2005 the procedure contained in Article 14 of the Radio Regulations shall be applied, if the power flux-density at the Earth's surface produced by emissions from a space-station exceeds;

- [-115] dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

  or

- [-105] dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane;

  or

- values to be derived by linear interpolation between these limits for angles of arrival between 5 and 25 degrees above the horizontal plane.

If the power flux-density at the Earth's surface produced by emissions from a space-station does not exceed these limits, the procedures in Articles 11 and 13 of the Radio Regulations shall be applied.

Section IV. Interim Procedure Relating to BSS (HDTV) Systems Introduced After 1 April 2005

4. For the purpose of introducing and operating BSS (HDTV) systems in the band 21.4 - 22.0 GHz after 1 April 2005 and before a future Conference has taken decisions on definitive procedures the procedures in Articles 11 and 13 of the Radio Regulations shall be applied. In the application of these procedures BSS (HDTV) systems shall be treated as if they were networks of the fixed-satellite service.

5. For the purpose of this Section, BSS (HDTV) systems introduced under provisions of Section III of this Resolution shall be taken into account, however, those introduced under provisions of Section II shall be ignored.

6. Administrations shall to the maximum extent possible seek to ensure that operational BSS(HDTV) systems introduced into the band 21.4 - 22.0 GHz under Sections III or IV of this Resolution have characteristics which take into account the studies of the CCIR for the preparation of a future WARC (to conform with draft Resolution No. GGG) and with the understanding that these characteristics shall not limit a future Conference for a flexible planning procedure (to conform with draft Resolution No. FFF).

EUR/20/60
ADD

RESOLUTION No. FFF

Relating to the Future Adoption of Procedures to Ensure Flexibility in the Use of the Frequency Band Allocated to the Broadcasting-Satellite Service for Wide RF-Band High-Definition Television

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has added an allocation to the broadcasting-satellite service in the band 21.4 - 22.0 GHz for use by wide RF-band high-definition television (HDTV) and that the bands 27.5 - 30.0 GHz or, for countries with high rainfall rates, 17.3 - 18.1 GHz could be used for the associated feeder links. The possibility of using the band 18.1 - 18.6 GHz should also be investigated;

b) that considerable further technological development of wide RF-band HDTV is expected before such services can be introduced for general operational use;

c) that this conference has made interim provisions to be applied during the period before the year 2005 to regulate the introduction of BSS (HDTV) systems of an experimental and operational character;

d) that in the longer term regulatory provisions designed to ensure flexibility in the use of the BSS (HDTV) allocation will be necessary, having regard to the interests of all countries and the state of technical development of this new service,

resolves

1. to invite all administrations to study this matter, taking into account the formation of a Voluntary Group of Experts charged with simplifying the procedures of the Radio Regulations, and to develop their own proposals for future consideration;

2. to invite the Secretary-General to bring this Resolution to the attention of the Administrative Council and the next full Plenipotentiary Conference with a view to the inclusion of an appropriate item in the agenda of a future world administrative radio conference.

EUR/20/61
ADD

RESOLUTION No. GGG

Relating to Technical Developments and Standardization in the Broadcasting-Satellite Service for Wide RF-Band High-Definition Television

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) the actions taken by this present Conference in respect of Resolution No. 521 (Orb-88);

b) the contents of Resolution No. FFF adopted by the Conference;

c) the expectation of further rapid development in the area of wide RF-band high-definition television (HDTV) and in the related satellite technology;

d) the need for the adoption of standards to facilitate the operation of procedures designed to ensure flexibility in the use of the HDTV allocation and the associated allocation for feeder links;

e) the need for an early definition of the parameters and the criteria necessary to permit coordination between HDTV systems to ensure their interference-free operation under the interim regulatory procedures adopted by this conference,

resolves

1. to invite the CCIR to expedite its studies leading to the development and adoption of recommendations to meet the needs stated in **considerings** d) and e) above;

2. to invite administrations to contribute to the further work of the CCIR on this subject;

3. to invite the CCIR to report the results of their studies to administrations at least one year before the next conference authorized to deal with this matter is held;

4. to invite the Secretary-General to bring this Resolution to the attention of the Administrative Council and the next full Plenipotentiary Conference with a view to the results of the CCIR studies being taken into account when establishing the agenda of a future competent conference.

EUR/20/62
ADD

RESOLUTION No. HHH

Relating to Future Consideration of the Region 1 Parts of the Plan for the Broadcasting-Satellite Service in the Band 11.7 - 12.5 GHz in Appendix 30 and the Associated Feeder-Link Plan in Appendix 30A

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the agenda required the present Conference to consider frequency allocations for the broadcasting-satellite service and the associated feeder links for wide RF-band high-definition television (HDTV) as indicated in Resolution No. 521 (Orb-88);

b) that the WARC ORB-88 in Resolution No. 521, **resolves** 3, stated that "while the Plans for the 11.7 - 12.7 GHz band can already be used for certain types of HDTV, studies should be continued on the long range future suitability of these bands for HDTV without prejudice to the existing plans in this band";

c) that modernization of parts of these plans, which had their origins in the WARC-77, would be valuable in offering the prospects of more efficient utilization of the spectrum and orbit resources by taking into account the technological improvements (e.g. satellite antennas and receiver sensitivity) which could be used to increase the capacity of the plan,

resolves

1. to invite the CCIR to study the means to improve the flexibility of the Region 1 parts of the Plan for the broadcasting-satellite service in the band 11.7 - 12.5 GHz contained in Appendix 30 and the associated parts of the feeder-link plan contained in Appendix 30A;

2. to invite the CCIR in its studies to take into account the need to maintain the essential rights of each country;

3. to invite administrations to contribute to the studies of the CCIR and, also, to consider the need for a future competent conference to review and as necessary revise the relevant parts of Appendices 30 and 30A;

4. to invite the Secretary-General to bring this Resolution to the attention of the Administrative Council and the next full Plenipotentiary Conference with a view to the establishment of a conference to undertake the review and any necessary revision of the relevant parts of Appendices 30 and 30A.

EUR/20/118
ADD

RESOLUTION No. EEE

Relating to the Introduction of the Mobile Service in the Frequency Bands 2 025 - 2 110 and 2 200 - 2 290 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) the changes in the allocations to space services made by this Conference in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz;

b) the changes in the allocations to the mobile service and the new technical limitations introduced for this service into Article 27 of the Radio Regulations in these bands;

c) the possibility of technical improvements in the space services concerned which could lead to more efficient usage of the spectrum,

resolves

1. that a review of the present usage of the frequency bands 2 025- 2 110 MHz and 2 200 - 2 290 MHz is necessary, with the idea of moving when practicable some assignments of the space services to bands above 20 GHz and reducing the allocations to the remaining space services, thus minimizing restrictions on the use of the above mentioned bands by the mobile service;

2. that the next competent WARC should consider this matter, taking into account the results of the relevant CCIR studies, and in particular should add the necessary provisions to the Radio Regulations so that no new 2 GHz assignments would be permitted after 1 January 2000 for those space services which should be accommodated in the bands above 20 GHz; provisions should also be added to ensure that all new assignments to these space services remaining in the 2 GHz bands are confined within reduced allocations,

invites the CCIR

1. to carry out the review mentioned in **resolves** 1 above;

2. to conduct the necessary studies on the evolution of space and mobile services and on compatibility between these services;

3. eventually to indicate to the next competent conference the necessary sharing criteria between these services,

urges the administrations

to participate actively in these studies,

invites the Secretary-General

to bring this Resolution to the attention of the next ordinary Plenipotentiary Conference with a view to including this subject in the agenda of the next competent conference.

EUR/20/131
ADD

RESOLUTION No. RRR

Relating to the Allocation of Frequencies to the Fixed-Satellite Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that as a consequence of No. 22 of the Radio Regulations which defines the fixed-satellite service, the frequency bands allocated to this service may by used by feeder links of other services;

b) that the broadcasting-satellite service and the mobile-satellite service are among the other services requiring feeder links;

c) that this present Conference has made additional allocations to these other services which will in consequence impose demands for more feeder links to be accommodated in the bands allocated to the fixed-satellite service;

d) that this Conference has been unable to increase the frequency allocations to the fixed-satellite service, specifically in the band 14.5 - 14.8 GHz;

e) that there is an imbalance in the present up-link and down-link allocations in the vicinity of 14/11 GHz which will need to be rectified by increasing the up-link allocations,

recognizing

f) that studies should be made of the longer term spectrum requirements for the feeder links of other services;

g) that this study should be undertaken by the CCIR and that a report on the outcome should be submitted in time for consideration and appropriate action by a future competent conference,

resolves

1. to invite the CCIR to conduct the necessary studies and to report the outcome at least one year before the next competent conference;

2. to invite administrations and other organizations interested in these radio services to participate in the work of the CCIR;

3. to invite the Secretary-General to bring this Resolution to the attention of the Administrative Council and the next full Plenipotentiary Conference with a view to including the subject in the agenda of a future World Administrative Radio Conference.

D/21/1
ADD

DRAFT RESOLUTION No. [D/1]

Relating to the convening of a planning conference for digital sound broadcasting in the band 87.5 - 108 MHz for Region 1 and certain countries concerned in Region 3

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that, due to technical progress, a modern digital alternative to FM sound broadcasting is presently being made available;

b) that such a digital sound broadcasting system will offer a considerably higher sound quality as well as additional system characteristics which are not supported by the present FM broadcasting system;

c) that digital sound broadcasting will, in addition to the properties mentioned above, have a higher frequency efficiency than conventional FM sound broadcasting;

d) that, for the reasons stated above, in future FM sound broadcasting now operational in the frequency band 87.5 - 108 MHz should be replaced by a digital sound broadcasting system;

e) that the Regional Administrative Conference for the Planning of VHF Sound Broadcasting (Region 1 and part of Region 3, Geneva, 1984) adopted a plan which is presently in force and which is based on conventional FM systems;

f) that digital sound broadcasting is not compatible with FM sound broadcasting;

g) that the plan mentioned in **considering** e) above will have to be substituted by a new plan, suitable for digital sound broadcasting;

h) that several countries in Region 3 with land boundaries adjoining Region 1 also use part of the band 87.5 - 108 MHz for the broadcasting service;

j) that several European countries are considering the implementation of digital sound broadcasting on an interim basis outside of the band 87.5 - 108 MHz;

k) that a plan for digital sound broadcasting shall allow for a gradual implementation of the new system because not all countries will be in a position to implement digital sound broadcasting at the same early date;

l) that part of the band 87.5 - 108 MHz could possibly be reserved for the continued operation of FM sound broadcasting for an indefinite period of time;

m) that this new plan should in no way affect existing or planned assignments to television stations in the band 87.5 - 100 MHz made in accordance with the Regional Agreement (Stockholm, 1961);

n) that radio equipment used by aircraft for automatic landing and direction finding purposes, which operates in the adjacent band 108 - 117.975 MHz, may be subject to harmful interference from nearby broadcasting stations operating in the band 87.5 - 108 MHz if the frequencies of the respective stations are not selected with care and that such interference can put human life at risk,

resolves

1. that a regional conference shall be convened before [31 December 1996] to draw up an agreement for Region 1 and the countries concerned in Region 3 and an associated plan for digital sound broadcasting in part or the whole of the band 87.5 - 108 MHz for Region 1 and for parts of Afghanistan and Iran which are contiguous with Region 1;

2. that this conference shall take place in two sessions:

- the first session will establish the technical bases for the preparation of the plan, including mutual criteria for sharing between digital sound broadcasting and other services, including television broadcasting, operating within the band 87.5 - 108 MHz;
- the second session, preferably to be separated from the first session by a period of more than six months but not more than twelve months, will draw up the agreement and associated plan;

3. that countries concerned in Region 3 must be given the opportunity to participate in the conference,

requests the CCIR

to study, as a matter of urgency, the necessary technical bases required for planning and determining the protection criteria between digital sound broadcasting stations and television broadcasting stations and between digital sound broadcasting stations and FM sound broadcasting stations,

invites the Secretary-General

to bring this Resolution to the attention of the Administrative Council at the next full Plenipotentiary Conference with the view to fix the dates and agenda for this conference,

calls upon administrations

to bear in mind the problem of compatibility with radionavigation systems operating in the adjacent band when planning the use of the band 87.5 - 108 MHz.

CAN/23/149
ADD

RESOLUTION No. ZZZ

Relating to the Pairing of Bands Below 3 GHz Allocated to the Mobile Satellite Services on a Primary Basis

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that a number of new Earth-to-space and space-to-Earth frequency bands have been allocated to the mobile-satellite services on a primary basis resulting from decisions taken at the WARC-92;

b) that, even with the allocation of these additional bands, spectrum and orbit conservation techniques will have to be used to their fullest possible extent if all existing and planned networks are brought into service;

c) that one such conservation technique is to ensure that bands that include directionality are available for use in a given area to the maximum extent possible by associating use of an Earth-to-space band with a specific companion space-to-Earth band;

d) that Article 8 does not include such a mechanism of pairing space-to-Earth bands with Earth-to-space bands,

resolves

1. that among the frequency bands allocated to the mobile-satellite services for which directionality is specified, specific combinations of Earth-to-space and space-to-Earth bands shall be used;

2. that in carrying out **resolves** 1, the following pairing of bands shall be used:

2.1	1 515	-	1 559 MHz	(space-to-Earth)
	1 616.5	-	1 660.5 MHz	(Earth-to-space)
2.2	1 960	-	1 990 MHz	(space-to-Earth)
	2 140	-	2 170 MHz	(Earth-to-space)
2.3	2 483.5	-	2 535 MHz	(space-to-Earth)
	2 638.5	-	2 690 MHz	(Earth-to-space)

3. that the bands 1 613.8 - 1 626.5 MHz and 1 960 - 1 990 MHz are also available for bi-directional use.

J/27/82
ADD

RESOLUTION No. J1

Implementation of the Changes in Allocations in the Bands Between 4 000 - 20 000 kHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that parts of frequency bands between 4 000 kHz and 20 000 kHz that were previously allocated to the fixed service or the fixed and mobile services have been re-allocated to the broadcasting service;

b) that existing fixed and mobile assignments in the bands 5 840 - 5 950 kHz, 7 300 - 7 600 kHz, 9 400 - 9 500 kHz, 9 900 - 9 995 kHz, 11 570 - 11 650 kHz, 12 050 - 12 110 kHz, 13 570 - 13 600 kHz, 13 800 - 13 900 kHz, 15 600 - 15 995 kHz and 17 520 - 17 550 kHz (termed "re-allocated bands") must be removed progressively from those re-allocated bands to make way for the broadcasting service;

c) that the assignments to be removed, termed "displaced assignments", must be re-accommodated in the re-accommodating bands,

recognizing

the difficulties facing administrations and the IFRB during the period of transition from the previous allocations to those made by this Conference,

resolves

1. that existing fixed and mobile assignments in the re-allocated bands shall be re-accommodated in the bands 4 438 - 4 650 kHz, 4 750 - 4 995 kHz, 5 005 - 5 450 kHz, 5 730 - 5 840 kHz, 6 765 - 7 000 kHz, 7 600 - 8 100 kHz, 9 040 - 9 400 kHz, 10 150 - 11 175 kHz, 11 400 - 11 570 kHz, 12 110 - 12 230 kHz, 13 410 - 13 570 kHz, 13 900 - 14 000 kHz, 14 350 - 14 990 kHz, 15 995 - 16 360 kHz, 17 410 - 17 520 kHz, 18 030 - 18 052 kHz, 18 168 - 18 780 kHz, 18 900 - 19 680 kHz and 19 800 - 19 990 KHz (termed "re-accommodating band");

2. that the transitional procedure in Annex A to this Resolution shall be used for the purpose of ensuring an orderly and equitable implementation of the changeover from the previous allocations to those made by this Conference;

3. that the provisions of Article 12 concerning the examination and recording in the Master Register of assignments in the re-allocated bands and the re-accommodating bands shall be suspended from 4 May 1992 to 30 September 1994;

4. that the interim procedure in Annex B to this Resolution shall be used for the purpose of dealing with any urgent new frequency assignments in the relevant bands during the period of suspension of the provisions of Article 12 as specified in **resolves** 3;

5. that the review procedure in Annex C to this Resolution shall be used for the purpose of examining any urgent new frequency assignments notified during the period of suspension of the provisions of Article 12 as specified in **resolves** 3,

invites administrations

to cooperate by not submitting notices for the assignments in the relevant bands during the period of suspension of the provisions of Article 12 as specified in **resolves** 3, except for urgent new assignments to be dealt with under the interim procedure annexed to this Resolution,

requests the IFRB

not to examine any notices in the relevant bands under Article 12 during the period of suspension of the provisions of that article as specified in **resolves** 3, other than those notices requesting deletions of existing assignments.

ANNEX A TO RESOLUTION No. J1

Transitional Procedure for the Selection and Approval of Replacement Assignments

PART I - PREPARATORY PHASE

Section I. Preparation and Publication by the IFRB of Consolidated Proposals for Replacement Assignments

1. For the purpose of this Resolution the term "displaced assignment" means a frequency assignment to a station in the fixed service or the mobile service in the part of the bands re-allocated from the fixed service or the fixed and mobile services to the broadcasting service for which a replacement assignment shall be found in accordance with this Resolution.

2. The Board shall prepare consolidated proposals for replacements for all assignments listed in the Master Register in the bands between 4 000 kHz and 20 000 kHz which the World Administrative Radio Conference, Malaga-Torremolinos, 1992, has re-allocated from the fixed service or the fixed and mobile services to the broadcasting service.

3. The Board, on 1 April 1992, shall insert in Column 2d of all assignments in the Master Register in the re-allocated band and the re-accommodating band, the common date of 1 April 1992 for class of operation A of the fixed service and for the mobile service, the date of 2 April 1992 for class of operation B and C of the fixed service, and the date of 5 April 1992 for the stations specified in Radio Regulations 342. The date previously listed in Column 2d shall be inserted in Remarks Column with the remarks which mean that the new date is the result of the procedure specified in this Resolution.

4. The displaced assignment shall be treated in the order of the revised date recorded in Column 2d. Furthermore, all displaced assignments which have the same revised date shall be treated in the following order:

1) assignments for national use;

2) assignments for international use.

In the application of this provision, the displaced assignments shall be processed in batches without any priority being applied to the assignments of any administration.

5. The displaced assignments of class of operation C shall not be treated until all displaced assignments of class of operation A or B have been satisfied.

6. Displaced assignments of class of operation C shall be as far as possible evenly distributed throughout the bands that continue to be allocated to the fixed service.

7. The Board, on 1 October 1993, shall send to each administration a document listing all the assignments concerning that administration, identifying those that were recorded in the Master Register, and those proposed as replacements.

Section II. Examination and Approval of Proposed Assignments

8. Each administration, upon receipt of the document specified in paragraph 7, shall acknowledge receipt and shall then examine the proposed replacement assignments contained therein with regard to their acceptability, following which the administration shall advise the Board as soon as possible:

- of its agreement, or
- which of the proposed assignments it finds unacceptable.

In the latter case, the administration shall inform the Board, as quickly as possible, of its reasons therefor.

9. The Board shall examine the responses under paragraph 8 and shall try, preferably by applying small adjustments, to satisfy the administration concerned with respect to the proposed assignments it found unacceptable. The Board shall do so in the following way:

- the Board shall collect all responses received under paragraph 8 within six months after 1 October 1993, and then process them together and without any priority being applied to the reply of any administration, and then
- the Board shall collect all responses received under paragraph 8 in the period from six months to nine months after 1 October 1993, and then process this second batch in the same manner as described above for the first batch.

10. The procedure described in this section shall terminate on 1 July 1994.

Section III. Subsequent Action by the Board

11. The Board, on termination of the procedure prescribed in Sections I and II of this annex, shall insert in the Master Register all replacement assignments that have been agreed by administrations, with annotations to indicate:

- that they shall have the same common status as the undisplaced assignments as provided for in paragraph 3, and
- their provisional nature in accordance with No. 1311.

12. The Board shall, for assignments mentioned in paragraph 11, insert in Column 2d of the Master Register the appropriate date in accordance with paragraph 3.

13. The Board shall then publish all replacement assignments made in accordance with the procedure prescribed in Part I of this Annex.

14. The Board, on publication of the supplements prescribed in paragraph 13, shall inform by telegram any administration having outstanding displaced assignments of class of operation A which have not been satisfied.

Section IV. Implementation of Article 12

15. As from 1 October 1994, the provisions of Article 12 shall apply to the re-accommodating bands.

16. Following that date, an administration, having been informed by the Board under paragraph 14 that certain of its displaced assignments have not been replaced under this transitional procedure, shall be free to select new assignments taking into account the assignments recorded in the Master Register under paragraph 11, and shall submit new notices to the Board in accordance with Article 12.

PART II - TRANSFER PHASE

Section V. Subsequent Action by Administrations

17. An administration, having received and accepted replacements for its recorded assignments that were displaced by decisions of the World Administrative Radio Conference, Malaga-Torremolinos, 1992, shall effect the changeover from the old to the new assignment not later than 1 January 2000.

18. An administration shall promptly inform the Board of the date on which the changeover from an old to a new replacement take place. The Board shall remove from that replacement assignment the special symbol placed in accordance with No. 1311 (see paragraph 11) in the Master Register, thus indicating that it has been implemented, and shall enter the date of the changeover in Column 2c. The date in Column 2c, originally recorded with the displaced assignment, shall be entered in the Remarks Column.

19. An administration, having effected the change to a replacement assignment, and having experienced harmful interference or having received a complaint of harmful interference involving another assignment:

a) shall make every effort with any other administration concerned to resolve the problem, and, if unsuccessful,

b) may select and submit to the Board an alternative replacement assignment*.

20. The procedure under paragraph 19 shall not be applied to the stations of the class of operation C. An administration, having received a complaint of harmful interference to the stations of the class of operation C from a replaced assignment of another class of station, or having experienced harmful interference for the replaced assignment of a class of operation C, may select and submit to the Board an alternative replacement assignment*.

21. Following a favourable finding by the Board on the replacement assignment selected under paragraph 19 or 20, the administration shall be entitled to have inserted in Column 2d of the Master Register, against that assignment, the common date 1 April 1992 for class of operation A and 2 April 1992 for class of operation B.

Section VI. Relevance of Dates in the Master Register

22. The relevance of the dates related to displaced assignments is referred to in Article 12.

---

* On request from an administration, the Board shall assist in the application of Provision 19 or 20.

ANNEX B TO RESOLUTION No. J1

Interim Procedure Concerning Notices Relating to Assignments in the Re-Accommodating Bands

1. During the period between 1 April 1992 and 30 September 1994, an administration, having an urgent requirement which cannot possible be delayed until the end of that period, may notify a new assignment in the re-accommodating bands. Such notices shall contain the information listed in the appropriate Section of Appendix 1.

2. An administration submitting a notice in accordance with paragraph 1 above shall be deemed to accept that its assignment:

a) shall be of an interim nature;

b) shall be subject to the review procedure contained in Annex C to this Resolution and shall then be modified if necessary to conform to the results of that review, and

c) shall not cause harmful interference to any assignments recorded in the Master Register that are entitled to protection.

3. The Board, upon receipt of a complete notice under paragraph 1, shall examine it with respect to No. 1240 and shall return to the notifying administration any notice not complying with that provision together with the reasons for this action.

4. Notices in conformity with No. 1240 shall be included in a special section of the weekly circular, where they shall be annotated to show that they are subjected to both the interim and review procedures contained in this annex and Annex C to this Resolution respectively. Assignments notified under No. 1218 shall additionally be annotated to that effect.

5. The Board shall compile and maintain a Special List of all notices dealt with under paragraph 4 until the end of the date of the review procedure specified in Annex C to this Resolution.

ANNEX C TO RESOLUTION No. J1

Review Procedure Concerning Notices Relating to Assignments for Stations of the Fixed Service and the Mobile Service in the Re-Accommodating Bands

1. The Board, commencing on 1 October 1994, shall examine under the appropriate provisions of Article 12 all interim assignments contained in the Special List compiled in accordance with Annex B to this Resolution with a view to recording them in the Master Register.

2. For the purposes of this examination, interim assignments shall be processed without priority being given to the assignments of any administration; however, assignments notified under No. 1218 shall be treated first.

3. All interim assignments shall be examined by the Board with respect to the probability of harmful interference from or to assignments entered in the Master Register on a provisional basis as a result of the application of Annex A to this Resolution. Depending on the findings of the board subsequent to this examination, further action shall be as follows:

4. Favourable finding with respect to paragraph 3 above.

4.1 The interim assignments notified under No. 1218 shall be recorded in the Master Register, and the date 1 October 1994 shall be entered in Column 2d.

4.2 The other interim assignments shall be examined under No. 1242 with respect to frequency assignments recorded in the Master Register at the date of commencement of the interim procedure described in Annex B to the present Resolution. Depending on the findings of the Board, the appropriate provisions of Article 12 shall be applied. When such assignments are to be recorded, the date 1 October 1994 shall be entered in Column 2d.

5. Unfavourable findings with respect to paragraph 3 above. The Board shall, having regard to the class of operation of assignments and the contents of the reconstructed Master Register, propose suitable replacement assignments and enter them on a provision basis with the date of 1 October 1994 in Column 2d.

6. The Board shall, upon completion of this review, compile a Temporary List of recorded and proposed replacement assignments and publish it as an annex to its weekly circular. A copy of this list, together with a national extract thereof, shall be sent to each administration having interim assignments in the Special List mentioned in paragraph 1 of this Annex.

7. An administration, upon receipt of the list mentioned in paragraph 6, shall consider the proposed replacements for its interim assignments and shall, within five months of the date of publication of the Temporary List, inform the Board whether the proposed assignments are acceptable, the administration shall give the reasons therefor.

8. Upon acceptance of a proposed assignment, the administration shall indicate the latest date of bringing into use. This date shall be within one year of the publication of the Temporary List.

9. The Board shall examine the replies under paragraph 7 and shall try, if necessary by applying small adjustments, to satisfy the administration concerned with respect to the proposed assignments it found unacceptable and propose alternative frequencies. Simultaneously, the Board shall replace the appropriate provisional entry by the new proposed frequency.

10. If, on 1 October 1995, provisional entries made under paragraphs 5 and 9 have not been accepted by the administrations concerned, the Board shall replace these entries by the corresponding interim assignments appropriately annotated. As from that date neither the Special List not the Temporary List shall be taken into consideration.

11. An administration, having an interim assignment for which no acceptable replacement assignment has been found, shall be free to select a new replacement and shall forward a new notice under the provisions of Article 12. Upon request from an administration, the board shall assist in the application of this provision.

J/27/83
ADD

RESOLUTION No. J2

Relating to Frequency use for the Meteorological-Satellite and the Earth Exploration-Satellite Services in the Band 401 - 403 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many stations of the meteorological-satellite and the earth exploration-satellite services in the band 401 - 403 MHz are operating, and the importance of the services is increasing;

b) that the meteorological-satellite and the earth exploration-satellite services in the band 401 - 403 MHz are secondary to other services, and the stations of these services cannot claim protection from harmful interference from stations of other stations,

resolves

that the next competent World Administrative Radio Conference should consider allocation to the meteorological-satellite service and the earth exploration-satellite service in the band 401 - 403 MHz with the intent of upgrading the allocation,

invites the Administrative Council

to take the necessary action to place this matter on the agenda of the next competent World Administrative Radio Conference.

E/32/1
ADD

RESOLUTION

Allocation of a frequency band to the terrestrial digital sound broadcasting service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that advances in technology have made available digital sound broadcasting systems of high quality;

b) that VHF bands are particularly suitable for terrestrial digital sound broadcasting systems;

c) that the bands 87.5 - 108 MHz in Region 1, 88 - 108 MHz in Region 2 and 87 - 108 MHz in Region 3 are generally much used for the high-powered FM sound broadcasting service;

d) that the band 108 - 117.975 MHz is allocated worldwide to the low-powered aeronautical radionavigation service, related to human safety and exposed to interference by the broadcasting service using the adjacent band below it;

e) that digital sound broadcasting systems ensure more efficient use of the spectrum, require lower effective radiated power, and cause less interference than FM broadcasting systems;

f) that there are other VHF bands allocated to the television broadcasting service, which have already been scheduled for withdrawal from that application in some countries,

resolves

to invite the Administrative Council to include the allocation of an appropriate VHF band for terrestrial digital sound broadcasting systems on the agenda of a forthcoming competent conference,

invites the CCIR

to undertake the relevant studies to determine the required technical parameters, propagation characteristics and compatibility criteria for terrestrial digital sound broadcasting systems,

invites administrations

to cooperate with the CCIR in this respect,

instructs the Secretary-General

to bring this Resolution to the attention of a forthcoming session of the Administrative Council.

E/25/12
SUP

RECOMMENDATION No. 511 (HFBC-87)

USA/12/192
ADD

RECOMMENDATION No. ZZZ

Relating to Interim Implementation of Wind Profiler Radars at Frequencies Near 400 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations plan to deploy wind profiler radars at sites dispersed over large geographical areas in order to improve meteorological predications, support studies of the climate and enhance the safety of navigation;

b) that the CCIR is conducting studies under Questions [AB/2] and 65/8 to determine the characteristics and requirements of wind profiler radars in order to make Recommendations as to suitable frequency bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected;

c) that frequencies in the 400 MHz region are preferred for measurements of winds at altitudes that are of the greatest general interest, but that implementation of wind profiler radars in the 402 - 406 MHz band poses an unacceptable risk of interference to the COSPAS-SARSAT system for distress alerting;

d) that in relation to the need to protect satellite receivers, operation of wind profiler radars in accordance with No. 342 requires special attention to the cumulative effects of all such operations in the large areas that are within view of the satellites;

e) Resolution AAA,

noting

that some administrations have found that wind profiler operations near [XXX MHz] will be compatible with existing systems,

recommends

that administrations consider frequencies near [XXX MHz] in making assignments to wind profiler radars until such time as the CCIR develops applicable Recommendations.

EUR/20/35
ADD

RECOMMENDATION No. WWW

Relating to the Elimination of HF Broadcasting on Frequencies Outside the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that as a result of the inadequate amount of HF spectrum allocated to the broadcasting service there is a consequential and increasing number of HF broadcasting transmitters operating on frequencies outside the bands allocated to the broadcasting service;

b) that the unregulated sharing of HF bands by broadcasting and other services generally does not represent an efficient use of the frequency spectrum;

c) that such unregulated sharing has led to harmful interference;

d) that this present Conference has allocated additional spectrum for the broadcasting service in the HF bands,

recommends

that administrations should take all practicable steps to eliminate HF broadcasting outside the HF bands allocated to the broadcasting service.

EUR/20/36
ADD

RECOMMENDATION No. XXX

Relating to the Use of the Minimum Number of Frequencies for a Requirement of the Broadcasting Service in the High Frequency Bands

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that almost all of the HF bands allocated exclusively to the broadcasting service are severely congested;

b) that the levels of congestion in these HF bands is increasing;

c) that it is therefore necessary to make efficient use of the HF bands allocated to the broadcasting service;

d) that Recommendation No. 516 (HFBC-87) considered "that the use of synchronized transmitters, where technically appropriate, is an efficient means of economizing frequency spectrum",

recognizing

e) that there are cases in which the reliability of a service needs to be improved by the addition of one or two frequencies in separate bands because the service involves:

1) difficult propagation paths, for example, those which are very long, those which pass through the auroral zone or those for which the propagation conditions change very rapidly;

2) a service area which extends radially from the transmitter for too large a distance to permit a satisfactory service to be achieved by the use of a single frequency;

3) the use of highly directional antennas to maintain satisfactory signal-to-noise ratios, thereby limiting the geographical area covered by the station concerned,

recommends

1. that for a given broadcasting requirement, wherever possible, only one frequency should be used in accordance with Nos. 339 and 1743 of the Radio Regulations;

2. that the use of more than one frequency in a given band should, wherever possible, be avoided.

EUR/20/37
ADD

RECOMMENDATION No. YYY

Relating to the Use of the Minimum Radiated Power Necessary to Achieve the Desired Standard of Service for a Given Broadcasting Requirement in the HF Bands

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the radiated power of a station is a function of both the transmitter power and the transmitting antenna characteristics;

b) that the use of a transmitting antenna with suitable main lobe radiation characteristics provides optimum coverage of the required service area;

c) that the use of a transmitting antenna having low levels of radiation outside the main lobe reduces interference to other services;

d) that the use of an antenna achieving the objectives of b) and c) above may avoid the need for excessive transmitter power while achieving the desired standard of service for a given broadcasting requirement in the appropriate HF bands,

recommends

the use for the broadcasting service in the HF bands of the optimum antenna and the minimum practicable transmitter power which together provide the desired standard of service throughout the required service area.

EUR/20/38
ADD

RECOMMENDATION No. ZZZ

Relating to the Accelerated Introduction of Single-Sideband Emissions and Possible Advancement of the Date for Cessation of the Use of Double-Sideband Emissions in the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the use of single sideband (SSB) instead of double sideband (DSB) modulation techniques would lead to improved spectrum utilization but would not alone overcome the present severe congestion of the HF bands allocated to the broadcasting service;

b) that the WARC HFBC-87 in Resolution No. 517 called for the introduction of SSB transmissions in the HF bands allocated exclusively to the broadcasting service with the characteristics specified in Appendix 45 to the Radio Regulations;

c) that in accordance with Recommendation No. 515 (HFBC-87) new HF broadcasting transmitters installed after 31 December 1990 should as far as possible be capable of operating either in both modes, SSB and DSB, or in the SSB mode alone;

d) that in accordance with Recommendation No. 517 (HFBC-87) there is a need, prior to the final confirmation of the date for the cessation of DSB transmissions in the HF broadcasting service, for a competent WARC to consider the worldwide distribution of SSB transmitters and synchronous demodulator receivers;

e) that the new extension bands allocated by this present WARC for HF broadcasting should be reserved only for SSB operations,

recommends

1. that administrations should encourage the substitution of SSB for DSB in all the HF bands allocated exclusively to the broadcasting service so that the next competent WARC may be able to advance the date of 31 December 2015 for the cessation of DSB emissions;

2. that the Administrative Council should be invited to place this Recommendation on the agenda for the next competent WARC.

EUR/20/129
ADD

RECOMMENDATION No. QQQ

Measures to Facilitate Utilization of Generic Allocations for the Mobile-Satellite Service Using Dynamic Variable Partitioning Techniques

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that some measures to facilitate the sharing of frequency bands allocated to the mobile-satellite service could lead to overall savings in implementation costs and reductions in spectrum requirements;

b) that some spectrum sharing options would require considerably planning, coordination and validation to ensure that the high reliability, integrity and priority required for the aeronautical mobile-satellite (R) service and maritime mobile-satellite service communications;

c) that the CCIR, in its report to this Conference, requests sufficient time to further investigate, specify and validate the technical and operational conditions under which dynamic variable partitioning and spectrum sharing could be implemented; such partitioning may be one of the measures to facilitate the utilisation of generic mobile-satellite allocations,

recommends

1. that, depending upon the outcome of studies to be made by the CCIR regarding **considering** c) above, particularly on safety matters, the next competent World Administrative Radio Conference should consider changing the separate allocations to the land, maritime and aeronautical mobile-satellite services into a generic mobile-satellite allocation;

2. that if dynamic variable partitioning and spectrum sharing are introduced, methods must be found to protect the services provided by existing and planned systems in these bands,

invites the CCIR

to continue its studies of these matters,

invites Administrations to

take note of this Recommendation and to participate in these studies;

instructs the Secretary-General

to bring this Recommendation to the attention of ICAO, IMO, INMARSAT and other organizations having an interest in this subject.

J/27/84
ADD

RECOMMENDATION No. JJ

Relating to Frequency use for the Space Research, the Space Operation and the Earth Exploration-Satellite Services Under 3 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

recognizing

a) that the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz had been allocated to the space research, the space operation and the earth exploration-satellite services, subject to the provisions of Article 14 of the Radio Regulations;

b) that WARC ORB-88 recognized that there is increasing use of these bands by the space research and the space operation services, leading to increased coordination difficulties in view of the provisions of Article 14,

considering

a) 2 070 - 2 110 MHz (Earth-to-space) and 2 250 - 2 290 MHz (space-to-Earth) frequency bands have been allocated on a primary basis to the space research, the space operation and the earth exploration-satellite services in this Conference;

b) WARC ORB-88 requested for CCIR to study the sharing criteria,

invites the Administrations

to study future allocation to the space research, the space operation and the earth exploration-satellite services in 2 025 - 2 070 MHz and 2 200 - 2 250 MHz bands which are subject to the provisions of Article 14,

instructs the Administrative Council

to place this matter on the agenda of the next competent World Administrative Radio Conference.

The following proposals also concern the frequency bands

dealt with in this documents:

ZWE/6/1

Zimbabwe supports the consideration of definitions for certain new space applications and review of relevant provisions of Article 1.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/2-E
3 February 1992

Draft

Note by the Secretary-General

STRUCTURE OF THE WORLD ADMINISTRATIVE RADIO CONFERENCE FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM (WARC-92) (Málaga-Torremolinos, 1992)

The agenda of the Conference appears in Resolution 995 adopted by the Administrative Council at its 45th Session (Geneva, 1990).

Bearing in mind Nos. 464 to 479 inclusive of the International Telecommunication Convention, Nairobi, 1982, the following committees with their terms of reference are suggested. These terms of reference have been drawn up within the framework of the Convention, the Conference agenda and in the light of experience at previous conferences.

Committee 1 - Steering Committee

Terms of Reference :

To coordinate all matters connected with the smooth execution of work and to plan the order and number of meetings, avoiding overlapping wherever possible in view of the limited number of members of some delegations (Nos. 468 and 469 of the International Telecommunication Convention, Nairobi, 1982).

Committee 2 - Credentials Committee

Terms of Reference :

To verify the credentials of delegations and to report on its conclusions to the Plenary Meeting within the time specified by the latter (Nos. 390 and 471 of the International Telecommunication Convention, Nairobi, 1982).

Committee 3 - Budget Control Committee

Terms of Reference :

1. To determine the organization and the facilities available to the delegates, to examine and approve the accounts of expenditure incurred throughout the duration of the Conference and to report to the Plenary Meeting the estimated total expenditure of the Conference as well as the estimated costs entailed by the execution of the decisions of the Conference (Nos. 476 to 479 inclusive of the International Telecommunication Convention, Nairobi, 1982 and Nairobi Resolution 48).

2. To consider and identify the financial implications of the decisions of the Conference and to prepare an appropriate statement thereon to the Administrative Council (agenda item 2.10) in accordance with Article 80 of the International Telecommunication Convention and Resolution 48 of the Plenipotentiary Conference (Nairobi, 1982).

Committee 4 - Frequency Allocation Committee

Terms of Reference :

On the basis of proposals by Administrations and taking account of the Reports by the IFRB and CCIR as well as the relevant conclusions by the WG to the Plenary and with due regard to the services to which the radiospectrum is already allocated:

1. To review and revise, as necessary, the provisions of Article 8 of the Radio Regulations, in accordance with agenda items 2.2 (2.2.1-2.2.8) and 2.6.

2. To consider and take action with regard to :

- Resolutions **208** (Mob-87)
  520 (Orb-88)
  521 (Orb-88)
  708 (Mob-87)

- Recommendations **205** (Mob-87)
  408 (Mob-87)
  511 (HFBC-87)
  716 (Orb-88)

Committee 5 - Regulatory Committee

Terms of Reference :

On the basis of proposals by Administrations and taking into account the relevant conclusions of the Frequency Allocation Committee and WG to the Plenary, as well as the Reports by the IFRB and CCIR,

1. To review and revise, as necessary, the regulatory procedures pertaining to various radio services and associated frequency bands in accordance with agenda items 2.2 (2.2.1-2.2.8) and 2.6.

2. To consider minimum modifications to Article 12 of the Radio Regulations as a result of actions taken with regard to Appendix 26 as indicated in Resolution 9* (item 2.4).

3. To consider the provisions of Articles 55(Rev.) and 56(Rev.) of the Radio Regulations as indicated in Resolution 7* (item 2.3).

---

* Plenipotentiary Conference of Nice, 1989.

4. To review the relevant provisions of Article 1 of the Radio Regulations and consider definitions for certain new space applications (item 2.1).

5. To consider appropriate action, in light of the decisions of the Conference relating to definitions in accordance with Resolution 11* (item 2.5).

Working Group to the Plenary

Terms of Reference :

On the basis of proposals by Administrations and taking into account the CCIR Report:

1. To consider problems associated with the use of the frequency bands in the range 401 - 403 MHz by the meteorological satellite and earth exploration satellite services, with the view to recommend their consideration by the next competent administrative radio conference (item 2.8).

2. To develop new Recommendations and Resolutions in relation to the agenda of the Conference, including Meteorological aids service in frequency bands below 1000 MHz and present allocations to space services above 20 GHz which were not placed on this agenda (item 2.7).

3. To consider, revise as necessary, and take appropriate action upon the relevant Recommendations and Resolutions (item 2.9.1, item 2.9.2).

4. To deal with any technical questions that may result from the work of the Frequency Allocation Committee and the Regulatory Committee.

Committee 6 - Editorial Committee

Terms of Reference :

To perfect the form of the texts to be included in the Final Acts of the Conference, without altering the sense, for submission to the Plenary Meeting (Nos. 473 and 474 of the International Telecommunication Convention, Nairobi, 1982).

---

* Plenipotentiary Conference of Nice, 1989.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/3-E
3 February 1992

HEADS OF DELEGATION

DRAFT AGENDA OF THE
FIRST PLENARY MEETING
Monday, 3 February 1992, at 1500 hrs
(Room Malaga)

		Document
1.	Approval of the agenda	-
2.	Election of the Chairman of the Conference	-
3.	Address by the Chairman	-
4.	Election of the Vice-Chairmen of the Conference	-
5.	Conference Structure	DT/2
6.	Election of the Chairmen and Vice-Chairmen of the Committees	-
7.	Composition of the Conference Secretariat	-
8.	Allocation of documents to Committees	DT/4
9.	Requests for participation received from international organizations	43
10.	Date by which the Credentials Committee must submit its conclusions	-
11.	Working hours of the meetings of the Conference	-
12.	Financial responsibilities of administrative conferences	42
13.	Other business	-

Pekka TARJANNE
Secretary-General

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CAMR-92 CAMR CHARGÉE D'ÉTUDIER LES ATTRIBUTIONS DE FRÉQUENCES DANS CERTAINES PARTIES DU SPECTRE

MÁLAGA-TORREMOLINOS, FÉVRIER/MARS 1992

Document DT/4-F/E/S
28 janvier 1992
Original: anglais

SEANCE PLENIERE /
PLENARY MEETING /
SESION PLENARIA

Projet / Draft / Proyecto

Note du Secrétaire général / Note by the Secretary-General /
Nota del Secretario General

ATTRIBUTION DES DOCUMENTS / ALLOCATION OF DOCUMENTS /
ATRIBUCION DE LOS DOCUMENTOS

PL -	Séance plénière : Plenary Meeting : Sesión plenaria :	1, 38, 43
C2 -	Pouvoirs : Credentials : Credenciales :	2
C3 -	Contrôle budgétaire : Budget Control : Control del presupuesto :	18, 19, 42
C4 -	Attributions de fréquences : Frequency Allocation : Atribución de frecuencias :	3, 4, 6, 7, 8, 9, 10, 11, 12+(Add.1,5,7), 13, 14, 15, 16, 17, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31+Add.1, 33, 34+Corr.1, 36, 37, 38, 39, 40, 41, 44, 45, 46, 48, 49, 51, 52, 53, 54
C5 -	Règlementation : Regulatory : Reglamentación :	3, 4, 5, 6, 7, 8, 9, 10, 11, 12+Add.2-5, 13, 14, 16, 20, 21, 22, 23, 24, 26, 27, 30, 31+Add.1, 32, 33, 34, 37, 38, 39, 40, 41, 44, 45, 46, 48, 49, 51, 52, 54
GT/ WG-PL -	Technique : Technical : Técnico :	3, 9, 10, 11, 12(Add.1,2,4,5,7,8,9), 16, 20, 23, 27, 31+Add.1, 34, 35, 39, 44, 45, 46

Pekka TARJANNE
Secrétaire général

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

Document DT/5(Rev.2)-E
13 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Chairman of the Working Group to the Plenary

STATUS OF INPUT DOCUMENTS RELATING TO WORKING GROUP TO THE PLENARY

1. Definition of categories

Category A: to be considered by Working Group to the Plenary in order to prepare texts for inclusion in the Final Acts

Category B: to be considered by Working Group to the Plenary in order to send its findings to the Committee with primary responsibility

Category C: may be considered by Working Group to the Plenary at a later stage if requested by the Committee with primary responsibility

2. Category A

2.1 Wind profiler meteorological radars (Agenda 2.7)

- CCIR Report, § 15.1 (Doc. 3)
- USA/12/189, Resolution No. AAA (Doc. 12); Add. 6 to Doc. 12 (United States)
- Section XIV, Doc. 16 (Papua New Guinea)
- AUS/31/76, Recommendation AUS-A (Doc. 31) (Australia)
- IND/34/44, Resolution No. BBB (Doc. 34) (India)
- Agenda item 2.7, Doc. 44 (Pakistan)
- USA/12/192, Recommendation No. ZZZ (Doc. 12 + Corr. 2) (Unites States)
- EUR/46/3, Recommendation No. PPP (Doc. 46) (Europe)
- TZA/74/19, Doc. 74 (Tanzania)

2.2 Meteorological satellites and Earth exploration satellites in the bands 401-403 MHz (Agenda 2.8)

- CCIR Report, § 15.4 (Doc. 3)
- USA/12/191, Resolution No. CCC (Doc. 12) (United States)
- J/27/83, Resolution J2 (Doc. 27) (Japan)

- IND/34/43, Resolution No. AAA (Doc. 34) (India)
- Agenda item 2.8 (Doc. 44) (Pakistan)
- CHN/61/39, Resolution No. XX (Doc. 61) (China)
- MEX/63/124, Recommendation No. MEX-A (Doc. 63) (Mexico)

2.3 Recommendation No. 66, spurious emissions (Agenda 2.9.1)

- CCIR Report, § 15.3 (Doc. 3)
- AUS/31/70-75 (Doc. 31) (Australia)

2.4 Resolution No. 703 (Agenda 2.9.2)

- USA/12/178-188 (Doc. 12) (United States)
- E/35/1-12 (Doc. 35) (Spain)
- MLI/39/14 (Doc. 39) (Mali)
- EQA/45/33-44 (Doc. 45) (Ecuador)
- MEX/63/111-122 (Doc. 63) (Mexico)

2.5 Further work by the CCIR concerning BSS (sound) (Agenda 2.9.1)

- EUR/20/55, Resolution No. CCC (Doc. 20) (Europe)

2.6 Review of other Resolutions and Recommendations relating to the work of Working Group to the Plenary (Agenda 2.9.1)

- Certain existing Resolutions and Recommendations

3. Category B

3.1 Definition of "geostationary satellite"

- IFRB Report, § 2.1 (Doc. 4)
- CAN/23/4, MOD 181, Article 1 (Doc. 23) (Canada)
- EUR/46/1, Resolution No. X, Note 2 (Doc. 46) (Europe)
- INS/52/1, NOC 182, Article 1 (Doc. 52) (Indonesia)

3.2 EIRP limits of the terrestrial systems to protect the inter-satellite service above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/138, ADD 2512, Article 27 (Doc. 12) (United States)

3.3 Control of interference to geostationary satellite systems from geostationary space stations in the inter-satellite service above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/144, ADD 2613A, Article 29 (Doc. 12) (United States)

3.4 EIRP limits of earth stations in the mobile-satellite service

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- USA/12/200, MOD 2548A, Article 28 (Add. 2 to Doc. 12) (United States)
- USA/12/72, ADD 733Z, Article 8 (Doc. 12) (United States)

3.5 PFD limits at the Earth's surface of the mobile-satellite service at around 2.5 GHz

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- USA/12/201, Resolution ZZZ, Section D (Add. 3 to Doc. 12) (United States)
- CAN/23/134-135, MOD 2562-2563, Article 28 (Doc. 23) (Canada)

3.6 PFD limits at the Earth's surface of the mobile-satellite service at around 2.1 GHz

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- CAN/23/65, ADD 749A, Article 8 (Doc. 23) (Canada)

3.7 Sharing criteria for LEO mobile-satellite service below 1 GHz

- CCIR Report, § 11.4 (Doc. 3)
- Addendum 9 to Doc. 12 (United States)
- Document 97 (Nigeria)

3.8 Sharing considerations for LEO mobile-satellite service above 1 GHz

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- Addendum 13 to Doc. 12 (United States)
- USA/12/201, Resolution ZZZ, Section D (Add. 3 to Doc. 12) (United States)

3.9 PFD limits at the Earth's surface of HDTV broadcasting satellites

- CCIR Report, § 7.4 (Doc. 3)
- EUR/20/59, Resolution No. ABC (Doc. 20) (Europe)
- CCIR draft Recommendation [Doc. 9/58] under approval process in accordance with CCIR Resolution 97 (see Doc. 9/BL/34)

4. Category C

4.1 Use of the band 410-420 MHz by the space research service

- USA/12/47, ADD 651A, Article 8 (Doc. 12) (United States)

4.2 EIRP limits of the mobile service in the 2 GHz band

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- EUR/20/105, ADD 2509A, Article 27 (Doc. 20) (Europe)

4.3 EIRP limits of the fixed and mobile services in the 2 GHz band (Agenda 2.2.6)

- CCIR Report § 13.3.1, § 13.3.3 (Doc. 3)
- USA/12/137, MOD 2509, Article 27 (Doc. 12) (United States)
- EUR/20/104, MOD 2509, Article 27 (Doc. 20) (Europe)
- CAN/23/127, MOD 2509, Article 27 (Doc. 23) (Canada)
- IND/34/40, MOD 2509, Article 27 (Doc. 34) (India)
- MEX/63/82, MOD 2509, Article 27 (Doc. 63) (Mexico)

4.4 PFD limits at the Earth's surface of the space services at around 2 GHz (Agenda 2.2.6)

- CCIR Report § 13.3.3 (Doc. 3)
- USA/12/139-140, MOD 2558-2559, Article 28 (Doc. 12) (United States)
- EUR/20/116-117, MOD 2558-2559, Article 28 (Doc. 20) (Europe)
- CAN/23/131-132, MOD 2558-2559, Article 28 (Doc. 23) (Canada)
- J/27/68-69, MOD 2558-2559, Article 28 (Doc. 27) (Japan)
- B/30/53-54, MOD 2558-2559, Article 28 (Doc. 30) (Brazil)
- IND/34/41-42, MOD 2558-2559, Article 28 (Doc. 34) (India)
- MEX/63/83-84, MOD 2558-2559, Article 28 (Doc. 63) (Mexico)

4.5 Sharing criteria for the broadcasting satellite (sound) service

- CCIR Report, § 6.4 (Doc. 3)
- Addendum 1 to Doc. 23 (Canada)

4.6 Sharing considerations in the 14.5-14.8 GHz band

- CCIR Report, § 12.4 (Doc. 3)
- Annex A, Addendum 1 to Doc. 12 (United States)

4.7 Sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service at around 17 GHz

- CCIR Report, § 7.4.3 (Doc. 3)
- CAN/23/91, ADD 868A, Article 8 (Doc. 23) (Canada)

4.8 PFD limits at the Earth's surface of space stations in the inter-satellite service (and the space communication service) above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/142, MOD 2583, Article 28 (Doc. 12) (United States)
- CAN/23/138, MOD 2579, Article 28 (Doc. 23) (Canada)
- J/27/65, ADD 881B, Article 8; J/27/73, MOD 2579, Article 28 (Doc. 27) (Japan)

4.9 PFD limits at the Earth's surface of space stations in the space communication service specific to the 27 GHz band

- CAN/23/106, ADD 881A, Article 8; CAN/23/140, ADD 2580.2, Article 28 (Doc. 23) (Canada)

4.10 Interference from LEO satellites to radio astronomy

- CCIR Report § 8.1.4.2.2 (Doc. 3)
- IND/34/5, ADD 596B, Article 8 (Doc. 34) (India)

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/5(Rev.1)-E
7 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Chairman of the Working Group to the Plenary

STATUS OF INPUT DOCUMENTS RELATING TO WORKING GROUP TO THE PLENARY

1. Definition of categories

Category A: to be considered by Working Group to the Plenary in order to prepare texts for inclusion in the Final Acts

Category B: to be considered by Working Group to the Plenary in order to send its findings to the Committee with primary responsibility

Category C: may be considered by Working Group to the Plenary at a later stage if requested by the Committee with primary responsibility

2. Category A

2.1 Wind profiler meteorological radars (Agenda 2.7)

- CCIR Report, § 15.1 (Doc. 3)
- USA/12/189, Resolution No. AAA (Doc. 12); Add. 6 to Doc. 12 (United States)
- Section XIV, Doc. 16 (Papua New Guinea)
- AUS/31/76, Recommendation AUS-A (Doc. 31) (Australia)
- IND/34/44, Resolution No. BBB (Doc. 34) (India)
- Agenda item 2.7, Doc. 44 (Pakistan)
- USA/12/192, Recommendation No. ZZZ (Doc. 12 + Corr. 2) (Unites States)
- EUR/46/3, Recommendation No. PPP (Doc. 46) (Europe)

2.2 Meteorological satellites and Earth exploration satellites in the bands 401-403 MHz (Agenda 2.8)

- CCIR Report, § 15.4 (Doc. 3)
- USA/12/191, Resolution No. CCC (Doc. 12) (United States)
- J/27/83, Resolution J2 (Doc. 27) (Japan)
- IND/34/43, Resolution No. AAA (Doc. 34) (India)

- Agenda item 2.8 (Doc. 44) (Pakistan)
- CHN/61/39, Resolution No. XX (Doc. 61) (China)
- MEX/63/124, Recommendation No. MEX-A (Doc. 63) (Mexico)

2.3 Recommendation No. 66, spurious emissions (Agenda 2.9.1)

- CCIR Report, § 15.3 (Doc. 3)
- AUS/31/70-75 (Doc. 31) (Australia)

2.4 Resolution No. 703 (Agenda 2.9.2)

- USA/12/178-188 (Doc. 12) (United States)
- E/35/1-12 (Doc. 35) (Spain)
- MLI/39/14 (Doc. 39) (Mali)
- EQA/45/33-44 (Doc. 45) (Equador)
- MEX/63/111-122 (Doc. 63) (Mexico)

2.5 Review of other Resolutions and Recommendations relating to the work of Working Group to the Plenary (Agenda 2.9.1)

- Certain existing Resolutions and Recommendations

3. Category B

3.1 Definition of "geostationary satellite"

- IFRB Report, § 2.1 (Doc. 4)
- CAN/23/4, MOD 181, Article 1 (Doc. 23) (Canada)
- EUR/46/1, Resolution No. X, Note 2 (Doc. 46) (Europe)
- INS/52/1, NOC 182, Article 1 (Doc. 52) (Indonesia)

3.2 EIRP limits of the terrestrial systems to protect the inter-satellite service above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/138, ADD 2512, Article 27 (Doc. 12) (United States)

3.3 Control of interference to geostationary satellite systems from geostationary space stations in the inter-satellite service above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/144, ADD 2613A, Article 29 (Doc. 12) (United States)

3.4 EIRP limits of earth stations in the mobile-satellite service

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- USA/12/200, MOD 2548A (Add. 2 to Doc. 12) (United States)
- USA/12/72, ADD 733Z, Article 8 (Doc. 12) (United States)

3.5 PFD limits of the mobile-satellite service at around 130 MHz, 400 MHz and 1900 MHz

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- USA/12/201, Resolution ZZZ, Section D (Add. 3 to Doc. 12) (United States)

3.6 PFD limits of the mobile-satellite service at around 2 GHz to 2.7 GHz

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- CAN/23/65, ADD 749A, Article 8 (Doc. 23) (Canada)
- CAN/23/134-135, MOD 2562-2563, Article 28 (Doc. 23) (Canada)

3.7 Sharing criteria for LEO mobile-satellite service below 1 GHz

- CCIR Report, § 11.4 (Doc. 3)
- Addendum 9 to Doc. 12 (United States)

4. Category C

4.1 Use of the band 410-420 MHz by the space research service

- USA/12/47, ADD 651A, Article 8 (Doc. 12) (United States)

4.2 EIRP limits of the mobile service in the 2 GHz band

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- EUR/20/105, ADD 2509A, Article 27 (Doc. 20) (Europe)

4.3 EIRP limits of the fixed and mobile services in the 2 GHz band (Agenda 2.2.6)

- CCIR Report § 13.3.1, § 13.3.3 (Doc. 3)
- USA/12/137, MOD 2509, Article 27 (Doc. 12) (United States)
- EUR/20/104, MOD 2509, Article 27 (Doc. 20) (Europe)
- CAN/23/127, MOD 2509, Article 27 (Doc. 23) (Canada)
- IND/34/40, MOD 2509, Article 27 (Doc. 34) (India)
- MEX/63/82, MOD 2509, Article 27 (Doc. 63) (Mexico)

4.4 PFD limits of the space services at around 2 GHz (Agenda 2.2.6)

- CCIR Report § 13.3.3 (Doc. 3)
- USA/12/139-140, MOD 2558-2559, Article 28 (Doc. 12) (United States)
- EUR/20/116-117, MOD 2558-2559, Article 28 (Doc. 20) (Europe)
- CAN/23/131-132, MOD 2558-2559, Article 28 (Doc. 23) (Canada)
- J/27/68-69, MOD 2558-2559, Article 28 (Doc. 27) (Japan)
- B/30/53-54, MOD 2558-2559, Article 28 (Doc. 30) (Brazil)
- IND/34/41-42, MOD 2558-2559, Article 28 (Doc. 34) (India)
- MEX/63/83-84, MOD 2558-2559, Article 28 (Doc. 63) (Mexico)

4.5 Sharing criteria for the broadcasting satellite (sound) service

- CCIR Report, § 6.4 (Doc. 3)
- Addendum 1 to Doc. 23 (Canada)

4.6 Sharing considerations in the 14.5-14.8 GHz band

- CCIR Report, § 12.4 (Doc. 3)
- Annex A, Addendum 1 to Doc. 12 (United States)

4.7 Sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service at around 17 GHz

- CCIR Report, § 7.4.3 (Doc. 3)
- CAN/23/91, ADD 868A, Article 8 (Doc. 23) (Canada)

4.8 PFD limits of HDTV broadcasting satellites

- CCIR Report, § 7.4 (Doc. 3)
- EUR/20/59, Resolution No. ABC (Doc. 20) (Europe)
- CCIR draft Recommendation [Doc. 9/58] under approval process in accordance with CCIR Resolution 97 (see Doc. 9/BL/34)

4.9 PFD limits of space stations in the inter-satellite service (and the space communication service) above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/142, MOD 2583, Article 28 (Doc. 12) (United States)
- CAN/23/138, MOD 2579, Article 28 (Doc. 23) (Canada)
- J/27/65, ADD 881B, Article 8; J/27/73, MOD 2579, Article 28 (Doc. 27) (Japan)

4.10 PFD limits of space stations in the space communication service specific to the 27 GHz band

- CAN/23/106, ADD 881A, Article 8; CAN/23/140, ADD 2580.2, Article 28 (Doc. 23) (Canada)

4.11 Interference from LEO satellites to radio astronomy

- CCIR Report § 8.1.4.2.2 (Doc. 3)
- IND/34/5, ADD 596B, Article 8 (Doc. 34) (India)

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/5-E
5 February 1992
Original: English

WORKING GROUP TO THE PLENARY

Chairman of the Working Group to the Plenary

STATUS OF INPUT DOCUMENTS RELATING TO WORKING GROUP TO THE PLENARY

1. Definition of categories

Category A: to be considered by Working Group to the Plenary in order to prepare texts for inclusion in the Final Acts

Category B: to be considered by Working Group to the Plenary in order to send its findings to the Committee with primary responsibility

Category C: may be considered by Working Group to the Plenary at a later stage if requested by the Committee with primary responsibility

2. Category A

2.1 Wind profiler meteorological radars (Agenda 2.7)

- CCIR Report, § 15.1 (Doc. 3)
- USA/12/189, Resolution No. AAA (Doc. 12); Add. 6 to Doc. 12 (United States)
- Section XIV, Doc. 16 (Papua New Guinea)
- AUS/31/76, Recommendation AUS-A (Doc. 31) (Australia)
- IND/34/44, Resolution No. BBB (Doc. 34) (India)
- Agenda item 2.7, Doc. 44 (Pakistan)
- USA/12/192, Recommendation No. ZZZ (Doc. 12 + Corr. 2) (Unites States)
- EUR/46/3, Recommendation No. PPP (Doc. 46) (Europe)

2.2 Meteorological satellites in the bands 401-403 MHz (Agenda 2.8)

- CCIR Report, § 15.4 (Doc. 3)
- USA/12/191, Resolution No. CCC (Doc. 12) (United States)
- J/27/83, Resolution J2 (Doc. 27) (Japan)
- IND/34/43, Resolution No. AAA (Doc. 34) (India)
- Agenda item 2.8 (Doc. 44) (Pakistan)
- CHN/61/39, Resolution No. XX (Doc. 61) (China)
- MEX/63/124, Recommendation No. MEX-A (Doc. 63) (Mexico)

2.3 Recommendation No. 66, spurious emissions (Agenda 2.9.1)

- AUS/31/69 (Doc. 31) (Australia)

2.4 Resolution No. 703 (Agenda 2.9.2)

- USA/12/178-188 (Doc. 12) (United States)
- E/35/1-12 (Doc. 35) (Spain)
- MLI/39/14 (Doc. 39) (Mali)
- EQA/45/33-44 (Doc. 45) (Equador)
- MEX/63/111-112 (Doc. 63) (Mexico)

2.5 Review of other Resolutions and Recommendations relating to the work of Working Group to the Plenary (Agenda 2.9.1)

3. Category B

3.1 Definition of "geostationary satellite"

- IFRB Report, § 2.1 (Doc. 4)
- CAN/23/4, MOD 181, Article 1 (Doc. 23) (Canada)
- EUR/46/1, Resolution No. X, Note 2 (Doc. 46) (Europe)

3.2 EIRP limits of the terrestrial systems to protect the inter-satellite service above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/138, ADD 2512, Article 27 (Doc. 12) (United States)

3.3 Control of interference to geostationary satellite systems for geostationary space stations in the inter-satellite service above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/144, ADD 2613A, Article 29 (Doc. 12) (United States)

4. Category C

4.1 Use of the band 410-420 MHz by the space research service

- USA/12/47, ADD 651A, Article 8 (Doc. 12) (United States)

4.2 EIRP limits of the mobile service in the 2 GHz band

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- EUR/20/105, ADD 2509A, Article 27 (Doc. 20) (Europe)

4.3 EIRP limits of the fixed and mobile services in the 2 GHz band

- CCIR Report § 13.3.1, § 13.3.3 (Doc. 3)
- USA/12/137, MOD 2509, Article 27 (Doc. 12) (United States)
- EUR/20/104, MOD 2509, ADD 2509A, Article 27 (Doc. 20) (Europe)
- CAN/23/127, MOD 2509, Article 27 (Doc. 23) (Canada)
- IND/34/40, MOD 2509, Article 27 (Doc. 34) (India)

4.4 EIRP limits of earth stations in the mobile-satellite service

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- USA/12/200, MOD 2548A (Add. 2 to Doc. 12) (United States)

4.5 PFD limits of the mobile-satellite service at around 2 GHz

- CCIR Report, § 8.1.4.2.2 (Doc. 3)
- CAN/23/65, ADD 749A, Article 8 (Doc. 23) (Canada)

4.6 PFD limits of the space services at around 2 GHz

- CCIR Report § 13.3.3 (Doc. 3)
- USA/12/139, MOD 2558, Article 28 (Doc. 12) (United States)
- EUR/20/116, MOD 2558, Article 28 (Doc. 20) (Europe)
- CAN/23/131, MOD 2558, Article 28 (Doc. 23) (Canada)
- J/27/68, MOD 2558, Article 28 (Doc. 27) (Japan)
- B/30/53, MOD 2558, Article 28 (Doc. 30) (Brazil)
- IND/34/41, MOD 2558, Article 28 (Doc. 34) (India)

4.7 Sharing considerations in the 14.5-14.8 GHz band

- CCIR Report, § 12.4 (Doc. 3)
- Annex A, Addendum 1 to Doc. 12 (United States)

4.8 Sharing between the fixed-satellite service (Earth-to-space) and the broadcasting-satellite service at around 17 GHz

- CCIR Report, § 7.4.3 (Doc. 3)
- CAN/23/91, ADD 868A, Article 8 (Doc. 23) (Canada)

4.9 PFD limits of HDTV broadcasting satellites

- CCIR Report, § 7.4 (Doc. 3)
- EUR/20/59, Resolution No. ABC (Doc. 20) (Europe)
- CCIR draft Recommendation [Doc. 9/58] under approval process in accordance with CCIR Resolution 97 (see Doc. 9/BL/34)

4.10 PFD limits of space stations in the inter-satellite service (and the space communication service) above 20 GHz

- CCIR Report, § 4.1.3 (Doc. 3)
- USA/12/142, MOD 2583, Article 28 (Doc. 12) (United States)
- CAN/23/139, MOD 2579, Article 28 (Doc. 23) (Canada)
- J/27/65, ADD 881B, Article 8; J/27/73, MOD 2579, Article 28 (Doc. 27) (Japan)

4.11 PFD limits of space stations in the space communication service specific to the 27 GHz band

- CAN/23/106, ADD 881A, Article 8; CAN/23/141, ADD 2580.2, Article 28 (Doc. 23) (Canada)

4.12 Interference from LEO satellites to radio astronomy

- CCIR Report § 8.1.4.2.2 (Doc. 3)
- IND/34/5, ADD 596B, Article 8 (Doc. 34) (India)

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/6-E
4 February 1992
Original: English

WORKING GROUP 4A

Note from the Chairman of Working Group 4A

SUBJECTS TO BE CONSIDERED BY WORKING GROUP 4A
BASED ON PROPOSALS TO THE CONFERENCE

1. Principles for extension of the allocations to the HF broadcasting service:
   - frequency bands shall be made available on a worldwide basis;
   - whenever possible, bands adjacent to existing HF BC bands shall be chosen;
   - bands internationally planned for non-broadcasting services in accordance with the Radio Regulations shall be avoided, e.g., Maritime mobile (Appendix 31 and Appendix 25), Aeronautical mobile (R), Aeronautical mobile (OR) bands, etc.;
   - bands allocated to the amateur service, standard frequency and time signal service shall be avoided;
   - the interests of the existing non-broadcasting services should be safeguarded through appropriate decisions (procedures).
2. Tropical Zone bands
3. Proposals for changes in the allocations of the bands

   4 MHz
   5 MHz
   6 MHz
   7 MHz
   9 MHz
   10 MHz
   11 MHz
   12 MHz
   13 MHz
   14 MHz
   15 MHz
   17 MHz
   18 MHz
   19 MHz

   including proposed new footnotes.
4. The amateur and broadcasting service around 7 MHz

5. SSB
   - new bands reserved for SSB;
   - change of implementation date for SSB.

6. Extension of RR 530 to other bands

7. Implementation of the new allocations
   - development of appropriate procedures, taking account of the accuracy of the MIFR;
   - adoption of measures to improve the efficiency of the spectrum used by HF broadcasting services (promotion of SSB, use of appropriate transmitter powers and antennas, planning and coordination procedures).

S. HESS
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/7E
6 February 1992

WORKING GROUP 5C

Note by the Chairman of Working Group 5C

PROPOSED INITIAL METHOD OF ADDRESSING TOPICS

1. Proposals Relating to Article 1 (Terms and Definitions).

   Agenda items 2.1 and 2.5.

   Docs. 7, 12, 23, 27, 31, 37, 46, 52 and 75.

2. Proposals Relating to Article 61. (Order of Priority of Communications in the Maritime Mobile Service and in Maritime Mobile - Satellite Service).

   Agenda item 2.6.

   Doc. 12.

3. Proposals Relating to Article 69. (Entry into Force of the Radio Regulations).

   Agenda item 2.6.

   Doc. 30.

4. Proposals Relating to Implementation of changes in Allocation to Broadcasting Service in the Bands Between 4000 kHz and 20000 kHz.

   Agenda item 2.2.2.

   Docs. 12, 20, 27, 33, and 39.

5. Proposals Relating to Convening of a Planning Conference for Digital Sound Broadcasting in the Band 87.5-108 MHz for Region 1 and Certain Countries Concerned in Region 3.

   Agenda item 2.2.3a.

   Docs. 21, 32 and 63.

J. F. BROERE

Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/8-E
5 February 1992
Original: English

WORKING GROUP 5C

Proposals Relating to the Relevant Provisions of Articles 1, 61 and 69

CHAPTER I

Terminology

ARTICLE 1

Terms and Definitions

Section I. General Terms

EUR/46/22
NOC 3, 4, 7

Section III. Radio Services

USA/12/1
ADD 22A

3.3A General-Satellite Service: A radiocommunication service using satellites for fixed and/or mobile applications.

USA/12/2
J/27/1
AUS/31/1
MOD 24

3.5 Inter-Satellite Service: A radiocommunication service providing links between artificial ~~earth~~ satellites.

PRG/37/1
MOD 24

3.5 Inter-Satellite Service: A space radiocommunication service providing links between ~~artificial earth~~ satellites.

EUR/46/22
NOC 26

CAN/23/1
MOD 27

3.8 Mobile-Satellite Service: A radiocommunication service:

- between mobile earth stations and one or more space stations, or between space stations used by this service; or
- between mobile earth stations by means of one or more space stations;
- which may also be used to derive position location information.

This service may also include feeder links necessary for its operation.

EUR/46/22
NOC 36

USA/12/3
ADD 46A

3.27A Radiolocation-Satellite Service: A radiodetermination-satellite service used for the purpose of radiolocation.

This service may also include feeder links necessary for its operation.

URS/7/1
MOD 48

3.29 Earth Exploration-Satellite Service: A radiocommunication service between earth stations and one or more space stations, which may include links between space stations, in which:

- information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from active sensors or passive sensors on earth satellites;
- similar information is collected from airbone or Earth-based platforms;
- such information may be distributed to earth stations within the system concerned;
- platform interrogation may be included.

This service may also include feeder links necessary for its operation.

CAN/23/2
ADD 55A

3.36A Multipurpose-Satellite Service: A radiocommunication service using satellites for fixed and mobile applications.

PRG/37/2
ADD 55A

Space Radiocommunication Service: Telecommunication service involving links set up using "space radiocommunication", including manned and unmanned spacecraft.

Any radio link between this service and the Earth is a terrestrial radiocommunication.

CAN/23/3
ADD 55B

3.36B Space-Communications Service: A radiocommunication service consisting of one or more space applications involving space operation, earth exploration-satellite, or space research activities, including links between space stations carrying out these applications.

PRG/37/3
ADD 55B

Multi-purpose Satellite Service: A radiocommunication service by satellite using both the mobile service and the fixed service, including access to personal mobile terminals.

Section V. Operational Terms

EUR/46/22
NOC 110, 111, 112, 117,

Section VII. Frequency Sharing

EUR/46/22
NOC 163

Section VIII. Technical Terms Relating to Space

PRG/37/4
ADD 173A

Multi-purpose Satellite: A satellite designed with technical characteristics compatible for the fixed service and the mobile service.

PRG/37/5
MOD 177

8.9 Inclination of an Orbit (of an earth satellite or a satellite of another celestial body): The angle determined by the plane containing the orbit and the plane of the Earth's equator, or by the plane containing the orbit and the plane of the equator of another celestial body.

PRG/37/6
MOD 179

8.11 Altitude of the Apogee or of the Perigee: The altitude of the apogee or perigee above a specified reference surface serving to represent the surface of the Earth or the surface of another celestial body.

PRG/37/7
MOD 180

8.12 ~~Geosynchronous~~Synchronous Satellite: ~~An earth~~ satellite whose period of revolution is equal to the period of rotation of ~~the Earth~~a celestial body about its axis.

CAN/23/4
MOD 181

8.13 Geostationary Satellite: A geosynchronous satellite whose circular and direct orbit lies ~~in~~ near the plane of the Earth's equator and ~~which thus remains fixed relative to the Earth; by extension~~, a satellite which remains approximately fixed relative to the Earth.

PRG/37/8
MOD 181

8.13 Geostationary Satellite: A ~~geosynchronous~~synchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a satellite which remains approximately fixed relative to the Earth.

PRG/37/9
ADD 181A

Stationary Satellite: A synchronous satellite whose circular and direct orbit lies in the plane of the equator of a celestial body and which thus remains fixed relative to that body.

PRG/37/10
NOC 182

8.14

ARTICLE 61

Order of Priority of Communications in the Maritime Mobile Service and in the Maritime Mobile-Satellite Service

USA/12/169
MOD 4441

The order of priority for communications[1] in the maritime mobile service and the maritime mobile-satellite service shall be as follows, except where impracticable in a fully automated system in which, nevertheless, ~~category 1~~distress, urgency and safety communications shall receive priority:

CHAPTER XIII

ARTICLE 69

Entry into Force of the Radio Regulations

B/30/63
MOD 5195
Mob-87

(2) The use of the frequency bands ~~as listed in Nos. 532 and 544 of the Radio Regulations~~12 230 - 12 330 kHz, 16 360 - 16 460 kHz, 17 360 - 17 410 kHz, 18 780 - 18 900 kHz, 22 720 - 22 855 kHz, 25 110 - 25 210 kHz and 26 100 - 26 175 kHz by the maritime mobile service shall commence on 1 July 1991 at 0001 hours UTC under the conditions specified in Resolution 325 (Mob-87).

J.F. BROERE
Chairman

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CAMR-92 **CAMR CHARGÉE D'ÉTUDIER LES ATTRIBUTIONS DE FRÉQUENCES DANS CERTAINES PARTIES DU SPECTRE**

MÁLAGA-TORREMOLINOS, FÉVRIER/MARS 1992

Document DT/9-F/E/S
05 mars 1992
Original: anglais

Commission 5/ Committee 5/ Comisión 5

Attribution des documents et des propositions aux Groupes de travail
Attribution of Documents and Proposals to Working Groups
Atribución de los documentos y de las propuestas a los Grupos de Trabajo

		Docs.
1.	Attribution générale General attribution Atribución genereal	
	GT/WG 5A	9, 11, 12, 20, 23, 26, 27, 30, 31, 44, 52, 57, 62, 63, 75, 79, 87, 90
	GT/WG 5B	3, 4, 5, 7, 8, 12, 20, 22, 23, 24, 27, 30, 34, 39, 40, 44, 46, 62, 63, 64, 75, 79
	GT/WG 5C	3, 4, 6, 7, 11, 12, 20, 21, 22, 23, 27, 30, 31, 32, 33, 37, 39, 41, 44, 46, 52, 63, 75
2.	Attribution detaillée Detailed attribution Atribución detallada	
	GT/WG 5A	Voir/ See/ Véase DL-5
	GT/WG 5B	Propositions pour les articles 11, 12, 13, 27, 28, 29 et 30 et pour les appendices 3, 26 et 30A et résolutions et récommandations associées Proposals for Articles 11, 12, 13, 27, 28, 29 and 30 and Appendices 3, 26 and 30A and associated resolutions and recommendations Propuestas para los artículos 11, 12, 13, 27, 28, 29 y 30 y Apéndices 3, 26 y 30A y resoluciones y recomendaciones asociadas

Références/ References/ Referencias:

Article/ Artículo 11:	EUR/20/94-102, CAN/23/109-124
Article/Artículo 12 et/and/y App.26	IFRB/5, ALG/40, PAK/44/7, CLN/62/13, SEN/75, ARG/79
Article/Artículo 13	CAN/23/125-126
Article/Artículo 27	USA/12/137-138, EUR/20/103-105, CAN/23/127-128, IND/34/40, EUR/46/16-18, MEX/63

Article/ Artículo 28	USA/12/139-143, USA/12/200, EUR/20/52-53, EUR/20/106-117, CAN/23/129-141, J/27/68-74, B/30/53-54, IND/34/41-42, EUR/46/19-21, MEX/63
Article/ Artículo 30	EUR/46/2
App. 3	EUR/46/2
App. 30A	KOR/8/22, CAN/23/148, J/27/78-81, B/30/64-68
Résolutions Resolutions Resoluciones	USA/12/201, EUR/20/54, EUR/20/59, EUR/20/60, EUR/20/62, AUS/31/69, EUR/46/1, LUX/64/6

Autres documents ne contenant pas des propositions spécifiques
Other documents not containing specific proposals
Otros documentos que no contienen propuestas específicas

CCIR/3, IFRB/4, URS/7, VGE/22

GT/WG 5C

Propositions pour les articles 1, 61 ET 69
Proposals for Articles 1, 61 AND 69
Propuestas para los artículos 1, 61 Y 69

ZWE/6/1, URS/7/1, USA/12/1-3, USA/12/169, CAN/23/1-4, J/27/1, B/30/63, AUS/31/1, PRG/37/1-10, MLI/39/1, YEM/41/1, PAK/44, EUR/46/22, INS/52/1, MEX/63, SEN/75

Autres résolutions et récommandations
Other resolutions and recommendations
Otras resoluciones y recomendaciones

USA/12/190, EUR/20/34, D/21/1, J/27/82, E/32/1, IFRB/33, MLI/39/42, SEN/75

Autres propositions/ Other proposals/ Otras propuestas:

MLI/39/14

Autres documents ne contenant pas des propositions spécifiques
Other documents not containing specific proposals
Otros documentos que no contienen propuestas específicas

CCIR/3, IFRB/4,URS/7, IMO/11, VGE/22

3. Il n'y aura plus de mise à jour pour cette liste.
No further up-date to this list will be issued.
No se volverá a poner al día esta lista.

E. GEORGE
Président/Chairman/Presidente

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/10-E
5 February 1992
Original: English

WORKING GROUP 4A

Draft note to the Chairman of Committee 5

1. The considerations of the extensions of the allocations to the HF broadcasting services are highly dependent on the accompanying measures intended to safeguard the interests of the existing non-broadcasting services. Some delegations indicated that they are unable to continue any consideration of the allocations unless they have a clear idea about the transfer procedures and/or other measures intended to safeguard the interest of the existing services.

In view of the above, Committee 5 is requested to give its utmost priority to the subjects dealing with transfer procedures in the HF bands and/or appropriate other measures in this connection.

S. HESS
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/11-E
5 February 1992
Original: English

WORKING GROUP
OF THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS RELEVANT TO AGENDA ITEM 2.7
(Wind profiler meteorological radars)

The annexed texts have been excepted by the documents referred to in item 2.1 of Document DT/5 and enclosed to facilitate consideration.

M. MUROTANI
Chairman

Annex: 1

ANNEX

CCIR Report, § 15.1 (Doc. 3)

15. Examination of any appropriate technical aspects related to the consideration of resolves 2.7, 2.8 and 2.9.1 of Resolution No. 995 of the ITU 45th Administrative Council (Agenda of WARC-92)

15.1 Wind profiler meteorological radars
(Resolves 2.7)

15.1.1 Spectrum aspects in relation to wind profiler meteorological radars

Wind profiler meteorological radar is a ground-based, generally pulsed, vertically directed Doppler radar designed to measure wind direction and speed as a function of altitude. The physics of radar wind profiling indicates that frequencies around 50 MHz (3 to 30 km), 400 MHz (500 m to about 10 km), and 1 000 MHz (100 m to 3 km) are preferred; the complementary altitude ranges are indicated in brackets. The 400 MHz region is particularly important for correlated radio and acoustic sounding, and for the range of altitudes that are most commonly of interest.

It is desirable to have a very limited set of operating frequencies in all of the three identified bands, on a worldwide basis. The operating frequency has a significant impact on the technical design (in particular the steerable phased array antenna), and thus the availability of economically priced systems, which could be a crucial factor for operating these systems.

15.1.2 Sharing considerations

Some systems are being tested experimentally, in the 44 - 47 MHz fixed and mobile band, at around 53 MHz in the Region 1 broadcasting band, in the 402 - 406 MHz meteorological aids band and in the 960 - 1 215 MHz aeronautical radionavigation band.

Up to now, CCIR can report initial assessments regarding sharing only in the bands 402 - 406 MHz and 960 - 1 215 MHz.

These assessments have shown that co-channel frequency sharing may be accommodated on a geographical basis. The examples considered, terrestrial radiolocation service and amateur service in the 400 MHz region, may require separation distances of 120 km and 60 km respectively. Similar studies in the 900 MHz region suggest that separation distances of 50 km may be required when considering the compatibility of radiolocation, amateur, fixed and mobile services, and wind profiler meteorological radars operating in this band. Further studies are essential to detail the frequency sharing potential between wind profiler meteorological radars and other services.

Current wind profiler radars, operating in the 402 - 406 MHz band, operate under necessarily severe constraints in order to minimize interference into the COSPAS-SARSAT system. These constraints prevent the wind profilers from fully achieving their intended function.

The major problem with the 402 - 406 MHz band is the interference from these wind profiler meteorological radars to the COSPAS-SARSAT satellite-based distress alerting and locating system operating in the 406.0 - 406.1 MHz band (see Recommendation No. 633). The results of an interference analysis carried out specifically for the COSPAS-SARSAT receiver-processor utilizing recent wind profiler meteorological radar antenna performance data and representative parameters, indicate that harmful interference will occur to the COSPAS-SARSAT system. During typical wind profiler operation, the SARSAT receiver-processor will be exposed to some 32 to 50 dB more interference than is acceptable. Such interference levels would completely blind the SARSAT receiver over very wide geographical areas, thereby defeating its search and rescue role. To reduce the interference from wind profiler meteorological radars to an acceptable level requires a suppression of about 95 dB, based on a co-channel assessment.

The analysis shows that a 4 MHz frequency separation would provide a suppression of around 61 dB and that a frequency separation of 10 to 15 MHz would be required to achieve the desired 95 dB figure.

The analysis thus demonstrates that the 95 dB suppression required cannot be achieved by "off frequency rejection" (OFR) within the 402 - 406 MHz band itself, and hence the use of that band by wind profiler meteorological radars is not compatible with the COSPAS-SARSAT system. RR 3010 and N 3067 prohibit any emission capable of causing harmful interference to distress, alarm, urgency or safety communications in the frequency band 406.0 - 406.1 MHz. Wind profiler meteorological radars operating in the 402 - 406 MHz band may also disrupt data collection up links to meteorological satellites operating between 401 and 403 MHz.

In the 400 MHz band the frequencies chosen for wind profiler meteorological radars need to be substantially offset from those used by airborne radars and receivers on amateur-satellite spacecraft for similar reasons, to avoid undue interference.

The use of wind profiler meteorological radars in the 960 - 1 215 MHz band may cause serious interference to aeronautical radionavigation provided for the safety of aircraft. It should be noted that the band has been planned internationally by ICAO and has almost reached saturation with existing DME and SSR assignments. In addition to the spectral congestion in the band, the DME receivers will be highly susceptible to interference from wind profiler meteorological radars due to both their close geographic proximity at airports, and the essential wideband nature of DME receivers. The co-channel emissions could be as great as 100 dB above DME receiver sensitivity. Further study by WMO and other organizations is under way.

A general problem with locating any high power emitter in the vicinity of airports and their approach paths is that they have the potential to disrupt new "fly-by-wire" critical aircraft systems. This issue is being studied jointly by the aviation authorities in the United States and Europe.

15.1.3 Summary

It is concluded that:

- wind profiler meteorological radars cannot be accommodated in the 402 - 406 MHz band, due to their non-compatibility with the COSPAS-SARSAT distress alerting and locating system (required frequency separation 10 - 15 MHz) and that it would therefore be appropriate for WARC-92 to consider adopting a Resolution to urge administrations to avoid making assignments to wind profiler meteorological radars in the 402 - 406 MHz band;
- wind profiler meteorological radars should not be accommodated in the 960 - 1 215 MHz aeronautical radionavigation band, unless studies prove that sharing is possible with aeronautical radionavigation;
- studies into the use of bands, in the regions of 50 MHz, 400 MHz and 1 000 MHz should continue, taking into consideration the essential operational and technical characteristics of vertically directed wind profiler meteorological radars;
- the technical standards for these radars, should be developed with particular attention to the interference potential to aeronautical and/or satellite systems;
- effects of high intensity radiated fields on aircraft systems need to be taken into account during further studies;
- it would be appropriate for WARC-92 to consider adopting a Resolution calling for the next competent conference to consider frequency allocations for wind profiler meteorological radars and for the CCIR to continue its studies (Question 102/8) on this subject.

Document 12 (USA):

USA/12/189
ADD

RESOLUTION No. AAA

Relating to Implementation of Wind Profiler Radars at Frequencies Near 50 MHz, 400 MHz and 1 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

referring to

a request to the Director of the CCIR and Chairman of the IFRB from the Secretary-General of the World Meteorological Organization, in May 1989, for advice and assistance in the identification of appropriate frequencies near 50 MHz, 400 MHz, and 1 GHz in order to accommodate allocations and assignments for wind profiler radars;

considering

a) that many administrations plan to deploy wind profiler radars at sites dispersed over large geographical areas in order to improve meteorological predictions, support studies of the climate, and enhance the safety of navigation;

b) that the CCIR established Questions [AB/2] and 65/8 to promulgate the relevant studies;

c) that the characteristics of wind profiler radars differ substantially from those of other meteorological aids;

d) that some experimental wind profiler radars are operating in the 402 - 406 MHz band, but these radars cause harmful interference to the COSPAS-SARSAT system for distress alerting in the 406.0 - 406.1 MHz band;

e) that a total wind profiler system may require frequencies not only in the 400 MHz region but also frequencies near 50 MHz and around 1 GHz;

f) Recommendation No. ZZZ,

considering further

that the International Maritime Organization has incorporated the COSPAS-SARSAT system in the Global Maritime Distress and Safety System,

recognizing

that frequencies in the 400 MHz region are preferred for measurements of winds at altitudes that are of the greatest general interest,

resolves

that the next competent world administrative radio conference consider the matter of appropriate allocations for accommodation of wind profiler radars,

invites the CCIR

to continue its studies of the characteristics and requirements of wind profiler radars and make Recommendations as to the technically suitable frequency bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected,

urges administrations

to avoid making frequency assignments to wind profiler radars in the 402 - 406 MHz band,

invites the Administrative Council

to place this matter on the agenda of the next competent world administrative radio conference.

Document 16 (Papua New Guinea):

XIV. Agenda Item 2.7 - Consideration of services such as meteorological aids below 1 000 MHz and space services above 20 GHz not previously considered

Papua New Guinea supports:

- the recommendation for further CCIR and WMO studies into the spectrum requirements and operations of wind profiler radars;
- the adoption of up-link power control using down-link beacons with appropriate safeguards to facilitate sharing with other countries;
- the implementation of further studies into spurious satellite emissions for the protection of the radio astronomy service.

Document 31 (Australia):

AUS/31/76
ADD

RECOMMENDATION No. AUS-A

Relating to Implementation of Wind Profiling Radars at Frequencies Near 50 MHz, 400 MHz and 1 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

referring to

a request to the Director of the CCIR and the Chairman of the IFRB from the Secretary-General of the World Meteorological Organization, in May 1989, for advice and assistance in the identification of appropriate frequencies near 50 MHz, 400 MHz, and 1 GHz in order to accommodate allocations and assignments for wind profiling radars,

considering

a) that many administrations plan to deploy wind profiler radars at sites dispersed over large geographical areas in order to improve meteorological predictions, support studies of the climate, and enhance the safety of navigation;

b) that the CCIR has studied various proposals for these meteorological aids devices and concluded that frequencies around 50 MHz, 400 MHz and 1 GHz are preferred, and that frequencies in the 400 MHz region are preferred for measurements of winds at altitudes that are of the greatest general interest;

c) that the CCIR has studied some of the sharing scenarios and concluded that sharing with other services, particularly aeronautical radionavigation, would be difficult;

d) that the characteristics of wind profiling radars differ substantially from those of other meteorological aids;

e) that some experimental wind profiling radars are operating in the 402 - 406 MHz band, but these radars cause harmful interference to the COSPAS-SARSAT system for distress alerting in the 406 - 406.1 MHz band;

f) that a total wind profiler system may require frequencies not only in the 400 MHz region but also frequencies near 50 MHz and around 1 GHz;

g) that this Conference was only empowered to develop new Recommendations and Resolutions in relation to this service;

h) that the CCIR has established Questions [AB/2] and 65/8 to continue further studies,

considering further

that the International Maritime Organization has incorporated the COSPAS-SARSAT system in the Global Maritime Distress and Safety System,

recommends

that the next competent conference should consider the allocation and/or designation of frequency bands for wind profiling radars in the meteorological aids service near 50 MHz, 400 MHz and 1 GHz,

invites the CCIR

to continue its studies of the characteristics and requirements of wind profiler radars and make Recommendations as to the technically suitable frequency bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected, and to provide a report to the Conference referred to in **recommends**,

requests the Secretary-General

1. to bring this Recommendation to the attention of the Administrative Council and the next Plenipotentiary Conference with a view to empowering a future conference to review the matters referred to in this Recommendation;

2. to bring this Recommendation to the attention of the World Meteorological Organization, the International Civil Aviation Organization, and the International Maritime Organization.

Document 34 (India):

IND/34/44
ADD

RESOLUTION No. BBB

Relating to Implementation of Wind Profiler Radars in the Frequency Bands Below 1 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that wind profiler radar is an important meteorological aid to measure wind direction and speed as a function of altitude;

b) that the physics of the radar wind profiling indicate that the frequencies near 50 MHz, 400 MHz and 1 000 MHz are preferred for these systems;

c) that CCIR studies have concluded that wind profiler radars cannot be accommodated in the 402 - 406 MHz band due to their non-compatibility with the COSPAS-SARSAT distress alerting and locating system in 406 - 406.1 MHz,

considering further

that the International Meteorological Organization has incorporated the COSPAS-SARSAT system in the Global Maritime Distress and Safety System,

resolves

that the next competent world administrative radio conference considers the matter of appropriate allocations for accommodation of wind profiler radars,

invites the CCIR

to continue its studies of the characteristics and requirements of wind profiler radars and make Recommendations as to the technically suitable bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected,

urges administrations

to avoid making frequency assignments to wind profiler radars in the 402 - 406 MHz band,

invites the Administrative Council

to place this matter on the agenda of the next competent world administrative radio conference.

Document 44 (Pakistan):

Agenda Item 2.7 - Meteorological aids service in frequency band below 1 000 MHz

In view of the potential interference by wind profiler radar operating in 402 - 406 MHz to the COSPAS/SARSAT distress alerting and locating system, it is desirable to avoid making future assignments in this band. Further studies for allocation of suitable frequency bands for wind profiler meteorological radar may be continued by the CCIR. A Resolution may be adopted in WARC-92 for the CCIR to continue studies on the problems associated with wind profiler radars and consideration of a suitable allocation for the meteorological aids by a future competent conference.

Document 12 (USA):

USA/12/192
ADD

RECOMMENDATION No. ZZZ

Relating to Interim Implementation of Wind Profiler Radars at Frequencies Near 400 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations plan to deploy wind profiler radars at sites dispersed over large geographical areas in order to improve meteorological predications, support studies of the climate and enhance the safety of navigation;

b) that the CCIR is conducting studies under Questions [AB/2] and 65/8 to determine the characteristics and requirements of wind profiler radars in order to make Recommendations as to suitable frequency bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected;

c) that frequencies in the 400 MHz region are preferred for measurements of winds at altitudes that are of the greatest general interest, but that implementation of wind profiler radars in the 402 - 406 MHz band poses an unacceptable risk of interference to the COSPAS-SARSAT system for distress alerting;

d) that in relation to the need to protect satellite receivers, operation of wind profiler radars in accordance with No. 342 requires special attention to the cumulative effects of all such operations in the large areas that are within view of the satellites;

e) Resolution AAA,

noting

that some administrations have found that wind profiler operations near 449 MHz will be compatible with existing systems,

recommends

that administrations consider frequencies near 449 MHz in making assignments to wind profiler radars until such time as the CCIR develops applicable Recommendations.

Document 46 (Europe):

EUR/46/3
ADD

RECOMMENDATION No. PPP

Relating to Wind Profiler Radars

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that wind profiler radars have been the subject of successful experiments to measure atmospheric wind velocities in several frequency bands;

b) that some administrations plan to utilize wind profiler radars in operational networks;

c) that it is highly desirable to use wind profiler radars in frequency bands which have been generally agreed, preferably on a worldwide basis,

recognizing

d) that the operational use of such radars is necessary to assist in meteorological forecasting and climatological research and can provide information as an aid to flight safety;

e) that in order to measure wind velocities up to a height of 30 kilometres it is necessary to allocate several frequency bands for these radars in the general vicinity of 50, 400 and 1 000 MHz;

f) that in the interests of efficient spectrum utilization it is necessary to share such bands with other services and, therefore, to establish the criteria for band sharing;

g) that studies have already shown that wind profiler radars operating in the vicinity of 400 MHz must be sufficiently separated in frequency from the COSPAS/SARSAT system centred on 406.025 MHz;

h) that it is essential in the interests of safety to protect the COSPAS/SARSAT system and other safety services from harmful interference which may be caused by wind profiler radars,

recommends

1. that the CCIR should as a matter of urgency complete its studies of the technical characteristics of wind profiler radars, the preferred frequency bands for their operation, and the criteria to permit sharing of those bands with other services and to ensure the interference-free operation of services in adjacent bands;

2. that administrations and international organizations concerned with wind profiler radars, particularly ICAO and WMO, should contribute to the CCIR studies;

3. that, as an interim measure, administrations authorizing experiments with or the operational use of such radars should take all necessary action to ensure protection from harmful interference to the COSPAS/SARSAT system and other safety services for example, aeronautical radionavigation systems in the band 960 - 1 215 MHz;

4. that the Administrative Council should include in the agenda for the next WARC the question of allocating frequency bands for the operational use of wind profiler radars.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/12-E
6 February 1992
Original: English

WORKING GROUP
OF THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS RELEVANT TO AGENDA ITEM 2.8
(Meteorological satellites in the bands 401 - 403 MHz)

The annexed texts have been excerpted by the documents referred to in item 2.2 of Document DT/5 and enclosed to facilitate consideration.

M. MUROTANI
Chairman

CCIR Report, § 15.4 (Document 3):

15.4 Primary service requirements for earth exploration-satellite and meteorological-satellite services in the bands 401 - 403 MHz
(Resolves 2.8)

Many administrations use frequencies in the bands 401 - 402 MHz and 402 - 403 MHz for reporting to satellites from airborne, land-based and maritime data collection platforms (DCPs).

The CCIR has conducted studies of the characteristics, requirements and sharing criteria necessary for compatibility with the services that are shared with these systems and the results are reported in Report 541 and Recommendation 514.

The EESS and the meteorological-satellite service in the bands 401 - 402 MHz and 402 - 403 MHz are secondary to other services in these bands. In order that continuous reliable observations can be made, it is essential that transmission of the data be achieved in an interference-free environment.

The CCIR concludes that an interference problem exists and that it would be appropriate for WARC-92 to consider a Resolution for a future WARC to deal with this problem.

Document 12 (USA):

USA/12/191
ADD

RESOLUTION No. CCC

Relating to Primary Service Requirements for Meteorological Satellites in the Bands 401 - 403 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations use frequencies in the bands 401 to 402 MHz and 402 to 403 MHz for reporting to satellites from airborne, land-based and maritime data collection platforms (DCPs);

b) that the CCIR has conducted studies of the characteristics, requirements and sharing criteria necessary for compatibility with the services that are shared with these systems, the results are reported in CCIR Report 541-2 and Report 514-2;

c) that the meteorological-satellite service in the bands 401 to 402 MHz and 402 to 403 MHz are secondary to other services in these bands and that in order for continuous reliable observations to be made, it is essential that transmission of the data be achieved without harmful interference,

resolves

that the next competent world administrative radio conference examine the allocation to the meteorological-satellite service operations in the bands 401 to 402 MHz and 402 to 403 MHz with the intent of upgrading the allocation;

invites the Administrative Council

to take the necessary action to place this matter on the agenda of the next competent world administrative radio conference.

Document 27 (Japan):

J/27/83
ADD

RESOLUTION No. J2

Relating to Frequency use for the Meteorological-Satellite and the Earth Exploration-Satellite Services in the Band 401 - 403 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many stations of the meteorological-satellite and the earth exploration-satellite services in the band 401 - 403 MHz are operating, and the importance of the services is increasing;

b) that the meteorological-satellite and the earth exploration-satellite services in the band 401 - 403 MHz are secondary to other services, and the stations of these services cannot claim protection from harmful interference from stations of other stations,

resolves

that the next competent World Administrative Radio Conference should consider allocation to the meteorological-satellite service and the earth exploration-satellite service in the band 401 - 403 MHz with the intent of upgrading the allocation,

invites the Administrative Council

to take the necessary action to place this matter on the agenda of the next competent World Administrative Radio Conference.

Document 34 (India):

IND/34/43
ADD

RESOLUTION No. AAA

Relating to Primary Service Requirements for Earth Exploration-Satellite and Meteorological-Satellite Services in the Bands 401 to 403 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations use frequencies in the bands 401 - 402 MHz and 402 - 403 MHz for reporting to satellites from airborne, land-based and maritime data collection platforms (DCPs);

b) that CCIR has conducted studies of the characteristics, requirements and sharing criteria necessary for compatibility with the services that are shared with these systems and the results are reported in Report 541 and Recommendation 514;

c) that the meteorological-satellite and earth exploration-satellite services in the bands 401 - 402 MHz and 402 - 403 MHz are secondary to other services in these bands and that in order for continuous reliable observations to be made, it is essential that transmission of the data be achieved without harmful interference;

d) that the CCIR has concluded that an interference problem to these systems exists,

resolves

that the next competent world administrative radio conference examines the allocations to meteorological-satellite and earth exploration-satellite services in the bands 401 - 402 MHz and 402 - 403 MHz with the intent of raising the allocation status to primary,

invites the Administrative Council

to take the necessary action to place this matter on the agenda of the next competent world administrative radio conference.

Document 44 (Pakistan):

Agenda item 2.8 - Consideration of the problems associated with the use of the frequency bands in the range 401 - 403 MHz by the meteorological-satellite and earth exploration-satellite services

A Resolution may be adopted by the WARC-92 for a future competent conference to deal with interference problems in the bands 401 - 402 and 402 - 403 MHz.

Document 61 (China (People's Republic of)):

CHN/61/39

RESOLUTION No. XX

Consideration of problems associated with the use of the frequency bands in the range 401 - 403 MHz by the meteorological satellite and earth exploration-satellite services.

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that a number of administrations have already allocated frequency bands of 401 - 402 MHz and 402 - 403 MHz to the meteorological satellite and earth exploration-satellite services with some other administrations cherishing the same intention;

b) that in the above-mentioned bands, both the meteorological satellite and earth exploration-satellite services are subject to interference, being allocated on a secondary basis; and

c) that the CCIR has carried out studies of the characteristics of these services and their sharing criteria with other services,

resolves

that the next competent world administrative radio conference considers the upgrading of the use of the frequency bands of 401 - 402 MHz and 402 - 403 MHz by the meteorological satellite and earth exploration-satellite services to the primary status,

invites the Administrative Council

to place this matter on the agenda of the next competent world administrative radio conference.

Document 63 (Mexico):

MEX/63/124
ADD

RECOMMENDATION No. MEX A

Relating to the Use of the Frequency Bands in the Range 401 - 403 MHz by the Meteorological-Satellite and Earth Exploration-Satellite Services

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the frequencies 401 - 403 MHz are used by some Administrations for collecting meteorological information via satellite communications;

b) that CCIR Reports 541-2 and 514-2 contain studies on the characteristics, requirements and sharing criteria needed to make the use of the band compatible with the services sharing the systems;

c) that it is necessary to have a reliable supply of meteorological satellite information without problems of harmful interference,

recommends

that a forthcoming competent world administrative radio conference should examine the allocation of the band 401 - 403 MHz and review the category of the meteorological-satellite service with a view to allocating it on a primary basis and analysing the problems of sharing with other services in the band 401 - 403 MHz with the aim of finding a solution,

invites the Administrative Council

to take the necessary steps to ensure that consideration of problems relating to the use of the frequency bands in the range 401 - 403 MHz by the meteorological-satellite and earth exploration-satellite services is included in the agenda for a forthcoming competent world administrative radio conference.

Reasons: The need to upgrade the category of allocation of the meteorological service in the frequency band 401 - 403 MHz and endeavour to resolve the problems of the incompatibility of the earth exploration-satellite service in that band.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/13-E
6 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS RELEVANT TO AGENDA ITEM 2.9.1

(Spurious emissions)

The following texts relevant to item 2.3 of Document DT/5 have been enclosed to facilitate consideration:

- Recommendation No. 66
- AUS/31/70-75 (Doc. 31) (Australia).

REC66-1

RECOMMENDATION No. 66

Relating to Studies of the Maximum Permitted Levels of Spurious Emissions

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that Appendix 8 to the Radio Regulations 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, for the frequency bands below 17.7 GHz;

b) that the principal objective of Appendix 8 is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;

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

d) that while Appendix 8 applies only to the mean power of the transmitter and the spurious emissions, there are a variety of emissions where the interpretation of the term "mean power" and its consequential measurement are difficult;

e) that whilst the CCIR is studying this problem, it has not yet furnished adequate Recommendations pertaining to Appendix 8 for frequency bands above 960 MHz;

f) that spurious emissions from transmitters operating in space stations may cause harmful interference, particularly in regard to intermodulation components from wide-band amplifiers which cannot be adjusted after launch;

REC66-2

g) that spurious emissions from earth stations also require particular study;

h) that no information is available from the CCIR regarding spurious emissions from stations employing digital modulation techniques in the frequency bands above 960 MHz;

noting

that in large metropolitan areas radio spectrum usage above 960 MHz is extensive and rapidly growing and that much of this growth in urban areas is now taking place above 10 GHz;

recommends that the CCIR

1. study as a matter of urgency the question of spurious emissions resulting from space services 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. 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 8;

3. establish appropriate measurement techniques for spurious emissions, including the determination of reference levels for wide-band transmissions as well as the applicability of reference measurement bandwidths;

4. study the categorizing of emissions and spurious emissions in terms of "mean power" and develop appropriate Recommendations to facilitate the interpretation and measurement of "mean power" as it applies to the various classes of emissions.

Document 31 (Australia):

RECOMMENDATION No. 66 (Rev. WARC-92)

Relating to Studies of the Maximum Permitted Levels of Spurious Emissions

AUS/31/70 MOD

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum~~, Geneva, 1979~~ (Malaga-Torremolinos, 1992),

AUS/31/71 ADD

recalling

Recommendation No. 66 of the World Administrative Radio Conference, Geneva, 1979;

considering

AUS/31/72 ADD

g) that spurious emissions can cause harmful interference to passive services including the radio astronomy service in bands above 17.7 GHz;

AUS/31/73 (MOD)

~~g~~ h) that spurious emissions from earth stations also require particular study;

AUS/31/74 (MOD)

~~h~~ i) that no information is available from the CCIR regarding spurious emissions from stations employing digital modulation techniques in the frequency bands above 960 MHz;

recommends that the CCIR

AUS/31/75 ADD

5. provide a report to the next competent conference on the results of its studies with a view to reviewing and including spurious emission limits in Appendix 8 of the Radio Regulations for the bands above 17.7 GHz.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/14-E
6 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS RELEVANT TO AGENDA ITEM 2.9.2

(REVIEW OF RESOLUTION No. 703)

The following texts relevant to item 2.4 of Document DT/5 have been enclosed to facilitate consideration.

Annex I:
- Resolution No. 703
- USA/12/178-188 (Document 12) (United States)
- E/35/1-12 (Document 35) (Spain)
- MLI/39/14 (Document 39(Rev.1) (Mali)
- EQA/45/33-44 (Document 45) (Ecuador)
- MEX/63/111-122 (Document 63) (Mexico)

Annex II: Circular-letter No. 77 (Secretary-General) (Results of consultation on application of Resolution No. 703).

ANNEX I

RES703-1

RESOLUTION No. 703

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services [1]

The World Administrative Radio Conference, Geneva, 1979,

considering

a) that, in frequency bands shared with equal rights by space radiocommunication and terrestrial radiocommunication services, it is necessary to impose certain technical limitations and coordination procedures on each of the sharing services for the purpose of limiting mutual interference;

b) that, in frequency bands shared by space stations located on geostationary satellites, it is necessary to impose coordination procedures for the purpose of limiting mutual interference;

c) that the calculation methods and interference criteria relating to coordination procedures referred to in paragraphs *a)* and *b)* above are based upon CCIR Recommendations;

d) that, in recognition of the successful sharing of the frequency bands by space radiocommunication and terrestrial radiocommunication services, and the continuing improvements in space technology, each CCIR Plenary Assembly subsequent to the Xth Plenary Assembly (Geneva, 1963) has

[1] Replaces Resolution No. Spa2 – 6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.

RES703-2

improved upon some of the technical criteria recommended by the preceding Plenary Assembly;

e) that CCIR Plenary Assemblies are held triennially, whereas administrative radio conferences, which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations, are in practice held less frequently and with much less regularity;

f) that the International Telecommunication Convention (Malaga-Torremolinos, 1973) recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned;

is of the opinion

a) that subsequent Plenary Assemblies of the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

b) that administrations should receive advance information of the drafts of the relevant CCIR Recommendations;

c) that the administrations should whenever possible apply the current CCIR Recommendations on sharing criteria when planning systems for use in frequency bands shared with equal rights between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

invites the CCIR

a) to request its Study Groups to prepare, at their final meetings before the Plenary Assembly, a provisional list identifying relevant parts of drafts of revised and new CCIR Recommendations affecting the calculation methods and the interference criteria, and also those specific sections of the

RES703-3

Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

b) to request the Director of the CCIR to forward this list together with texts of these drafts of revised and new Recommendations to administrations and to the IFRB within thirty days following the final Study Group meetings;

resolves that

1. the IFRB shall immediately distribute the information mentioned in *invites b)* above to all administrations, so that it reaches them as soon as possible before the convening of the subsequent Plenary Assembly. This should be accompanied by a notice indicating that the enclosed texts are subject to approval at the next CCIR Plenary Assembly;

2. *a)* each CCIR Plenary Assembly, having adopted any or all of the relevant Recommendations and approved the appropriate portions of the list mentioned in *invites a)* above, should arrange for the Secretary-General to be informed of the list and those Recommendations which affect the appropriate calculation methods and the interference criteria to be employed;

b) the Secretary-General shall forward this list and the appropriate texts to all administrations within thirty days, asking them to indicate within four months those CCIR Recommendations or specific technical criteria defined in the Recommendations referred to in paragraph 2.*a)* above to which they agree for use in the application of the pertinent provisions of the Radio Regulations;

3. the administrations which do not reply to the Secretary-General's consultation within four months shall be sent a telegram asking for their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations. If no reply is received within thirty days from the date of dispatch of the telegram, it shall be concluded that the administration does not wish to express an opinion at that time;

4. should an administration, in its reply to the Secretary-General's consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, or should an administration not reply to the Secretary-General's consultation as in paragraph 3 above, the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that administration;

RES703-5

5. the Secretary-General shall publish, for the information of all administrations, a list, prepared by the IFRB on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not. This consolidated list shall also include the administrations mentioned in paragraph 3 above;

6. the IFRB shall take into account:

a) the applicability of the CCIR calculation methods and the interference criteria when making technical examinations with respect to cases involving only administrations to which such methods and criteria are acceptable;

b) the applicability of the calculation methods and the interference criteria defined in the Radio Regulations in accordance with the consolidated list referred to in paragraph 5 above, when making technical examinations with respect to cases involving the other administrations;

7. the Secretary-General of the ITU shall annually remind administrations which have not previously replied to communicate their decision in pursuance of paragraph 3 above;

8. if, at a later date, questions arise concerning the application of the relevant calculation methods and interference criteria to a case involving the administrations mentioned in paragraph 3 above, the IFRB shall enquire of the administrations concerned whether or not they would agree to the application of the methods and criteria defined in the relevant CCIR Recommendations referred to in paragraph 2 above;

9. the consolidated list published pursuant to paragraph 5 above shall be updated on the basis of the replies received in accordance with paragraphs 7 and 8 above.

Document 12 (USA):

RESOLUTION No. 703

USA/12/178
MOD

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services[1]

USA/12/179
SUP

~~1 Replaces Resolution No. Spa2-6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.~~

USA/12/180
MOD

The World Administrative Radio Conference ~~Geneva, 1979,~~ for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

USA/12/181
MOD

e) that CCIR Plenary Assemblies are held ~~triennially~~frequently and with regularity, whereas administrative radio conferences, which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations, are in practice held less frequently and with much less regularity;

USA/12/182
ADD

f) that the CCIR has adopted a procedure for the approval of Recommendations between Plenary Assemblies;

USA/12/183
MOD

~~f)~~ g) that the International Telecommunication Convention ~~(Malaga-Torremolinos, 1973)~~ recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned,

is of the opinion

USA/12/184
MOD

a) that subsequent ~~Plenary Assemblies~~decisions of the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

invites the CCIR

USA/12/185
MOD

a) to request its Study Groups to prepare, at their final meetings before the Plenary Assembly, a provisional list identifying relevant parts of approved new or revised CCIR Recommendations and drafts of revised ~~and~~or new CCIR Recommendations affecting the calculation methods and the interference criteria, and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

USA/12/186
MOD

b) to request the Director of the CCIR to forward this list together with texts of approved new or revised CCIR Recommendations and texts of ~~these~~drafts of revised ~~and~~or new Recommendations to administrations and to the IFRB within thirty days following the final Study Group meetings,

resolves that

USA/12/187
MOD

1. the IFRB shall immediately distribute the information mentioned in invites b) above to all administrations, so that it reaches them as soon as possible before the convening of the subsequent Plenary Assembly. This should be accompanied by a notice indicating that the enclosed texts have already been approved by the CCIR between Assemblies or are subject to approval at the next CCIR Plenary Assembly;

USA/12/188
MOD

2. a) each CCIR Plenary Assembly~~, having adopted any or all of the relevant Recommendations and approved the appropriate portions of the list mentioned in invites a) above,~~ should arrange for the Secretary-General to be informed of the list mentioned in invites a) above, and those Recommendations which affect the appropriate calculation methods and the interference criteria to be employed;

Document 35 (Spain):

E/35/1
MOD

RESOLUTION No. 703 (Rev. WARC-92)

NOC

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services

E/35/2
MOD

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992), ~~Geneva, 1979,~~

NOC

considering

. . . . . .

E/35/3
MOD

d) that, in recognition of the successful sharing of the frequency bands by space radiocommunication and terrestrial radiocommunication services, and the continuing improvements in space technology and that of the earth segment, each CCIR Plenary Assembly subsequent to the Xth Plenary Assembly (Geneva, 1963) has improved upon some of the technical criteria recommended by the preceding Plenary Assembly;

E/35/4
MOD

e) that CCIR Plenary Assemblies are held at set intervals ~~triennially~~, whereas administrative radio conferences, which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations, are in practice held less frequently and with much less regularity;

NOC

. . . . . .

E/35/5
ADD

g) that the administrations keep the CCIR continually informed of practical results and experience of sharing between terrestrial and space radiocommunication services or between space services, which help to bring about significant improvements in coordination procedures, calculation methods and harmful interference thresholds, and thereby to optimize the available orbit/spectrum resources;

NOC

is of the opinion

. . . . . .

E/35/6
MOD

c) that the administrations should ~~whenever possible~~ apply the current CCIR Recommendations on sharing criteria when planning systems for use in frequency bands shared with equal rights between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

NOC

invites the CCIR

. . . . . .

NOC

resolves that

. . . . . .

E/35/7
MOD 3. The administrations which do not reply to the Secretary-General's consultation within four months shall be sent a telegram asking for their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations. If no reply is received within thirty days from the date of dispatch of the telegram, it shall be concluded that the administration ~~does not wish to express an opinion at that time~~agrees to those CCIR Recommendations or specific technical criteria defined in the Recommendations referred to in paragraph 2a) above for use in the application of the pertinent provisions of the Radio Regulations;

E/35/8
MOD 4. should an administration, in its reply to the Secretary-General's consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, ~~or should an administration not reply to the Secretary-General's consultation as in paragraph 3 above,~~ the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that administration;

E/35/9
MOD 5. the Secretary-General shall publish, for the information of all administrations, a list, prepared by the IFRB on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not~~. This consolidated list shall also include the administrations mentioned in paragraph 3 above~~;

NOC . . . . . .

E/35/10
SUP 7.

E/35/11
SUP 8.

E/35/12
SUP 9.

Document 39(Rev.1) Mali:

IV. Agenda item 2.9 - Relevant Recommendations and Resolutions

Agenda item 2.9.2 - Approval of Recommendations between two Plenary Assemblies

The approval of Recommendations between two Plenary Assemblies was discussed at the XVIIth Plenary Assembly of the CCIR in Düsseldorf.

Our Administration shares the concern expressed by the developing countries at this Plenary Assembly.

MLI/39/14

To remedy the shortcomings, the Administration of Mali proposes that meetings should be held at sub-regional level and for each geographical region to provide information on the results of the work of the CCIR and the draft Recommendations being approved.

Document 45 (Ecuador):

EQA/45/33
MOD

RESOLUTION No. 703 (Rev. WARC-92)

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services[1]

EQA/45/34
SUP

~~1~~ ~~Replaces Resolution No. Spa2-6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.~~

EQA/45/35
MOD

The World Administrative Radio Conference ~~(Geneva, 1979)~~ for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

NOC

a) - d)

EQA/45/36
MOD

e) that CCIR Plenary Assemblies are held ~~triennially, whereas~~ more frequently and with greater regularity than Administrative Radio Conferences which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations~~, are in practice held less frequently and with much less regularity~~;

EQA/45/37
ADD

f) that the CCIR has adopted a procedure for approving Recommendations between Plenary Assemblies;

EQA/45/38
MOD

~~f)~~g) that the ~~International Telecommunication~~ Convention ~~(Malaga-Torremolinos, 1973)~~ recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned,

is of the opinion

EQA/45/39
MOD

a) that subsequent ~~Plenary Assemblies of~~ decisions taken by the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

EQA/45/40
NOC b)

NOC c)

invites the CCIR

EQA/45/41
MOD a) to request its Study Groups to prepare, at their final meetings before the Plenary Assembly, a provisional list identifying relevant parts of new or revised Recommendations approved in the interval between the Plenary Assemblies and of drafts of revised and new CCIR Recommendations affecting the calculation methods and the interference criteria and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

EQA/45/42
MOD b) to request the Director of the CCIR to forward this list together with texts of any revised or new Recommendations approved in the interval between Plenary Assemblies and of these drafts of revised and new Recommendations to administrations and to the IFRB within thirty days following the final Study Group meetings,

Document 63 (Mexico):

PROPOSAL CONCERNING RESOLUTIONS AND RECOMMENDATIONS

RESOLUTION No. 703

MEX/63/111
MOD

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services[1]

MEX/63/112
SUP

~~[1] Replaces Resolution No. Spa2-6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971.~~

MEX/63/113
(MOD)

The World Administrative Radio Conference, ~~Geneva, 1979~~ Malaga-Torremolinos, 1992.

considering

NOC a)

NOC b)

NOC c)

NOC d)

MEX/63/114
MOD

e) that CCIR Plenary Assemblies are held ~~triennially, whereas~~ more frequently and regularly than administrative radio conferences, which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations, ~~are in practice held less frequently and with much less regularity~~;

MEX/63/115
ADD

f) that the CCIR has adopted a procedure for approving Recommendations between Plenary Assemblies;

MEX/63/116
MOD

~~f)~~g) that the ~~International Telecommunication~~ Convention ~~(Malaga-Torremolinos, 1973)~~ recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned;

is of the opinion

MEX/63/117
MOD

a) that subsequent ~~Plenary Assemblies~~ decisions of the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

NOC b)

NOC c)

MEX/63/118

Invites the CCIR

MEX/63/119
MOD a) to request its Study Groups to prepare, at their final meetings before the Plenary Assembly, a provisional list identifying relevant parts of new or revised Recommendations approved in the interval between Plenary Assemblies, and of drafts of revised Recommendations and new CCIR Recommendations affecting the calculation methods and the interference criteria, and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

MEX/63/120
MOD b) to request the Director of the CCIR to forward this list together with texts of the revised Recommendations and new Recommendations approved in the interval between Plenary Assemblies and these drafts of revised and new Recommendations to administrations and to the IFRB within thirty days following the final Study Group meetings;

resolves that

MEX/63/121
MOD 1. the IFRB shall immediately distribute the information mentioned in Invites b) above to all Administrations, so that it reaches them as soon as possible before the convening of the subsequent Plenary Assembly. This should be accompanied by a notice indicating that the enclosed texts have been approved in the interval between Plenary Assemblies or are subject to approval at the next CCIR Plenary Assembly;

MEX/63/122
MOD 2. a) each CCIR Plenary Assembly~~, having adopted any or all of the relevant Recommendations and approved the appropriate portions of the list mentioned in Invites a) above,~~ should arrange for the Secretary-General to be informed of the list mentioned in Invites a) and those Recommendations which affect the appropriate calculation methods and the interference criteria to be employed;

NOC b)

NOC 3 - 9

Reasons: To incorporate the decisions of the XVIIth CCIR Plenary Assembly concerning the accelerated approval of Recommendations.

ANNEX II

UNION INTERNATIONALE DES TELECOMMUNICATIONS
INTERNATIONAL TELECOMMUNICATION UNION
UNIÓN INTERNACIONAL DE TELECOMUNICACIONES

Place des Nations
CH 1211 Genève 20

Téléphone National (022) 730 51 11
International + 41 22 730 51 11

Tg: BURINTERNA GENEVE
Télex: 421 000 UIT CH

TELEFAX
+ 41 22 733 72 56

TELETEX
228 46815100 = UIT

SECRÉTARIAT GÉNÉRAL

Geneva, 7 October 1991

Référence à rappeler dans la réponse
When replying, please quote
Indiquese en la respuesta esta referencia

Circular-letter No. 7.7
RM/Z/CSF

Tél: 730.59.90

To all administrations

Subject: Application of Resolution 703 of the WARC-79 relating to the "Calculation methods and interference criteria recommended by the CCIR for sharing frequency bands between space radiocommunication and terrestrial radiocommunication services or between space radiocommunication services"

To the Director-General

Dear Sir,

In pursuance of Resolution 703 of the World Administrative Radio Conference, Geneva, 1979, the Secretary-General consulted all administrations by Circular-letter 39 of 1st November 1990, concerning their agreement to the application of revised and new CCIR Recommendations affecting the calculation methods and the interference criteria relating to sharing of frequency bands between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services. A reminder Circular-telegram (A219) was sent on 1st March 1991.

Pursuant to paragraph 5 of the Resolution, the IFRB has analysed the replies received from administrations and has prepared the summary which appears in the Annexes. Annex 1 contains the consolidated list prepared on the basis of the positive replies received from administrations and Annex 2 lists all administrations from which either no reply or no positive reply has been received.

If, at a later date, questions arise concerning the application of the relevant calculation methods and interference criteria to a case involving the administrations listed in Annex 2, the IFRB, in accordance with paragraph 8 of Resolution 703, will enquire of the administrations concerned whether or not they would agree to the application of revised and new CCIR Recommendations.

In accordance with paragraph 3 of the Resolution, administrations listed in Annex 2 4) are those that expressed no opinion at the time of the original consultation. These administrations are reminded pursuant to paragraph 7 of the Resolution to communicate their decision relating to the application of revised and new CCIR Recommendations to the Secretary-General so that pursuant to paragraph 9 of the Resolution the consolidated list published in Annex 1 may be updated.

Yours faithfully,

Pekka TARJANNE
Secretary-General

Annexes: 2

Annex 1

ADMINISTRATIONS TO WHICH THE CCIR RECOMMENDATIONS LISTED BELOW ARE APPLICABLE

CCIR Rec. No.	TITLE	Applicable parts of CCIR Recommendations	Relevant provision of the RR	Administrations accepting CCIR Recommendations
466-5	Maximum permissible level of interference in a telephone channel of a geostationary satellite network in the fixed-satellite service employing frequency modulation with frequency-division multiplex, caused by other networks of this service	Considering (p) added Note 2 added	1084 1084.1	AFS, ARS, AUS, B, BEL, CAF, CAN, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, S, SUI, SUR, THA, URS, UGA, VEN
523-3	Maximum permissible levels of interference in a geostationary satellite network in the fixed-satellite service using 8-bit PCM encoded telephony, caused by other networks of this service	Note 11 added	1084 1084.1	AFS, ARS, AUS, B, BEL, CAF, CAN, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, S, SUI, SUR, THA, URS, UGA, VEN
524-3	Maximum permissible levels of off-axis e.i.r.p. density from earth stations in the fixed-satellite service transmitting in the 6 and 14 GHz frequency band	Considerings (f) modified and (g) Recommends 3 added Notes 7, 8, 9, 10 added and 11	2636	AFS, ARS, AUS, B, BEL, CAF, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, S, SUI, SUR, THA, UGA, URS, VEN
671	Necessary protection ratios for narrow-band single-channel-per-carrier transmissions interfered-with by analogue television carriers	Considerings (a), (b), (c) (d) and (e) Recommends 1 Notes 1, 2, 3, 4, and 5	1084 1084.1	AFS, ARS, AUS, BEL, CAN, CAF, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, S, SUI, SUR, THA, URS, UGA, VEN
465-3	Reference earth-station radiation pattern for use in coordination and interference assessment in the frequency range from 2 to about 30 GHz	Note 3 added	1084 1084.1 1118 1118.1 1119 1119.1	AFS, ARS, AUS, B, BEL, CAF, CAN, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, S, SUI, SUR, THA, URS, UGA, VEN

CCIR Rec. No.	TITLE	Applicable parts of CCIR Recommendations	Relevant provision of the RR	Administrations accepting CCIR Recommendations
675	Calculation of the maximum power density (averaged over 4 KHz) of a frequency-modulated FDM carrier	Considerings (a), (b) and (c) Recommends 1 and 2 Annex	App. 3 and 4	AFS, AUS, B, BEL, CAF, CAN, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, S, SUI, SUR, THA, URS, UGA, VEN
674	Power flux density values to facilitate the application of Article 14 for FSS vis-à-vis fixed service in the 11.7-12.2 GHz band in Region 2	Considerings (a), (b), (c), (d) and (e) Recommends 1, 2, 3, and 4 Note 1	1620 1630	AUS, B, BEL, CAF, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, , THA, URS, SUI, SUR, UGA, VEN
406-6	Maximum equivalent isotropically radiated power of line-of-sight radio-relay system transmitter operating in the frequency bands shared with the fixed-satellite service	Note 1 modified	2502 to 2511.2	AFS, AUS, B, BEL, CAF, CAN, CLN, CPV, CVA, DNK, ETH, G, INS, LUX, MEX, MTN, NZL, PHL, PNG, POR, QAT, RRW, S, SUI, SUR THA, URS, UGA, VEN

Annex 2

ADMINISTRATIONS TO WHICH THE CCIR RECOMMENDATIONS LISTED IN ANNEX 1 ARE NOT APPLICABLE

1) Administrations which have replied not accepting CCIR Recommendations

B : Rec. No 671
CAN : Rec. No. 524

2) Administrations not wishing to express an opinion at this time

ARS : Rec. Nos., 406-6, 675
CAN : Rec. No. 674
ISL : Rec. Nos. 466-5, 523-3, 524-3, 671, 465-3, 675, 674, 406-6

3) Administrations which have replied that Rec. No. 674 does not apply to them

AFS, ARS, S

4) Administrations from which no reply has been received

AFG, AGL, ALB, ALG, ARG, ATG, AUT, BAH, BDI, BEN, BFA, BGD, BHR, BLZ, BOL, BOT, BRB, BRM, BRU, BTN, BUL, CBG, CHL, CHN, CLM, CME, COM, COG, COM,CTI, CTR, CUB, CYP, D, DDR, DJI, DMA, DOM, E, EGY, EQA, F, FJI, FNL, GAB,GHA, GMB, GNB, GNE, GRC, GRD, GTM, GUI, GUY, HND, HNG, HOL, HTI, I, IND, IRL, IRN, IRQ, ISR, J, JMC, JOR, KEN, KIR, KOR, KRE, KWT, LAO, LBN, LBR, LBY, LCA, LIE, LSO, MAU, MCO, MDG, MLA, MLD, MLI, MLT, MNG, MOZ, MRC, MWI, NCG, NGR, NIG, NMB, NOR, NPL, NRU, OMA, ONU, PAK, PNR, POL, PRG, PRU, ROU, SCN, SDN, SEN, SEY, SLM, SLV, SMO, SMR, SNG, SOM, SRL, STP, SWZ, SYR, TCD, TCH, TGO, TON, TRD, TUN, TUR, TUV, TZA, UAE, URG, USA, VCT, VTN, VUT, YEM, YUG, ZAI, ZMB, ZWE,

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CAMR-92 **CAMR CHARGÉE D'ÉTUDIER LES ATTRIBUTIONS DE FRÉQUENCES DANS CERTAINES PARTIES DU SPECTRE**

MÁLAGA-TORREMOLINOS, FÉVRIER/MARS 1992

Document DT/15-FES
7 février 1992
Original: anglais:

Groupe de travail/Working Group/Grupo de trabajo 5B

Tâches confiées au Groupe de travail 5B
Tasks for Working Group 5B
Tareas del Grupo de Trabajo 5B

		Docs.
1.	Articles/Artículos 27 et/and/y 28	DT/1B2
2.	Resolutions autres que celles liées aux procédures de coordination des réseaux à satellite géostationnaire et non-géostationnaire Resolutions other than those concerning coordination procedures for geostationary and non-geostationnary satellite networks Resoluciones otras que las que se refieren a los procedimientos de coordinación de las redes de satélite geoestacionario y no-geoestacionario	DT/1B3 DT/1B3 ADD1 LUX/64/6
3.	Articles / Artículos 29 et/and/y 30	DT/1B2 IFRB/24
4.	Procédures relatives aux procédures de coordination des réseaux à satellite géostationnaire et non-géostationnaire Procedures concerning coordination procedures for geostationary and non-geostationary satellite networks Procedimientos relativos a los procedimientos de coordinación de las redes de satélite geoestacionario y no-geoestacionario	DT/1B3 DT/1B3 ADD1
5.	Appendice / Appendix/ Apéndice 26 et/and/y Article/ Artículo 12	IFRB/5 ALG/40 PAK/44/7 CLN/62/13 SEN/75 ARG/79

J.P. LUCIANI
Président/Chairman/Presidente

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/16-E
6 February 1992
Original: English

WORKING GROUP 4A

Note from the Chairman of Working Group 4A

GUIDELINES TO BE USED FOR CONSIDERATIONS OF AGENDA ITEM 2.2.2

1. In response to Recommendation No. 511(HFBC-87), and in view to implement Resolution Nos. 511 (HFBC-87) and 517(HFBC-87), the following guidelines are established for considering the extensions of the allocations to the HF broadcasting service:

- interests of the existing non-broadcasting services should be safeguarded through appropriate decisions;
- frequency bands should be made available on a worldwide basis;
- bands adjacent to existing HFBC bands should be chosen;
- bands internationally planned for non-broadcasting services in accordance with the Radio Regulations shall be avoided, e.g., maritime mobile (Appendix 31 and Appendix 25), aeronautical mobile (R), aeronautical mobile (OR) bands, etc.;
- bands allocated to the standard frequency and time signal service shall be avoided;
- [incompatibility between amateur service and broadcasting service shall be taking into consideration so as to avoid difficult sharing situations].

S. HESS
Chairman

UNION INTERNATIONALE DES TELECOMMUNICATIONS

CAMR-92 **CAMR CHARGEE D'ETUDIER LES ATTRIBUTIONS DE FREQUENCES DANS CERTAINES PARTIES DU SPECTRE**

MALAGA-TORREMOLINOS, FEVRIER/MARS 1992

Corrigendum 1 au
Document DT/17-F/E/S
10 février 1992
Original: anglais

Origine: Documents DL/5, DL/14

GROUPE DE TRAVAIL 5A

Projet

PREMIER RAPPORT DU PRESIDENT DU GROUPE DE TRAVAIL 5A A LA COMMISSION 5

1. Texte français

Remplacer la page 3 du document par la page ci-jointe.

2. English text

No change.

3. Texto español

Sustitúyase la página 3 por la página adjunta.

NOC Mob-87

Section III. Classe et nombre minimum de personnes dans les stations de navire et les stations terriennes de navire qui utilisent les fréquences et les techniques prescrites au chapitre N IX et pour la correspondance publique

NOC 3987 Mob-87 § 4. Les administrations font en sorte que le personnel des stations de navire et des stations terriennes de navire possède les aptitudes professionnelles lui permettant d'assurer efficacement le service de ces stations et prennent les mesures nécessaires pour garantir la disponibilité et la maintenance des équipements de communications de détresse et de sécurité en vertu des accords internationaux pertinents.

NOC 3988 Mob-87 § 5. Une personne suffisamment qualifiée doit être disponible pour assurer un service spécialisé d'opérateur de communication dans les cas de détresse.

NOC 3989 Mob-87 § 6. Le personnel des stations de navire pour lesquelles une installation radioélectrique est obligatoire en vertu d'accords internationaux et qui utilisent les fréquences et les techniques prescrites au chapitre N IX doit comporter au moins, compte tenu des dispositions de l'article 55:

MOD 3990 Mob-87

a) pour les stations à bord des navires qui naviguent au-delà de la portée des stations côtières en ondes ~~hectométriques~~métriques, compte tenu des dispositions de la Convention pour la sauvegarde de la vie humaine en mer; un titulaire du certificat de radioélectronicien de première ou de deuxième classe, ou du certificat général d'opérateur;

[SUP] 3991 Mob-87

MOD 3992 Mob-87

~~c~~)b) pour les stations ~~de navire~~ à bord de navires qui naviguent à portée des stations côtières fonctionnant en ondes métriques~~:~~compte tenu des dispositions de la Convention pour la sauvegarde de la vie humaine en mer; un titulaire du certificat de radioélectronicien de première ou de deuxième classe, du certificat général d'opérateur ou du certificat restreint d'opérateur.

NOC 3993 Mob-87 § 7. Le personnel des stations de navire pour lesquelles une installation radioélectrique n'est pas obligatoire en vertu d'accords internationaux et qui utilisent les techniques et fréquences prescrites au chapitre NIX doit avoir les aptitudes professionnelles et être titulaire des certificats requis par les administrations.

3994 à 4011 Non attribués.

NOC Mob-87

Sección III. Clase y personal mínimo en las estaciones de barco y estaciones terrenas de barco que utilizan las técnicas y frecuencias prescritas en el capítulo N IX y las prescritas para la correspondencia pública

NOC 3987 Mob-87 § 4. Las administraciones adoptarán las medidas necesarias para que el personal de las estaciones de barco y estaciones terrenas de barco posea las aptitudes profesionales necesarias para operar eficazmente la estación, y tomarán las medidas que garanticen la disponibilidad operacional y el mantenimiento de los equipos para comunicaciones de socorro y seguridad, de conformidad con los acuerdos internacionales pertinentes.

NOC 3988 Mob-87 § 5. Una persona que posea las aptitudes profesionales necesarias deberá estar en disposición de actuar como operador especializado en casos de socorro.

NOC 3989 Mob-87 § 6. El personal de las estaciones de barco provistas obligatoriamente de aparatos de radicomuniaciones en cumplimiento de acuerdos internacionales y que utilizan las frecuencias y técnicas prescritas en el capítulo N IX incluirá, por lo menos, en lo relativo a las disposiciones del articulo 55:

MOD 3990 Mob-87 a) para estaciones a bordo de barcos que navegan fuera del alcance de las estaciones costeras que transmiten en ondas ~~hectométricas~~ métricas, teniendo en cuenta las disposiciones del Convenio para la Seguridad de la Vida Humana en el Mar: un titular del certificado de radioelectrónico de primera o de segunda clase o del certificado de operador general;

[SUP] 3991 Mob-87

MOD 3992 Mob-87 ~~c)~~ b) para estaciones ~~de barco~~ a bordo de barcos que navegan al alcance de las estaciones costeras que transmiten en ondas métricas teniendo en cuanta las disposiciones del Convenio para la Seguridad de la Vida Humana en el Mar: un titular del certificado de radioelectrónico de primera o de segunda clase o del certificado de operador general o del certificado de operador restringido.

NOC 3993 Mob-87 § 7. El personal de las estaciones de barco que no están provistas obligatoriamente de equipos de radicomunicaciones en cumplimiento de acuerdos internacionales y que utilizan las frecuencias y técnicas prescritas en el capítulo N IX estará debidamente calificado y poseerá los certificados necesarios de conformidad con las exigencias de la administración.

3994 a 4011 NO atribuidos.

INTERNATIONALE TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

Document DT/17-E
7 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP 5A

Source: DL/5
DL/14

Draft

FIRST REPORT OF THE CHAIRMAN OF WORKING GROUP 5A TO COMMITTEE 5

1.0 Introduction:

Included in this Report are the modifications to Article 56 prepared by Working Group 5A. These modifications are based on consideration of proposals submitted to the Conference by nineteen Administrations in documents: 9, 12, 20, 23, 26, 27, 30, 31, 44, 52, 57, 61, 62, 63, 65, 74, 75, 79 and 101. Three information papers from IMO (Doc. 11), ICS (Doc. 83) and ITF (Doc. 83) were also considered.

2.0 Background Material:

Texts from IMO Resolution A.703(17) on training of radio personnel in the GMDSS, IMO Resolution A. ...(17) on guide-lines for ensuring availability of radio equipment and Resolution No. 5 of the IMO GMDSS Conference (London, 1988) on Regulation IV/15.7 on maintenance requirements were considered by the Working Group when developing modifications to the relevant provisions of the Radio Regulations.

3.0 Conclusions:

The Working Group considered the proposals of Administrations concerning personnel of stations in the Maritime Mobile and the Maritime Mobile-Satellite Service. After discussion of this matter the Group agreed that the ITU Regulations and the amendments to the 1974 SOLAS Convention concerning Radiocommunications for the GMDSS should be harmonized. Provisions RR 3990-3992 reflecting this decision are in the Report of the Drafting Group 5A1 (DL/14) based on its terms of reference contained in DL/13. Attached is the result of the Working Group's recommendations concerning Article 56.

Annex: 1

Robert C. McIntyre
Chairman, Working Group 5A

ARTICLE 56

NOC Mob-87

Personnel of Stations in the Maritime Mobile and the Maritime Mobile-Satellite Service

NOC Mob-87

Section I. Personnel of Coast Stations and Coast Earth Stations

NOC 3979 Mob-87 § 1. Administrations shall ensure that the staff on duty in coast stations and in coast earth stations are adequately qualified to operate the stations efficiently.

NOC Mob-87

Section II. Class and Minimum Number of Operators of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter IX and for Public Correspondence

NOC 3980 § 2. In the public correspondence service, each government shall take the necessary steps to ensure that stations on board ships of its own nationality have personnel adequate to perform efficient service.

NOC 3981 § 3. The personnel of ship stations in the public correspondence service shall, having regard to the provisions of Article **55**, include at least:

NOC 3982 *a)* ship stations of the first category, except in the case provided for in No. **3986**: a chief operator holding a radiocommunication operator's general certificate or a first-class radiotelegraph operator's certificate;

NOC 3983 *b)* ship stations of the second and third categories, except in the case provided for in No. **3986**: a chief operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate;

NOC 3984 *c)* ship stations of the fourth category, except in the cases provided for in Nos. **3985** and **3986**: one operator holding a radiocommunication operator's general certificate or a first- or second-class radiotelegraph operator's certificate;

NOC 3985 *d)* ship stations in which a radiotelegraph installation is provided but not prescribed by international agreements: one operator holding a radiocommu-nication operator's general certificate or a first- or second-class radiotelegraph operator's certificate, or a radiotelegraph operator's special certificate;

NOC 3986 *e)* ship stations equipped with a radiotelephone installation only: one operator holding either a radiotelephone operator's certificate or a radiotelegraph operator's certificate.

NOC Mob-87

Section III. Class and Minimum Number of Personnel for Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter N IX and for Public Correspondence

NOC 3987 Mob-87

§ 4. Administrations shall ensure that the personnel of ship stations and ship earth stations are adequately qualified to enable efficient operation of the station, and shall take steps to ensure the operational availability and maintenance of equipment for distress and safety communications in accordance with the relevant international agreements.

NOC 3988 Mob-87

§ 5. An adequately qualified person shall be available to act as a dedicated communications operator in cases of distress.

NOC 3989 Mob-87

§ 6. The personnel of ship stations for which a radio installation is compulsory under international agreements and which use the frequencies and techniques prescribed in Chapter N IX shall, with respect to the provisions of Article 55, include at least:

MOD 3990 Mob-87

a) for stations on board ships which sail beyond the range of ~~MF~~ VHF coast stations, taking into account the provisions of the Convention for the Safety of Life at Sea, a holder of a first- or second-class radio electronic certificate or a general operator's certificate;

[SUP] 3991 Mob-87

MOD 3992 Mob-87

~~c)~~ *b)* for ~~ship~~ stations on board ships which sail within the range of VHF coast stations, taking into account the provisions of the Convention for the Safety of Life at Sea: a holder of a first- or second-class radio electronic certificate or a general operator's certificate or a restricted operator's certificate.

NOC 3993 Mob-87

§ 7. The personnel of ship stations for which a radio installation is not compulsory under international agreements and which use the frequencies and techniques prescribed in Chapter N IX shall be adequately qualified and certificated in accordance with the administration's requirements.

3994 to 4011

NOT allocated.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Addendum 1 to
Document DT/18-E
10 February 1992
English only

Working Group 4A

Note from the Chairman of the Working Group 4A

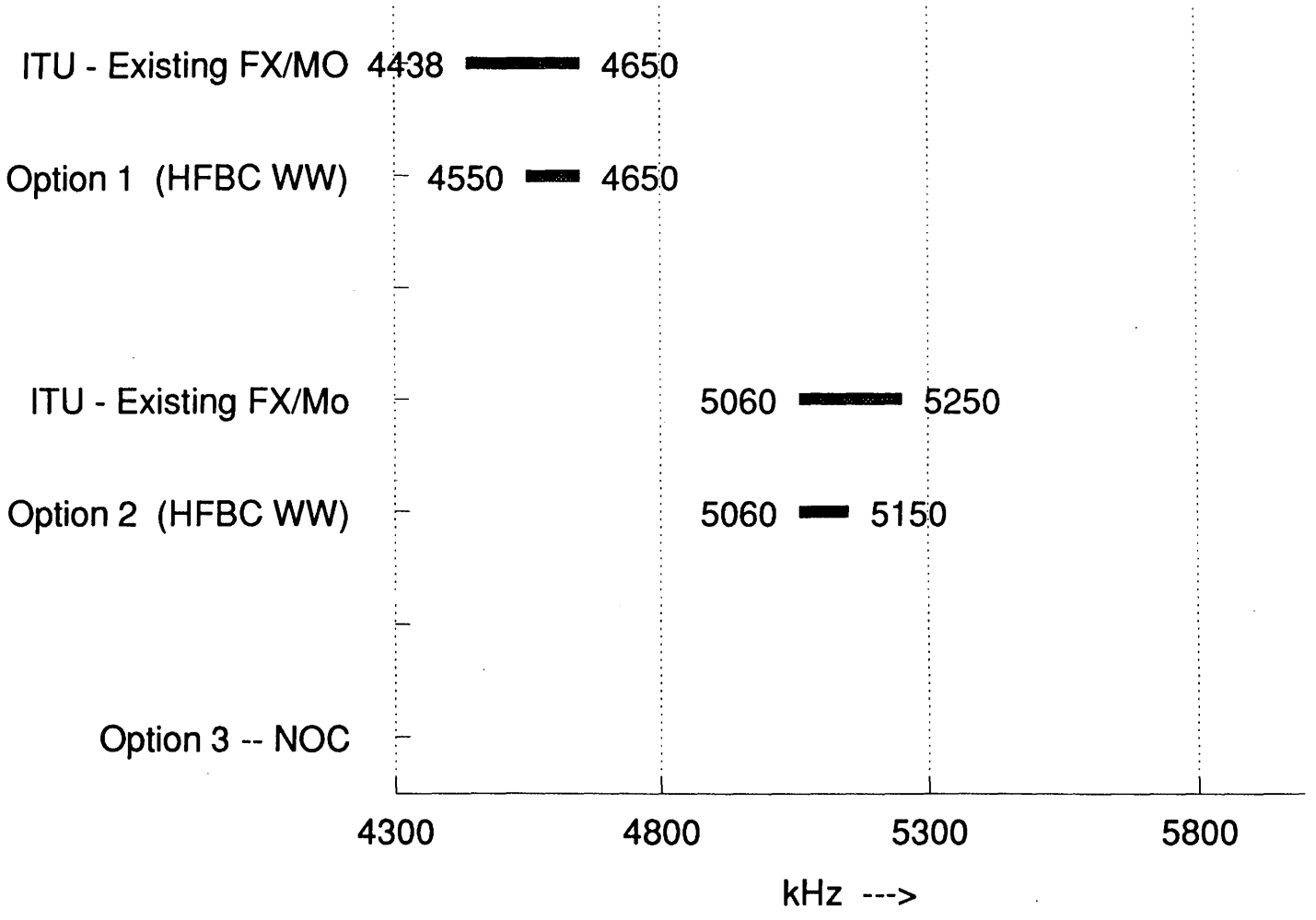
Attached is the graphical representation of the proposals concerning the extensions of the frequency allocations to the HFBC.

S. HESS
Chairman

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

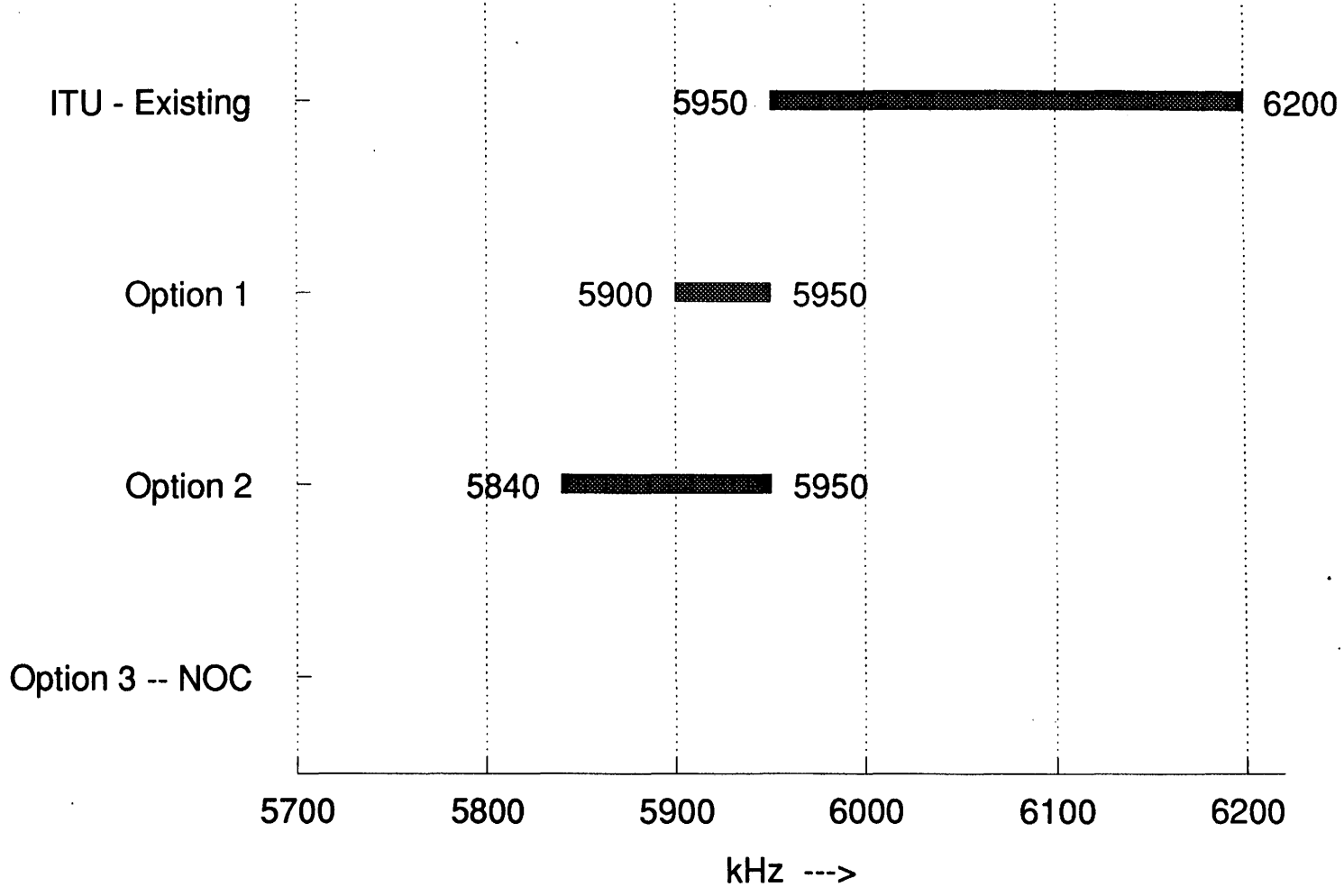
HFBC Allocation Proposals
(4.3 - 5.2 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

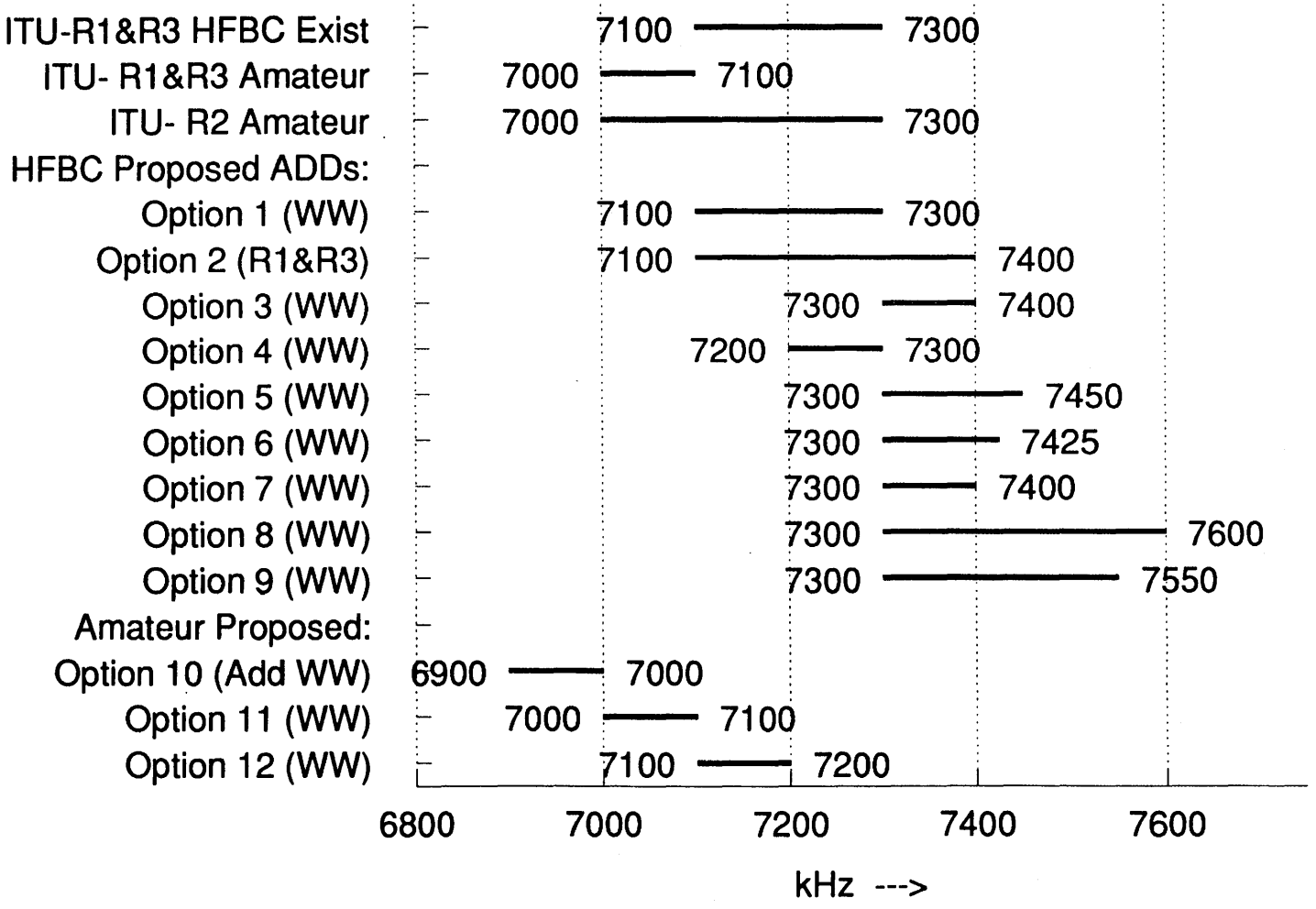
HFBC Allocation Proposals
(5.7 - 6.2 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

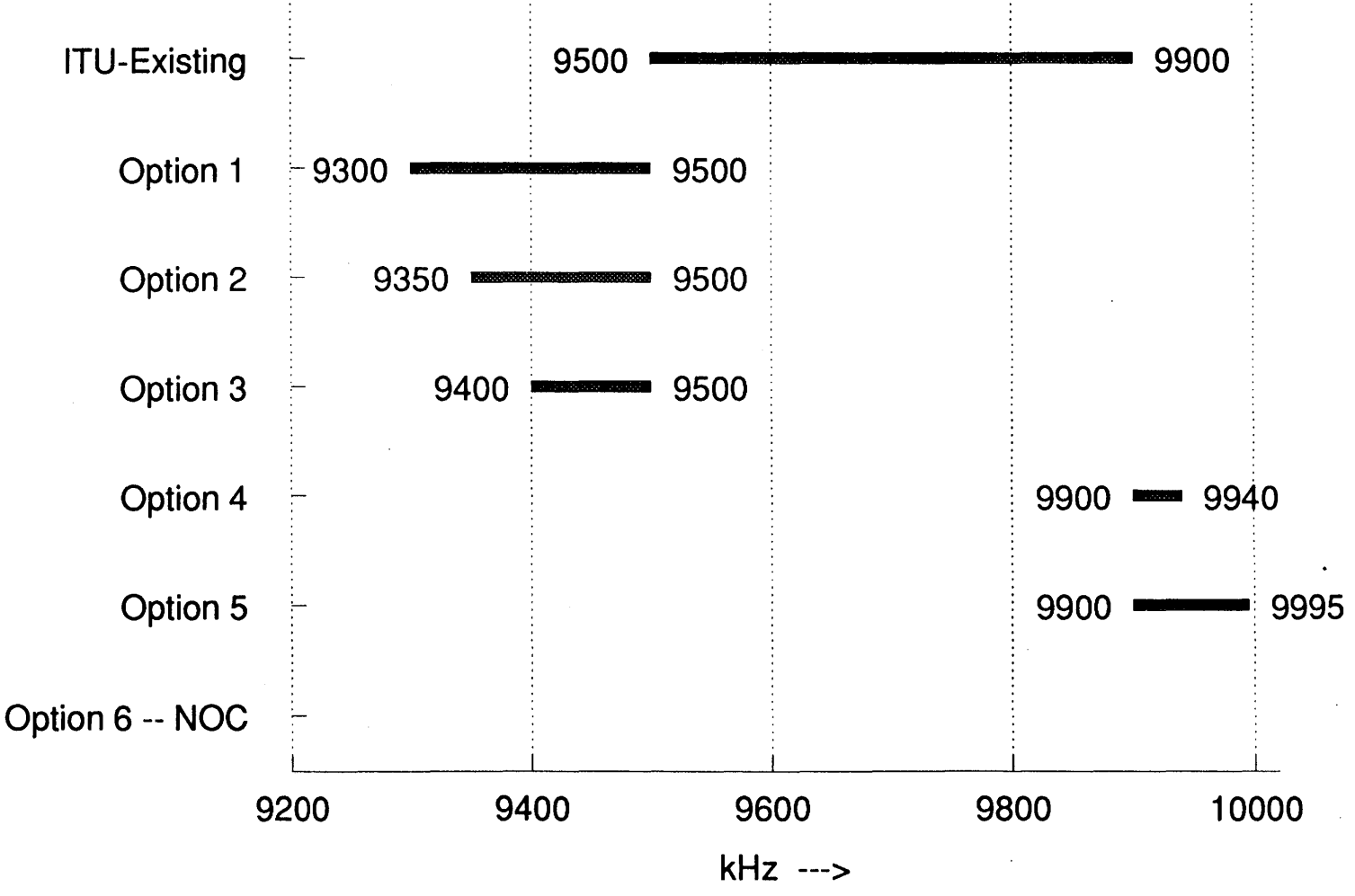
HFBC Allocation Proposals
(6.9 - 7.7 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

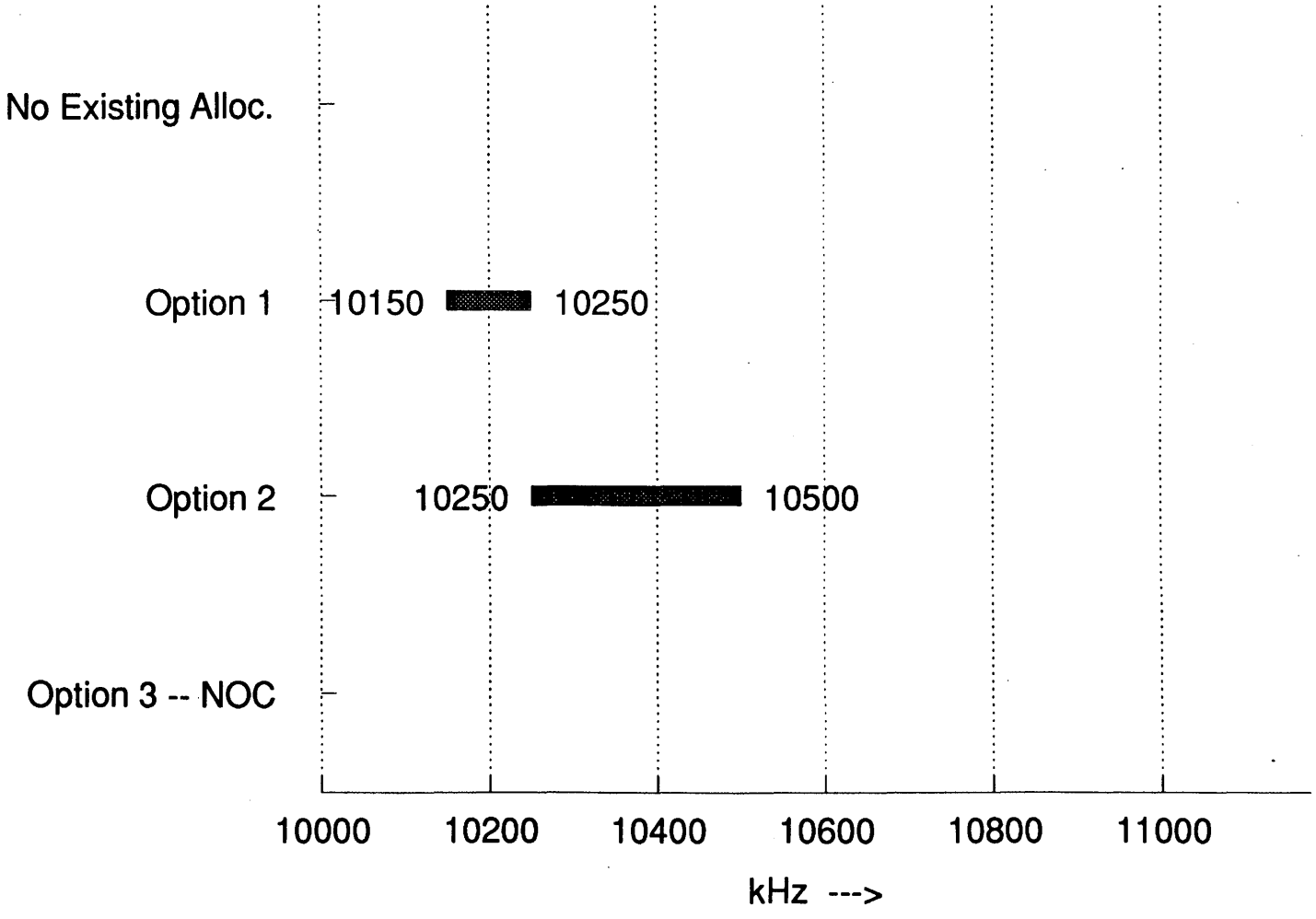
HFBC Allocation Proposals
(9.2 - 10.0 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

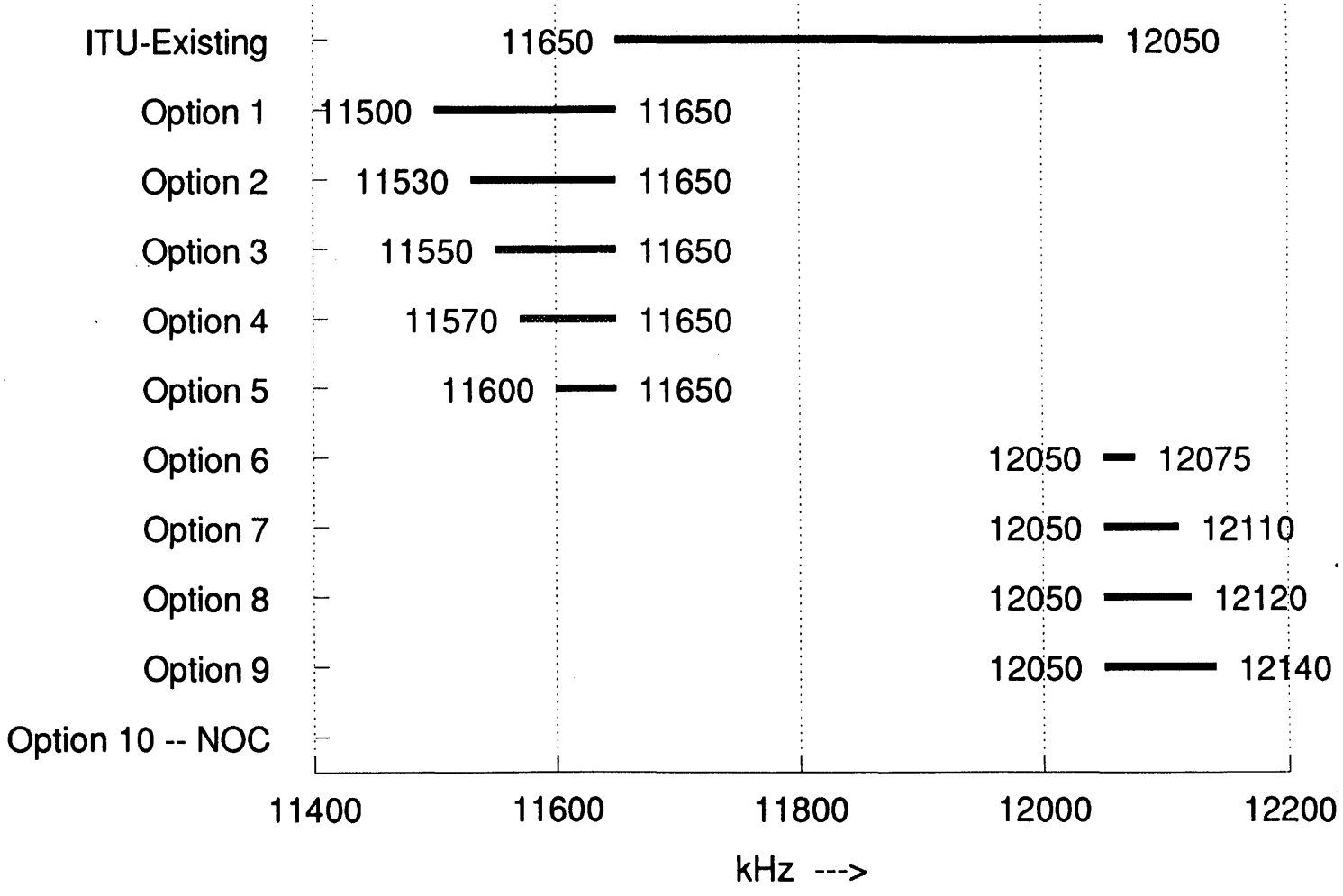
HFBC Allocation Proposals
(10.0 - 11.2 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

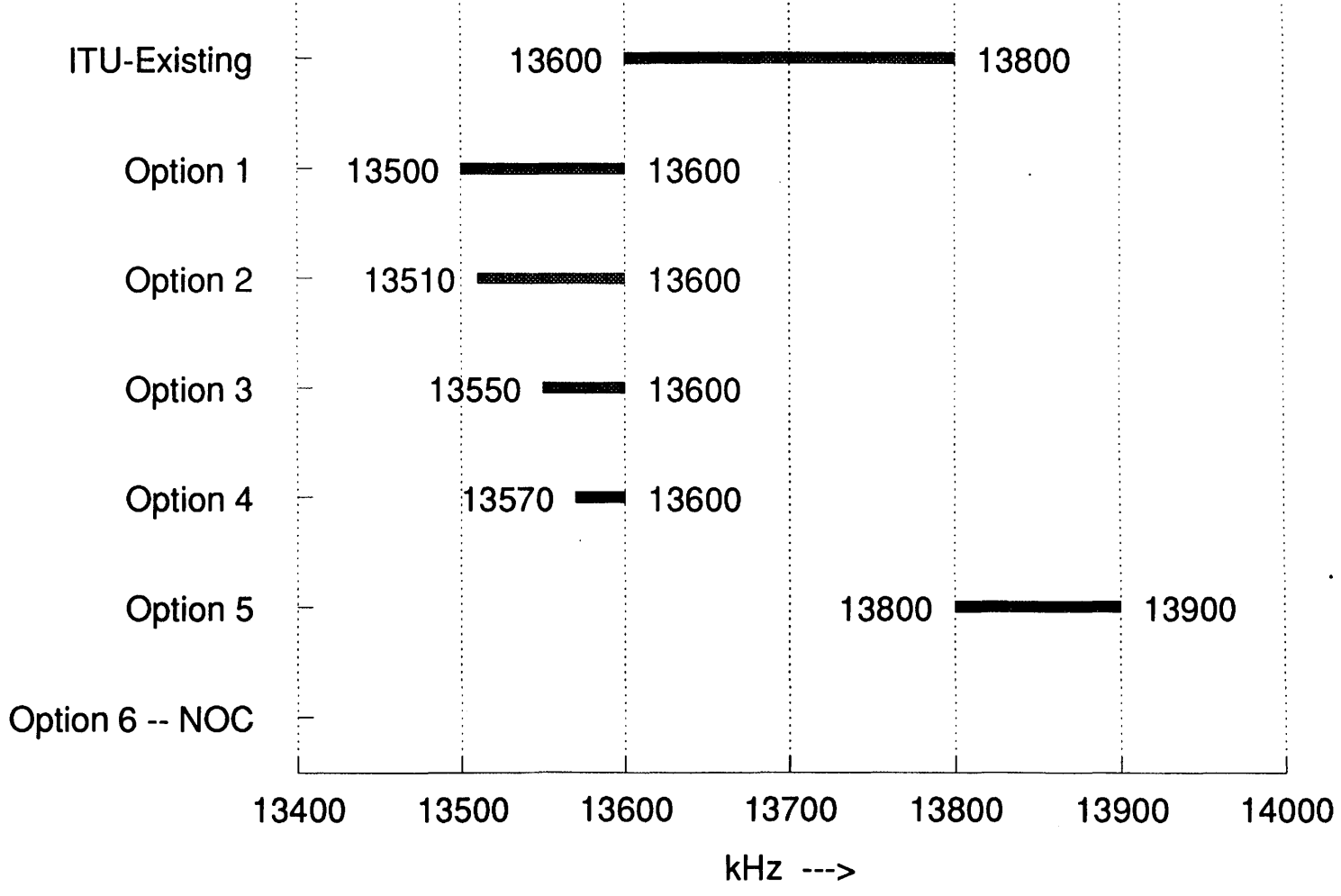
HFBC Allocation Proposals
(11.40 - 12.2 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

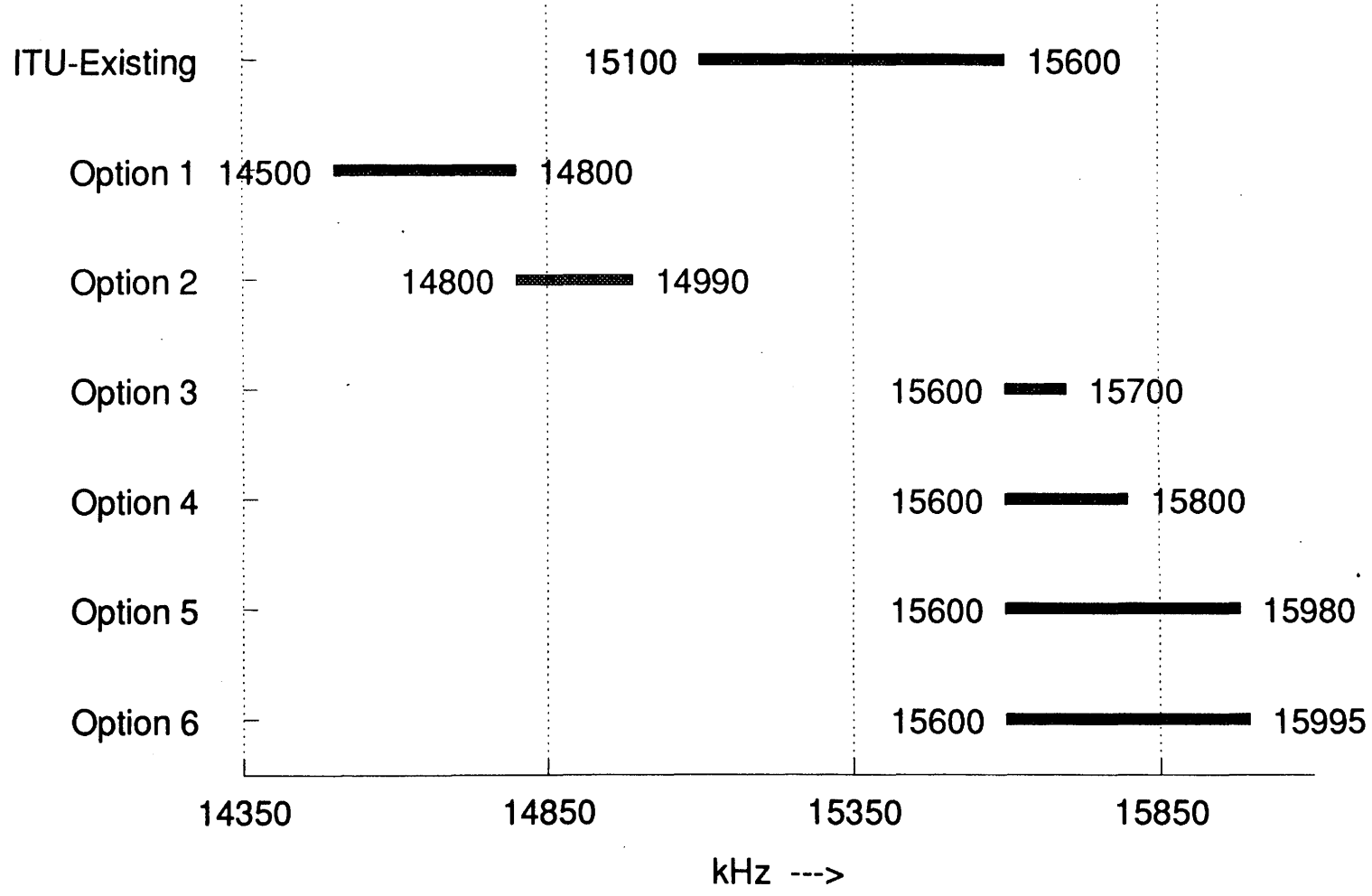
HFBC Allocation Proposals
(13.4 - 14.0 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

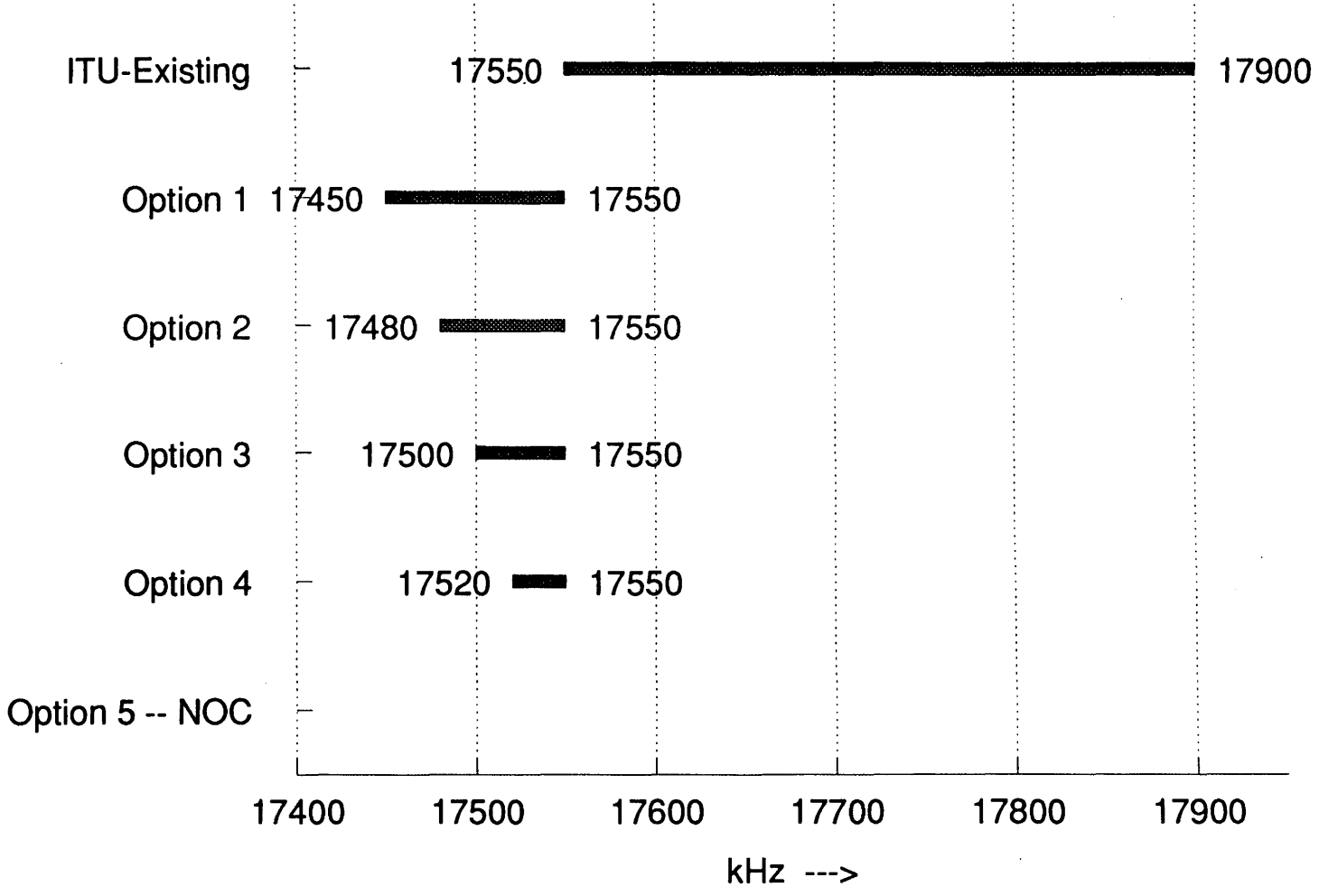
HFBC Allocation Proposals
(14.5 - 16.1 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

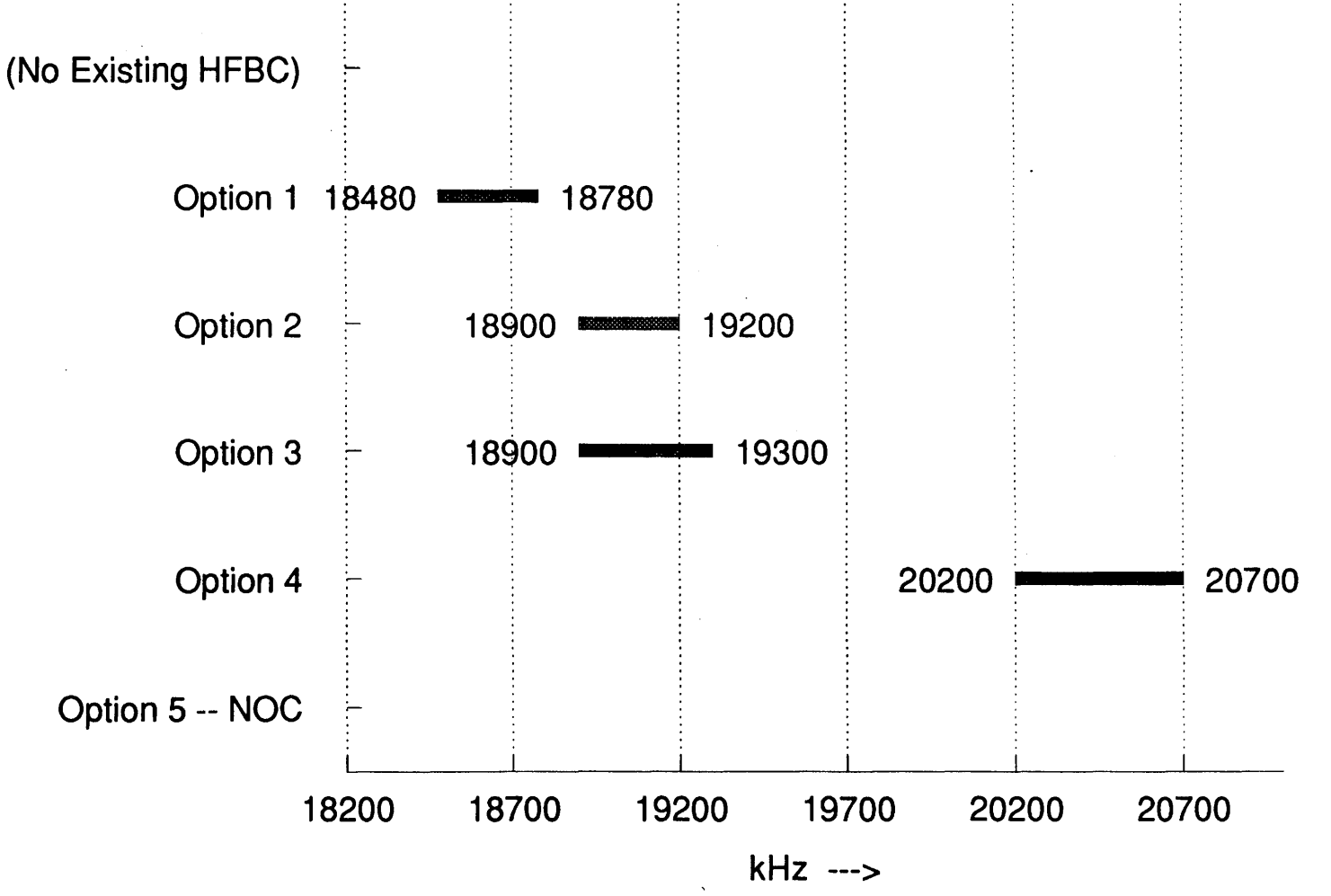
HFBC Allocation Proposals
(17.4 - 17.9 MHz)



PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

PAGE INTENTIONALLY LEFT BLANK

HFBC Allocation Proposals
(18.2 - 21 MHz)



INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/18-E
7 February 1992
Original: English

WORKING GROUP 4A

Note by the Chairman of Working Group 4A

EXTRACT FROM CONFERENCE PROPOSALS CONCERNING HF BROADCASTING BANDS

The 4 MHz range.

Existing allocation

4 438 - 4 650 kHz FIXED/MOBILE

Proposal for new HF broadcasting allocation:

4 550 - 4 650 kHz

The 5 MHz range.

Existing allocation

5 060 - 5 250 kHz FIXED/Mobile

Proposal for new HF broadcasting allocation:

5 060 - 5 150 kHz

The 6 MHz range.

Existing BC allocation

5 950 - 6 200 kHz (250 kHz)

Proposals for extension of HF broadcasting bands:

5 900 - 5 950 kHz

5 840 - 5 950 kHz

NOC

The 7 MHz range.

Existing BC allocation

7 100 - 7 300 kHz REG 1/3

Existing amateur allocation

7 000 - 7 100 kHz (w. wide)

7 100 - 7 300 kHz REG 2

6 725 - 7 000 kHz FIXED/Land Mobile

7 300 - 8 100 kHz FIXED/Land Mobile

Proposals for extension of HF broadcasting bands:

7 100 - 7 300 kHz (worldwide)
7 100 - 7 400 kHz (REG 1/3)

7 300 - 7 400 kHz
7 200 - 7 300 kHz (worldwide)

7 300 - 7 450 kHz
7 300 - 7 425 kHz
7 300 - 7 400 kHz
7 300 - 7 600 kHz
7 300 - 7 550 kHz
NOC

Proposals for new amateur bands:

6 900 - 7 000 kHz (worldwide)
7 000 - 7 100 kHz (worldwide)
7 100 - 7 200 kHz (worldwide)

The 9 MHz range.

Existing BC allocation

9 500 - 9 900 kHz (400 kHz)
9 040 - 9 500 FIXED
9 900 - 9 995 FIXED

Proposals for extension of HF broadcasting bands:

9 300 - 9 500 kHz
9 350 - 9 500 kHz
9 400 - 9 500 kHz

9 900 - 9 940 kHz
9 900 - 9 995 kHz
NOC

The 10 MHz range.

No existing BC allocation

10 150 - 11 175 kHz FIXED/Mobile (-Aer R)

Proposals for extension of HF broadcasting bands:

10 150 - 10 250 kHz
10 250 - 10 500 kHz

The 11 MHz range.

Existing BC allocation

11 650 - 12 050 kHz (400 kHz)
11 400 - 11 650 FIXED
12 050 - 13 200 FIXED

Proposals for extension of HF broadcasting bands:

11 500 - 11 650 kHz
11 530 - 11 650 kHz
11 550 - 11 650 kHz
11 570 - 11 650 kHz
11 550 - 11 650 kHz
11 600 - 11 650 kHz

12 050 - 12 075 kHz
12 050 - 12 110 kHz
12 050 - 12 120 kHz
12 050 - 12 140 kHz

The 13 MHz range.

Existing BC allocation

13 600 - 13 800 kHz (200 kHz)
13 410 - 13 600 kHz FIXED/Mobile
13 800 - 14 000 kHz FIXED/Mobile

Proposals for extension of HF broadcasting bands:

13 500 - 13 600 kHz
13 510 - 13 600 kHz
13 550 - 13 600 kHz
13 570 - 13 600 kHz

13 800 - 13 900 kHz

The 15 MHz range.

Existing BC allocation

15 100 - 15 600 kHz (500 kHz)
14 350 - 14 900 kHz FIXED/Mobile
15 600 - 16 360 kHz FIXED

Proposals for extension of HF broadcasting bands:

14 500 - 14 800 kHz

14 800 - 14 990 kHz

15 600 - 15 700 kHz

15 600 - 15 800 kHz

15 600 - 15 980 kHz

15 600 - 15 995 kHz

The 17 MHz range.

Existing BC allocation

17 550 - 17 900 kHz (350 kHz)

17 410 - 17 550 kHz FIXED

Proposals for extension of HF broadcasting bands:

17 450 - 17 550 kHz

17 480 - 17 550 kHz

17 500 - 17 550 kHz

17 520 - 17 550 kHz

The 19 MHz range.

No existing BC allocation

18 168 - 18 780 kHz FIXED/Mobile

18 900 - 19 680 kHz FIXED

20 010 - 21 000 kHz FIXED/Mobile

Proposals for new HF broadcasting bands:

18 480 - 18 780 kHz

18 900 - 19 200 kHz

18 900 - 19 300 kHz

20 200 - 20 700 kHz

S. HESS
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/19(Rev.3)-E
14 February 1992
Original: English

SUB-WORKING GROUP 4C1

Note from the Chairman of Sub-Working Group 4C1

SUMMARY OF PROPOSALS ON AGENDA ITEM 2.2.3b

The proposals listed below on BSS (HDTV) allocations and associated feeder links have been summarized in the attached tables and arranged in frequency band order.

Administration	Document	Proposal
URS	7 + Corr.1	3, 7, 46, 47
NIG	9	2
PNG	16	
USA	12 + Add.7	105-107, 115
EUR	20	56, 58
CAN	23	87-92, 94-99, 101A, 148
NZL	26	
J	27	61, 62
B	30	50, 51
AUS	31	44-47
IND	34	36-39
MLI	39(Rev.1)	7
ALG	40	28-31
PAK	44	
EQU	45	20-22
BFA	49	4
INS	52	4
F	54	1, 2
THA	56	5
CLN	62	4
LUX	64	5, 6
TZA	74	
SEN	75	
ZMB	91	
IRN	98	

Administration	Document	Proposal
TUN	99	
TUR	101	
BEN	111	5
BGD	126	
GAB	128	
LYB	131(Add.1)	2

The Tables A and B also include proposals made during discussions.

K. WHITTINGHAM
Chairman of Sub-Working Group 4C-1

V. STEPANIAN
Vice-Chairman of Sub-Working Group 4C-1

TABLE A

Summary of Proposals for BSS (HDTV) Allocation

12 GHz	**17 GHz** (17.3 - 17.8 GHz)	**21 GHz** (21.4 - 22 GHz)	**25 GHz** (24.65 - 25.25 GHz)
NIG /9(+ expand 17 GHz) USA/12 + Add.7 (+ expand 24/25 GHz) PNG/16 (+ expand 21 GHz) NZL/26 EQA/45 (+ expand 24/25 GHz) LUX/64 GAB/128 (high rain rate)	NIG/9 CAN/23 B/30 INS/52 ZMB/91 BGD/126 SNG MEX CLM	URS/7 + Corr.1 PNG/16 EUR/20 (30 Adm's) AUS/31 IND/34 MLI/39(Rev.1) ALG/40 PAK/44 BFA/49 THA/56 CLN/62 TZA/74 SEN/75 IRN/98 TUN/99 TUR/101 BEN/111 GAB/128 OMA TCD KEN SWZ	J/27 USA/12 + Add.7 EQA/45 (24.25 - 25.25 GHz) ISR
		LYB/131(Add.1) (above 20 GHz)	

TABLE B

Summary of Proposals for BSS (HDTV) Feeder-Link Allocation

Non-specified	**17 GHz** (17.3 - 18.1 GHz)	**18 GHz** (18.1 - 18.6 GHz)	**20 GHz** (19.7 - 20.2 GHz)	**21 GHz** (21.4 - 22.4 GHz)	**27 - 31 GHz**
NIG/9 USA/12 PNG/16 NZL/26 AUS/31 IND/34 PAK/44 EQA/45 CLN/62 LUX/64 IRN/98	EUR/20 (30 Adm's) (for high rain rates) J/27 (for Region 3) MLI/39(Rev.1) BFA/49 TZA/74 SEN/75 ZMB/191 BEN/111 (for high rain rates) GAB/128 OMA BEN NGR TCD KEN SWZ	EUR/20 (29 Adm's) F/54 THA/56 TUR/101 SNG	B/30	CAN/23 BGD/126	URS/7 + Corr.1 (28.5 - 29.5 GHz) EUR/20 (30 Adm's) (27.5 - 30 GHz) J/27 ALG/40 (28.5 - 29.5 GHz) TUN/99 (28.5 - 29.5 GHz) BEN/111 (28.5 - 29.5 GHz)
	INS/52 (Below 23 GHz)				
				MEX (24.25 - 25.25 GHz)	

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/19(Rev.2)-E
7 February 1992
Original: English

SUB-WORKING GROUP 4C-1

Note from the Chairman of Sub-Working Group 4C-1

SUMMARY OF PROPOSALS ON AGENDA ITEM 2.2.3b

The proposals listed below on BSS (HDTV) allocations and associated feeder links have been summarized in the attached tables and arranged in frequency band order.

Administration	Document	Proposal
URS	7 + Corr.1	3, 7, 46, 47
NIG	9	2
PNG	16	
USA	12 + Add.7	105-107, 115
EUR	20	56, 58
CAN	23	87-92, 94-99, 101A, 148
NZL	26	
J	27	61, 62
B	30	50, 51
AUS	31	44-47
IND	34	36-39
MLI	39(Rev.1)	7
ALG	40	28-31
PAK	44	
EQU	45	20-22
BFA	49	4
INS	52	4
F	54	1, 2
THA	56	5
CLN	62	4
LUX	64	5, 6
TZA	74	
SEN	75	
ZMB	91	
IRN	98	

Administration	Document	Proposal
TUN	99	
TUR	101	
BEN	111	5
BGD	126	
GAB	128	

K. WHITTINGHAM
Chairman of Sub-Working Group 4C-1

V. STEPANIAN
Vice-Chairman of Sub-Working Group 4C-1

TABLE A

SUMMARY OF PROPOSALS FOR BSS (HDTV) ALLOCATION

12 GHz	**17 GHz** (17.3 - 17.8 GHz)	**21 GHz** (21.4 - 22 GHz)	**25 GHz** (24.65 - 25.25 GHz)
NIG /9(+ expand 17 GHz)	NIG/9	URS/7 + Corr.1	J/27
USA/12 + Add.7 (+ expand 24/25 GHz)	CAN/23	PNG/16	USA/12 + Add.7
PNG/16 (+ expand 21 GHz)	B/30	EUR/20 (30 Adm's)	EQA/45 (24.25 - 25.25 GHz)
NZL/26	INS/52	AUS/31	ISR
EQA/45 (+ expand 24/25 GHz)	ZMB/91	IND/34	
LUX/64	BGD/126	MLI/39(Rev.1)	
GAB/128 (high rain rate)	SNG	ALG/40	
		PAK/44	
		BFA/49	
		THA/56	
		CLN/62	
		TZA/74	
		SEN/75	
		IRN/98	
		TUN/99	
		TUR/101	
		BEN/111	
		GAB/128	

TABLE B

SUMMARY OF PROPOSALS FOR BSS (HDTV) FEEDER LINK ALLOCATION

Non-specified	**17 GHz** (17.3 - 18.1 GHz)	**18 GHz** (18.1 - 18.6 GHz)	**20 GHz** (19.7 - 20.2 GHz)	**21 GHz** (21.4 - 22 GHz)	**27.5 - 30 GHz**
NIG/9 USA/12 PNG/16 NZL/26 J/27 AUS/31 IND/34 PAK/44 EQA/45 CLN/62 LUX/64 IRN/98	EUR/20 (30 Adm's) (for high rain rates) MLI/39(Rev.1) BFA/49 TZA/74 SEN/75 ZMB/191 BEN/111 (for high rain rates) GAB/128	EUR/20 (29 Adm's) F/54 TUR/101	B/30	CAN/23 BGD/126 (21.4 - 22.2 GHz)	URS/7 + Corr.1 (28.5 - 29.5 GHz) EUR/20 (30 Adm's) ALG/40 (27.5 - 28.5 GHz or 28.5 - 29.5 GHz) TUN/99 (28.5 - 29.5 GHz) BEN/111 (28.5 - 29.5 GHz)
	INS/52 (Below 23 GHz) THA/56 (Below 23 GHz)				

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/19(Rev.1)-E
7 February 1992
Original: English

SUB-WORKING GROUP 4C-1

Note from the Chairman of Sub-Working Group 4C-1

SUMMARY OF WRITTEN PROPOSALS ON AGENDA ITEM 2.2.3b

The proposals listed below on BSS (HDTV) allocations and associated feeder links have been summarized in the attached tables and arranged in frequency band order.

Administration	Document	Proposal
URS	7 + Corr.1	3, 7, 46, 47
NIG	9	2
USA	12 + Add.7	105-107, 115
EUR	20	56, 58
CAN	23	87-92, 94-99, 101A, 148
NZL	26	
J	27	61, 62
B	30	50, 51
AUS	31	44-47
IND	34	36-39
MLI	39(Rev.1)	7
ALG	40	28-31
PAK	44	
EQU	45	20-22
BFA	49	4
INS	52	4
F	54	1, 2
THA	56	5
CLN	62	4
LUX	64	5, 6
TZA	74	
ZMB	91	
IRN	98	
TUR	101	
PNG	16	
SEN	75	
BEN	111	5

K. WHITTINGHAM
Chairman of Sub-Working Group 4C-1

V. STEPANIAN
Vice-Chairman of Sub-Working Group 4C-1

TABLE A

SUMMARY OF WRITTEN PROPOSALS FOR BSS (HDTV) ALLOCATION

12 GHz	**17 GHz** (17.3 - 17.8 GHz)	**21 GHz** (21.4 - 22 GHz)	**25 GHz** (24.65 - 25.25 GHz)
NIG/9 (+ expand 17 GHz) USA/12 + Add.7 (+ expand 24/25 GHz) NZL/26 EQA/45 (+ expand 24/25 GHz) LUX/64	NIG/9 CAN/23 B/30 ZMB/91	URS/7 EUR/20 (30 Adm's) AUS/31 IND/34 MLI/39 Rev.1 ALG/40 PAK/44 BFA/49 TZA/74 IRN/98 TUR/101 BEN/111	J/27 USA/12 + Add.7 EQA/45
PNG/16 (around 20 GHz) INS/52 (below 23 GHz) THA/56 (below 23 GHz) CLN/62 (above 20 GHz) SEN/75 (around 20 GHz)			

TABLE B

SUMMARY OF WRITTEN PROPOSALS FOR BSS (HDTV)
FEEDER LINK ALLOCATION

Non-specified	**18 GHz** (17.3 - 18.1 GHz)	**18 GHz** (18.1 - 18.6 GHz)	**20 GHz** (19.7 - 20.2 GHz)	**21 GHz** (21.4 - 22 GHz)	**27.5 - 30 GHz**
NIG/9 USA/12 PNG/16 NZL/26 J/27 AUS/31 IND/34 PAK/44 EQA/45 CLN/62 LUX/64 TZA/74 ZMB/91 IRN/98	EUR/20 (30 Adm's) (for high rain rates) MLI/39 Rev.1 BFA/49 BEN/111 (for high rain rates)	EUR/20 (29 Adm's) F/54 TUR/101	B/30	CAN/23	URS/7(28.5 - 29.5 GHz) EUR/20 (30 Adm's) ALG/40 (27.5 -28.5 GHz or 28.5 - 29.5 GHz) BEN/111 (28.5 - 29.5 GHz)
	INS/52 (Below 23 GHz) THA/56 (Below 23 GHz) SEN/75 (Below 20 GHz)				

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/19-E
7 February 1992
Original: English

Note from the Chairman of Sub-Working Group 4C-1

SUMMARY OF WRITTEN PROPOSALS ON AGENDA ITEM 2.2.3b

The proposals listed below on BSS (HDTV) allocations and associated feeder links have been summarized in the attached tables and arranged in frequency band order.

Administration	Document	Proposal
URS	7 + Corr.1	3, 7, 46, 47
NIG	9	2
USA	12 + Add.7	105-107, 115
EUR	20	56, 58
CAN	23	87-92, 94-99, 101A, 148
NZL	26	
J	27	61, 62
B	30	50, 51
AUS	31	44-47
IND	34	36-39
MLI	39(Rev.1)	7
ALG	40	28-31
PAK	44	
EQU	45	20-22
BFA	49	4
INS	52	4
F	54	1, 2
THA	56	5
CLN	62	4
LUX	64	5, 6
TZA	74	
ZMB	91	
IRN	98	
TUR	101	

K. WHITTINGHAM
Président du Sous-Group de travail 4C-1
Chairman of Sub-Working Group 4C-1
Presidente del Subgrupo de trabajo 4C-1

V. STEPANIAN
Vice-Président du Sous-Group de travail 4C-1
Vice-Chairman of Sub-Working Group 4C-1
Vicepresidente del Subgrupo de trabajo 4C-1

SUMMARY OF WRITTEN PROPOSALS FOR BSS (HDTV) ALLOCATION

12 GHz	17 GHz (17.3-17.8 GHz)	21 GHz (21.4-22 GHz)	23 GHz (22.5-23.1 GHz)	25 GHz (24.65 - 25.25 GHz)
USA/12 + Add.7 (+ expand 24/25 GHz) NZL/26 EQA/45 (+ expand 24/25 GHz) LUX/64	NIG/9 CAN/23 B/30 ZMB/91	URS/7 EUR/20 (30 Adm's) AUS/31 IND/34 MLI/39 Rev.1 ALG/40 BFA/49 TZA/74 IRN/98	PAK/44	J/27
INS/52 (below 23 GHz) THA/56 (below 23 GHz) CLN/62 (above 20 GHz)				

SUMMARY OF WRITTEN PROPOSALS FOR BSS (HDTV) FEEDER LINK ALLOCATION

<table>
<tr><th rowspan="2">Non-specified</th><th rowspan="2">17 GHz
(17.3-18.1 GHz)</th><th rowspan="2">18 GHz
(18.1-18.6 GHz)</th><th rowspan="2">20 GHz
(19.7-20.2 GHz)</th><th rowspan="2">21 GHz
(21.4-22 GHz)</th><th colspan="2">27.5-30 GHz</th></tr>
<tr><th>28.5-29.5 GHz</th><th></th></tr>
<tr><td rowspan="2">NIG/9
USA/12
NZL/26
J/27
AUS/31
IND/34
MLI/39 Rev.1
PAK/44
EQA/45
CLN/62
LUX/64
TZA/74
ZMB/91</td><td>EUR/20 (29 Adm's)
(for high rain rates)
BFA/49</td><td>F/54</td><td>B/30</td><td>CAN/23</td><td rowspan="2">URS/2
ALG/40</td><td rowspan="2">EUR/20 (29 Adm's)</td></tr>
<tr><td colspan="4">INS/52 (Below 23 GHz)
THA/56 (Below 23 GHz)</td></tr>
</table>

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/20-E
10 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS TO BE CONSIDERED BY THE WORKING GROUP TO THE PLENARY

(Definition of "geostationary satellite")

The following texts relevant to item 3.1 of Document DT/5 (Rev. 1) have been enclosed to facilitate consideration:

- Radio Regulations:
  - Art. 1, Nos. 180, 181, 182
  - Art. 27, No. 2502
  - Art. 29, Sect. II, No. 2613
- IFRB Report, § 2.1 (Doc. 4)
- CAN/23/4, MOD 181, Article 1 (Doc. 23) (Canada)
- INS/52/1, (Doc. 52) (Indonesia)
- EUR/46/1, Resolution No. X, Note 2 (Doc. 46) (Europe)

Radio Regulations, Article 1:

180 8.12 *Geosynchronous Satellite:* An earth *satellite* whose period of revolution is equal to the period of rotation of the Earth about its axis.

181 8.13 *Geostationary Satellite:* A *geosynchronous satellite* whose circular and direct *orbit* lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a *satellite* which remains approximately fixed relative to the Earth.

182 8.14 *Geostationary-satellite orbit:* The *orbit* in which a *satellite* must be placed to be a *geostationary satellite.*

Radio Regulations, Article 27:

2502 § 2. (1) As far as practicable, sites for transmitting [1] stations, in the fixed or mobile service, employing maximum values of equivalent isotropically radiated power (e.i.r.p.) exceeding +35 dBW in the frequency bands between 1 GHz and 10 GHz, should be selected so that the direction of maximum radiation of any antenna will be at least 2° away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction [2].

Radio Regulations, Article 29:

Section II. Control of Interference to Geostationary-Satellite Systems

2613 § 2. Non-geostationary space stations shall cease or reduce to a negligible level their emissions, and their associated earth stations shall not transmit to them, whenever there is insufficient angular separation between non-geostationary satellites and geostationary satellites, and whenever there is unacceptable interference [1] to geostationary-satellite space systems in the fixed-satellite service operating in accordance with these Regulations.

Note - See also USA/12/144 in Document DT/21.

IFRB Report, § 2.1 (Document 4):

2.1 Geostationary satellite (RR181)

2.1.1 By its Report to WARC-ORB-88 (Doc. 18), the Board informed the Conference of its Rules of Procedures on the interpretation of the space related provisions of the Radio Regulations. Rule RR181 concerned a decision of the Board to consider as geostationary satellite, any geosynchronous satellite having an inclination excursion equal to or less than 5 °. This decision was based on the following factors. The definition of a geostationary satellite indicates that the geostationary orbit should lie in the plane of Earth's equator. The same definition admits, however, that a geostationary satellite is, by extension, a satellite which remains approximately fixed relative to the Earth. To the contrary of the longitudinal station keeping tolerances included in Article 29, no provision of the Radio Regulations indicated North-South station keeping tolerances for geostationary satellites. As some specific procedures or provisions of the Radio Regulations apply only for geostationary satellites (Section II of Article 11, RR2613, Resolution No. 506), the Board identified a need for defining a margin of the inclination excursion (5 °) for a geosynchronous satellite to be considered as geostationary satellite.

2.1.2 WARC-ORB-88 discussed the problem of satellites in "inclined circular geosynchronous orbits" both from technical and regulatory points of view and requested the CCIR and the IFRB to further study the question of the use of slightly inclined geosynchronous orbits.

2.1.3 After WARC-ORB-88, the Board has carried out its own studies and has also considered the results of the CCIR studies so far published on

(i) intra-service problems (space system vs space system) and
(ii) sharing problems between space and terrestrial services.

In its studies the Board has also taken into account a growing interest of satellite operators to use slightly inclined geosynchronous orbits to extend the useful lifetime of geostationary satellites.

2.1.4 The results of the above studies show relatively few problems in the area of interference between space systems. Greater problems may, nevertheless, be expected in the sharing situations between space and terrestrial services.

2.1.5 The Board has, in particular, considered the need for a regulatory limitation of the inclination excursion of a geostationary satellite and concluded that the use of slightly inclined geosynchronous satellite orbits show relatively few problems in the specific area of concern of the application of the RR1060 coordination procedures for geostationary satellites. With a wider acceptance of the geosynchronous satellites using slightly inclined orbits as geostationary satellites, the related frequency assignments may benefit of the coordination procedure (RR1060) which is limited to geostationary satellites. On the other hand, the Board has noted that some problems may be expected in different sharing situations between space and terrestrial services when satellites use inclined geosynchronous orbits. The Board has however considered that these sharing problems are covered in the Radio Regulations by procedures equally applicable to geostationary and non-geostationary satellites.

2.1.6 On the basis of the above elements, the Board has decided to suppress its former interpretation rule containing a 5 ° inclination excursion limitation for the geostationary satellite orbit. Having noted, however, some problems resulting from the use by "geostationary satellites" of slightly inclined geosynchronous orbits in different sharing situations between space and terrestrial services, the Board recommends to the Conference to consider the matter relating to the use of slightly inclined geosynchronous orbit by geostationary satellites.

Document 23 (Canada):

CAN/23/4
MOD **181** 8.13 Geostationary Satellite: A geosynchronous satellite whose circular and direct orbit lies ~~in~~ near the plane of the Earth's equator and ~~which~~ thus ~~remains fixed relative to the Earth, by extension~~, a satellite which remains approximately fixed relative to the Earth.

Reasons: To provide a functional definition for geostationary satellites taking into account the increased interest in inclined geostationary satellite operations.

Document 52 (Indonesia):

Agenda item 2.1 - Definition

INS/52/1

As definition will come up after other related items have been developed and have been agreed in the Conference, any proposal will be considered later. Indonesia expects WARC-92 will retain the technical terms relating to the geostationary-satellite orbit as stipulated in the Radio Regulations.

Document 46 (Europe):

EUR/46/1
ADD

RESOLUTION No. X

Relating to Interim Procedures for the Coordination of the Frequency Assignments of Satellite Networks in Certain Space Systems Utilizing Non-Geostationary-Satellite Orbits[1, 2]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

---

[1] This Resolution shall be applied only to satellite networks in non-GSO space systems in the mobile-satellite service, the meteorological-satellite service and the radiodetermination-satellite service and if appropriate the associated feeder links for these services.

[2] For the purposes of these interim procedures a non-geostationary-satellite network shall be one with a space station outside the GSO or in a geosynchronous orbit with an inclination exceeding 5 degrees.

considering

a) that in several different space radiocommunication services there is increasing interest in the use of the space systems using non-geostationary-satellite orbits (non-GSO);

b) that, in order to ensure the interference-free operation of such systems and of other radio services and systems sharing the same frequency bands on the basis of equality of the relevant allocations, there is a need for procedures to regulate the frequency assignments of satellite networks in non-GSO systems;

c) that the coordination concepts and the sharing criteria required for the adoption of a fully developed coordination procedure relating to non-GSO systems are not yet available;

d) that, consequently, there is a need for interim procedures to be applied until such time, as a future conference, with the benefit of further studies by the CCIR and taking account of the experience gained in practice, will be able to adopt a more permanent procedure,

considering also

e) that the Plenipotentiary Conference, Nice, 1989, initiated the formation of a Voluntary Group of Experts, one of whose tasks is to simplify the procedures of the Radio Regulations;

f) that any new procedures adopted by this present Conference must therefore be as simple as possible and should where appropriate make use of the existing procedures of the Radio Regulations;

g) that any interim procedures must take full account of the status of the allocations to services, both terrestrial and space, in any frequency bands which may be used by non-GSO systems;

h) that any interim procedures must also take full account of the interests of all countries regardless of the state of development of their terrestrial and space radiocommunication services,

considering further

j) that the provisions of No. 2613 of the Radio Regulations, while necessary to safeguard GSO systems in the fixed-satellite service from interference which might be caused by non-GSO systems, would if more widely applied prejudice the development of non-GSO systems in other space radiocommunication services,

resolves

1. that pending the adoption of a more permanent procedure by a future competent conference, the use of frequency assignments by non-GSO systems in the space services to which this Resolution applies shall be regulated in accordance with the interim procedures and the associated provisions in the Annex hereto;

2. to invite all administrations concerned in or by the introduction and operation of non-GSO systems in the relevant space services to cooperate in the application of these interim procedures;

3. to invite the IFRB to cooperate in the application of these procedures;

4. to invite all those administrations which acquire experience in the operation of the annexed interim procedures to contribute to the studies of the CCIR;

5. to invite the CCIR to study and develop Recommendations on the coordination concepts and the sharing criteria required for more permaneht procedures to regulate mutual interference between non-GSO systems, between non-GSO and GSO systems, and between non-GSO systems and terrestrial services sharing frequency bands in which the allocations to space services and terrestrial services have the same status;

6. to invite the Secretary-General to bring this Resolution, at an appropriate stage, to the attention of the Administrative Council with a view to inclusion of this subject in the agenda of a future conference.

ANNEX TO RESOLUTION No. X

Interim Procedures for the Coordination of Frequency Assignments for Use by Non-Geostationary-Satellite Networks in the Mobile-Satellite Service, the Meteorological-Satellite Service and the Radiodetermination-Satellite Service

Limits of Applicability of Interim Procedures

These interim procedures are intended to supplement the existing provisions of the Radio Regulations to provide for the introduction and operation of networks using non-geostationary-satellite orbits in the mobile-satellite service, the meteorological-satellite service and the radiodetermination-satellite service until a future WARC has established more permanent procedures.

Section I. Procedure for the Advance Publication of Information on Planned Networks Using Non-Geostationary-Satellite Orbits

1. The provisions of Section I of Article 11 of the Radio Regulations shall be applied. For this purpose the data to be provided shall be that contained in MOD Appendix 3[1]. See also Nos. 1613.1 and 1615.1.

2. For the purposes of an administration sending comments under No. 1047 of the Radio Regulations, it shall be understood that such a response may also be made with respect to interference which may be unacceptable to that administration's existing or planned terrestrial services which share the frequency band concerned on an equal basis. Thereafter the case shall be handled in accordance with Nos. 1047A - 1056A.

3. In the resolution of difficulties, the administrations involved shall take particular account of the provisions of Nos. 1084.1, 1107.1 and 1118.1/1119.1.

4. If all difficulties involving terrestrial services or networks of different satellite systems are resolved under the procedure of this Section, or if there is no response within four months from the date of the relevant weekly circular, there shall be no requirement for further coordination. At this stage the definitive data used in this procedure shall then be sent to the IFRB in the form of MOD Appendix 3 for early publication.

---

[1] Appendix 3, Section 2.A.4b - Orbital information - shall be modified to include the following additional orbital information: argument of the perigee, right ascension, the separation of time and (where appropriate) the active service arc. For stabilized, non-geostationary-satellite orbits, the terrestrial projections of the orbits shall also be given (see proposal EUR/46/2).

Section II. Procedure for the Coordination of Frequency Assignments to Space Stations of Non-Geostationary-Satellite Networks in Relation to Space Stations of Geostationary Systems and in Relation to Non-Geostationary Systems With Which Difficulties Were Not Resolved Under Section I of the Interim Procedures

5. For the purposes of this section of interim procedures, the provisions of Section II of Article 11 of the Radio Regulations shall be extended to include space stations of non-geostationary-satellite networks, both as to the requirement and means to effect coordination and the right to respond to requests for coordination of frequency assignments to space stations of other networks.

6. The effective date to be taken into account by the Board when examining a notice of a frequency assignment relating to a space station of a non-geostationary-satellite network shall be the date of receipt by the Board of definitive data in the form of MOD Appendix 3. The provisions of No. 1058E shall however be applied.

Section III. Coordination of Frequency Assignments to an Earth Station Operating in a Non-Geostationary-Satellite Network in Relation to Terrestrial Stations

7. Where it is necessary under the provisions of Section III of Article 11 of the Radio Regulations to coordinate the frequency assignments of an earth station in a non-geostationary-satellite network with respect to the terrestrial stations of another administration, those provisions shall continue to be applied.

Section IV. Application of Technical and Operational Limitations in Appropriate Frequency Bands

8. In the frequency bands shared with equal rights between terrestrial radiocommunication services and space radiocommunication services employing non-geostationary-satellite networks, the relevant provisions of Articles 27 and 28 of the Radio Regulations shall be applied.

Section V. Action in the Event of a Failure to Resolve Difficulties

9. In the event of a failure to resolve difficulties arising under these interim procedures, the administration responsible for the planned non-geostationary network may authorize its introduction on an experimental basis under the provisions of Article 34 of the Radio Regulations and having regard to the relative status of the allocations to the radiocommunication services in the frequency band involved. This provision shall however be applicable only in relation to the services of an administration with which there were unresolved difficulties.

10. In such a case the administration responsible shall, before the network is introduced, inform the Board of full details of the network in the form of MOD Appendix 3, the planned date of commencement of transmissions and subsequently of the actual date of commencement.

11. In its examination under Article 13, No. 1506, of notices of frequency assignments for non-geostationary-satellite networks governed by these interim procedures, the Board shall examine the probability of harmful interference only to the services of an administration with which there were unresolved difficulties.

12. If within a period of six months from the actual date of commencement of transmissions of a non-geostationary network under Article 34 of the Radio Regulations any administrations with which there were unresolved difficulties do not report a case of harmful interference to the Board, and to the administration responsible for the network, it shall be deemed that those difficulties have been resolved. The Board shall then modify the relevant entries in the Master Register.

13. If within that six month period a case of harmful interference is reported the administration responsible for the non-geostationary network shall take such action as may be required to eliminate or reduce to an acceptable level the interference to the services of the complaining administration which are operating in accordance with the Radio Regulations. Article 22 of the Radio Regulations shall be taken as a guide in such cases.

Section VI. Supplementary Provisions

14. Recognizing that these are interim procedures to deal with cases where the technical measures required for a fully detailed coordination procedure are not yet available, all administrations are urged to cooperate to the maximum possible extent in the application of the procedures with a view to facilitating the introduction of non-geostationary-satellite networks without interference to or from other services, space or terrestrial, which share the same frequency bands on the basis of equality.

15. Recognizing also the potential value to all administrations from the developing technology of non-geostationary-satellite systems, administrations are invited to consider utilizing burden-sharing techniques as an aid to the resolution of difficulties which may arise from the operation of these interim procedures.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

Document DT/21-E
10 February 1992
Original: English

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS TO BE CONSIDERED BY THE WORKING GROUP TO THE PLENARY

The following texts relevant to items 3.2 and 3.3 of Document DT/5 (Rev. 1) have been enclosed to facilitate consideration:

Annex I:

- Radio Regulations Art. 28, Nos. 2578-2585

Annex II:

- CCIR Report, § 4.1.3 (Doc. 3)

Annex III:

- USA/12/138, ADD 2512, Art. 27 (Doc. 12) (USA)

Annex IV:

- USA/12/144, ADD 2613A, Art. 29 (Doc. 12) (USA)

ANNEX I

2576 12.2 - 12.5 GHz[1] (for Region 3)

12.5 - 12.75 GHz[2] (for Region 3 and for Region 1 on the territory of countries mentioned in Nos. 848 and 850).

2577 (7) Power flux-density limits between 17.7 GHz and 19.7 GHz.

2578 *a)* The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the following values:

–115 dB(W/m²) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-115 + 0.5(\delta - 5)$ dB(W/m²) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

–105 dB(W/m²) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

2579 *b)* The limits given in No. 2578 apply in the frequency band listed in No. 2580 which is allocated to the following space radiocommunication services:

- fixed-satellite service (space-to-Earth)
- earth exploration-satellite including meteorological-satellite service (space-to-Earth)

for transmission by space stations where this band is shared with equal rights with the fixed or mobile service.

2576.1

[1] The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. 346. Therefore any limits concerning inter-Regional interference which may appear in CCIR Recommendations should, as far as practicable, be observed by administrations.

2576.2
Orb-88

[2] See No. 2576.1 and Resolution 34.

2580 17.7 - 19.7 GHz[1]

2581 (8) Power flux-density limits between 31.0 GHz and 40.5 GHz.

2582 *a)* The power flux-density at the Earth's surface produced by emissions from a space station, including emissions from a reflecting satellite, for all conditions and for all methods of modulation, shall not exceed the values given in No. 2578[2] .

2583 *b)* The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

2584 31.0 - 31.3 GHz

34.2 - 35.2 GHz (for space-to-Earth transmissions under Nos. 895 and 896 on the territory of countries mentioned in No. 894)

37.5 - 40.5 GHz

2585 (9) The limits given in Nos. 2553, 2557, 2562, 2566, 2570, 2574, 2578, 2582 and 2582.1 may be exceeded on the territory of any country the administration of which has so agreed.

2586 to 2611 NOT allocated.

2580.1

[1] The equality of right to operate when a band of frequencies is allocated in different Regions to different services of the same category is established in No. 346. Therefore any limits concerning inter-Regional interference which may appear in CCIR Recommendations should, as far as practicable, be observed by administrations.

2582.1

[2] The provisions of No. 2582 shall apply until such time as the CCIR has made a Recommendation as to the values of power flux-density limits which should apply in the frequency band specified in No. 2584, at which time all systems shall meet those power flux-density limits recommended by the CCIR and endorsed by a competent world administrative radio conference.

ANNEX II

CCIR Report, § 4.1.3 (Document 3):

4.1.3 Sharing analysis/protection criteria

Sharing between the fixed service and new space service applications above 20 GHz could be facilitated by applying the following provisional pfd limits from Report 387 (see also RR 2578):

-115 dB(W/m^2) in any 1 MHz band for angles of arrival between 0° and 5° above the horizontal plane;

-115 + 0.5 (θ - 5) dB(W/m^2) in any 1 MHz band for angles of arrival between 5° and 25° above the horizontal plane;

-105 dB(W/m^2) in any 1 MHz band for angles of arrival between 25° and 90° above the horizontal plane.

Further study is required to determine suitable pfd limits to protect FS systems from LEO satellite emissions (space-to-Earth and space-to-space) at these frequencies.

Japan has indicated that some stations of their FS systems which operate in the 26 GHz band require a protection that would be provided by pfd limits of -115 dB(W/m^2) to as low as -125 dB(W/m^2) in any 1 MHz band. They also indicated that they are developing a new system compatible with the pfd limits given above.

LEO satellites may experience terrestrial interfering signal levels from representative systems that exceed the -6 dB I/N criteria in Recommendation 609. As shown in Report 1197, statistics indicate that visibility of the exposures of these satellites will be short-term and within the percentage time requirements of Recommendation 609; thus sharing with the fixed service will be feasible.

Geostationary data relay satellites receiving at frequencies near 26 GHz may experience interfering signal levels from terrestrial stations for significantly longer periods of time. In order to avoid such interference cases where future terrestrial transmitting systems whose main beam illuminates a data relay satellite with powers greater than -36 dB(W/Hz) averaged over 1 MHz, interference reduction techniques may be necessary.

Sharing with the fixed-satellite service is feasible given longitudinal spacings between DRS and FSS geostationary satellites of at least 4°.

Sharing with ISS (GSO-to-GSO) satellites is facilitated when limits of between 110° and 150° are imposed on the maximum orbital spacing between satellites in the GSO-to-GSO systems.

Because of the extreme sensitivity of radioastronomy observations, it is usually impossible for a space service to share the same frequency band. For this reason, the DRS systems being planned to operate near 23 GHz are being designed with protection of the radioastronomy bands in mind.

ANNEX III

Document 12 (USA):

USA/12/138
ADD 2512 For the protection of the satellites operating in the inter-satellite service in the 25.25 - 27.50 GHz band, e.i.r.p. density of a terrestrial system should not exceed -36 dBW/Hz in any 1 MHz bandwidth.

Reasons: To protect satellites operating in the inter-satellite service in the 25.25 - 27.50 GHz band from harmful interference which might be caused by terrestrial systems. This value is reflected in Section 3.2.1.3 of the JIWP Report. The 1 MHz reference bandwidth approximates the minimum receiver bandwidth of a data relay satellite.

ANNEX IV

Document 12 (USA):

USA/12/144
ADD 2613A § 2A. In the frequency bands 21.7 - 22 GHz, 22.55 - 23.55 GHz and 25.25 - 27.5 GHz, geostationary space stations in the inter-satellite service shall have the following restriction:

Whenever the emissions from geostationary satellites are directed to other geostationary satellites, the angular separation between such geostationary satellites, as measured from the centre of the Earth, shall be no more than 120°.

Whenever the emissions from geostationary satellites 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.

Reasons:

1. The reason for the proposed 120° geocentric angle restriction between geostationary satellites is to protect data relay satellites and permanent space station proximity link operations from interference caused by transmissions between geostationary satellite systems. Most low Earth-orbit spacecraft operate at an altitude between 300 and 1,000 km. Current Data Relay Satellites (DRS) are capable of tracking spacecraft in altitudes up to 12,000 km, and interference protection should be provided for these spacecraft. To avoid harmful interference between inter-satellite service (ISS) (geostationary-to-geostationary) links and DRS links when low Earth-orbit spacecraft are at altitudes up to the 12,000 km, the angular separation between two geostationary space stations operating with each other would have to be no greater than approximately 100°. This angular separation is based upon an off-axis angle at the ISS station antenna (geostationary-to-geostationary) that assures sufficient antenna discrimination to protect both ISS (geostationary-to-geostationary) and DRS links. The antenna discrimination was calculated using the antenna pattern given in Figure 13 of CCIR Report 558.

Such a restriction would not permit fixed-satellite service (FSS) type systems with geostationary-to-geostationary links to have full Earth coverage with just three satellites. Therefore, to accommodate the use of geostationary-to-geostationary links by global FSS type systems using three satellites, we are proposing to limit the angular separation to no greater than 120°. In this case, interference would be avoided when low Earth-orbit spacecraft operate with altitudes up to 9,000 km.

2. The reason for the proposed 15° pointing restriction relative to the geostationary-satellite orbit is to protect geostationary inter-satellite service space stations from interference due to inter-satellite service space stations communicating with space stations beyond the geostationary-satellite orbit.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/22-E
10 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS TO BE CONSIDERED BY THE WORKING GROUP TO THE PLENARY

The annexed texts have been excerpted by the documents referred in item 4.8 of Document DT/5 (Rev. 1) and enclosed to facilitate consideration:

- CCIR Report, § 7.4 (Doc. 3)
- EUR/20/59, Resolution No. ABC (Doc. 20) (Europe)
- CCIR Draft Recommendation [Doc. 9/BL/34]

CCIR Report (Document 3):

7.4 Sharing with other services

Sharing with other services is detailed in Reports 631, 807, 951 and in the CCIR Report to WARC Orb-88. The range of frequencies to be considered is specified in Resolution 521 (Orb-88) as 12.7 to 23 GHz. The studies of sharing in this range are not complete, but CCIR has had inputs in some specific areas. The following sections give a summary of the relevant information.

7.4.1 Sharing with FS (BSS into FS)

Fixed service systems above 10 GHz are principally digital systems designed to meet the performance and availability objectives given by Recommendations 594 and 577 respectively. Sharing with the BSS in the frequency bands above about 20 GHz can be on the same basis as sharing with the FSS in the bands near to 20 GHz, namely by establishing appropriate power flux-density limits for the band. The coordination areas of FSS earth stations are determined according to Appendix 28 of the Radio Regulations.

The power flux-density limits to protect FS receivers are normally set at values which limit the degradation due to the aggregate of interferers on the performance and availability of digital systems to no more than 10 per cent of the total allowances, as used in Recommendation 615 which applies to sharing between the FS and the FSS.

Report 387 includes the following limits for sharing between the FS and the FSS in the frequency bands between 11.7 and 23 GHz:

Band (GHz)	Limit of power flux-density (dB(W/m^2))			
	$\theta \leq 5°$	$5° < \theta \leq 25°$	$25° < \theta \leq 90°$	Reference Bandwidth
11.7-15.4	-148	$-148 + 0.5(\theta-5)$	-138	any 4 kHz band
15.4-23.0	-115	$-115 + 0.5(\theta-5)$	-105	any 1 MHz band

θ : the angle of arrival of the wave (degrees above the horizontal)

Report 1189 on sharing between the FS and the HDTV BSS in the 22.5 - 23 GHz band has derived a power flux-density limit of -109 dB(W/m^2/MHz) for low elevation angles not including the effect of differential fading. However, the amount to allocate to differential fading is currently under study. Pending resolution, the above power flux-density limits in the range 15.4 - 23 GHz may be used for information in the band 22.5 - 23 GHz.

Based on a value of differential fading of 6 dB, which is suggested as an appropriate value in Report 1189, the above power flux-density limits would not impose any constraints on the BSS digital systems as proposed in Table VII-III. Conversion of the receive power flux-density requirements, as indicated in Table VII-III, to dB(W/m^2/MHz) results in both digital system's power flux-density receive requirements to be -127 dB(W/m^2/MHz). If the atmospheric absorption figure of 7.2 dB used in the link calculations of both systems were ignored, the resulting free space calculation of -120 dB(W/m^2/MHz) is still compatible with Report 387.

In the case of an analogue BSS system, the net protection afforded to the fixed service assuming the above stated power flux-density limits, is expected to be negative unless the angle of arrival is 0° for medium and high values of atmospheric attenuation especially around the water vapour absorption peak centred at 22.3 GHz.

Analogue HDTV systems might reduce the interference impact resulting from the calculation procedure for the path to the FS receivers by using techniques such as energy dispersal and taking advantage, when applicable, of atmospheric absorption and also taking into account seasonal variations.

At lower frequencies (e.g. 17.7 - 17.8 GHz) atmospheric attenuation is not so great. Based on power flux-density limits specified in RR Article 28, digital systems will still cause no sharing problems, whilst in the case of analogue systems a deficiency of some 18 dB will need to be compensated by satellite antenna discrimination. This could be a major constraint on the location of BSS service areas, especially at high latitudes.

A number of frequency bands are allocated to the fixed service on a primary basis. The frequency bands of 11.7 to 12.5 GHz, 12.2 to 12.7 GHz and 11.7 to 12.2 GHz are allocated to Regions 1, 2 and 3 respectively. The sharing between the BSS and the fixed service in these bands is regulated by Appendix 30 of the RR.

7.4.2 Sharing with FS (FS into BSS)

The interference from digital radio-relay systems to the BSS in the 21.2 to 23 GHz band has been studied. The calculation results show that it is very difficult to share the same frequency band between the digital radio-relay systems and the BSS for HDTV reception within the same service area. There could be considerable interference to the HDTV BSS receivers in the vicinity of digital radio transmitters. Of course, the result will depend on the number and deployment of the radio-relay systems.

This interference situation could be treated by developing a coordination area around an FS transmitter. Such a procedure would be useful for adjacent administrations using either the FS or BSS, or within an administration that can implement the FS and HDTV BSS in geographically separated service areas in the same band. In practice, the separation distance can be less than that given by the above in the light of site shielding, frequency offset and antenna discrimination.

Sharing the band in this manner would be facilitated and could generally become a domestic matter if the coordination areas were acceptably small. A study done by Canada for a 23 GHz system shows that for typical BSS receiver and FS transmitter parameters, the coordination contour has a narrow shape. In the main lobe, the coordination distances of about 120 km to protect analogue systems and 74 km to protect digital W-HDTV have been calculated. Off the main lobe the coordination distance decreases rapidly. In the back lobe, the calculated coordination distance is of the order of 6 km for analogue and 2 km for digital W-HDTV.

7.4.3 Sharing with FSS

17 GHz band

If an HDTV service is to be introduced into the band 17.3 to 17.8 GHz then a reverse band operating situation will exist with the existing 17 GHz feeder-link service to the existing 12 GHz BSS.

Unacceptable levels of interference into 17 GHz feeder-link satellite receivers from nearby HDTV satellites can be avoided provided the satellites are spaced sufficiently apart. The required spacing depends on system parameters, in particular the levels assumed for the far side lobe of the satellite receive and transmit antennas. Assuming the W-HDTV system parameters based on Table VII-III and satellite antenna patterns given in Appendices 30 and 30A of the Radio Regulations, the required separations range from approximately 0.04° to 0.6° with the larger separations required for the analogue W-HDTV case.

Interference to domestic HDTV receivers from the BSS feeder link is restricted to an area around the feeder-link station which depends very much on the local site shielding. With a shielding factor of 25 dB, the affected area could be reduced to a maximum of about 10 km in radius (elevation 15°). Shielding can, however, not effectively reduce interference due to rain scatter to the areas below the feeder-link path. For rainfall rates that are exceeded for 1% of the worst month, rain scatter distances may be in excess of 10 km (depending on the elevation angle and the actual rain attenuation).

If FSS down links above 17.7 GHz operate with co-coverage with an analogue HDTV satellite, then the required minimum orbital separation for the worst interference case would be about 24°.

Considering sharing with the FSS carrying FM television traffic, the separation required between co-coverage wide RF-band HDTV BSS and FSS TV satellites is dominated by interference from the wide RF-band BSS satellites. For an analogue HDTV interferer, a minimum separation angle of approximately 24° in the worst case situation would be required, corresponding to the 8 dB FSS receiver threshold. The separation reduces to approximately 15° when the FSS receiver threshold is increased to 10 dB. For the case of interference from digital wide RF-band HDTV into FSS TV, these separation angles are approximately 6° and 4° respectively. Sharing with the FSS carrying single-channel-per-carrier traffic would be considerably more difficult in the case of analogue HDTV BSS. The situation may be alleviated somewhat in the case of the digital HDTV system. The separation requirements in terms of interference from FSS into the wide RF-band HDTV BSS are considerably less, ranging from approximately 2° for the case of interference into digital wide RF-band HDTV up to approximately 4.3° for interference into analogue systems.

It can be concluded that sharing in this 100 MHz band would not be difficult with respect to digital HDTV satellites. With regard to analogue HDTV, sharing may be possible through coordination and the judicious selection of carrier frequencies. Therefore, there may be some possibilities for sharing between the FSS and HDTV BSS in the band 17.7 - 17.8 GHz.

20/30 GHz bands

Studies have been carried out by Study Group 4 to examine the possibility of sharing between the two services at 20/30 GHz. The studies used parameters representative of the wide range of FSS space-to-Earth services; those used for the HDTV BSS were mainly derived from Report 1075. The analyses show that in the majority of cases the level of interference from the analogue HDTV BSS into the FSS would exceed the FSS C/I criteria by 15 to 30 dB, depending upon the FSS service being offered, when the orbital separation is 3°. Therefore, this sharing would be very difficult. The digital HDTV services would create substantially less interference, but may still be difficult to share in this band. The studies assumed in most cases that the parameters of 14/11 GHz international-type earth stations were used, scaled to 30/20 GHz.

7.4.4 Sharing with inter-satellite service (ISS)

Links between ISS geostationary satellites are discussed in Report 791.

The bands extending from 22.55 to 23.55 GHz are allocated to the inter-satellite service. The interference from the BSS into the ISS is discussed in § 4.8.4 and in Report 951. The ISS operates at lower power levels than those foreseen to be in use for the BSS and it usually operates by pointing in a direction away from the Earth. As a consequence the interference to the BSS from this source is minimal.

A recent study by ESA has shown that improved sharing conditions can be expected if the ISS uses receiving antennas with a rapid roll-off as defined in Report 810.

7.4.5 Protection of radio astronomy

The radio astronomy service is protected in the bands 22.01 - 22.21 GHz, 22.21 - 22.5 GHz, 22.81 - 22.86 GHz and 23.07 - 23.12 GHz either by primary status or by footnotes in the RR. The BSS satellite is likely to generate interference, not only from the in-band signal but also from out-of-band components or spurious emissions. An ESA study has shown that the use of the spectrum in this region is highly inefficient if guard bands are included to protect the radio astronomy service. If radio astronomy is to be protected in the band 22 to 22.5 GHz, this would severely restrict the use of this band by the BSS, and similarly, protection of radio astronomy in the band 22.5 to 23.6 GHz would reduce the amount of usable spectrum for the BSS. See also § 6.4.5.

7.4.6 Sharing with passive and active microwave sensors in the range 11.7 - 23.0 GHz

For passive sensor measurements of wind speed, ice morphology, and rain rate, the interference threshold is -152 dBW in a reference bandwidth of 200 MHz (Report 694), based on a sensor sensitivity of 1° K (Report 693).

The wide RF-band HDTV systems being studied by the CCIR would require a beam centre power flux-density ranging from -109 to -101 dB(W/m^2) per channel even in the temperate rain climatic zones found in Europe. Since 200 MHz could accommodate up to four HDTV channels, the total beam centre power flux-density would be of the order of -103 to -95 dB(W/m^2) in 200 MHz. Additional information may be found in Reports 693 and 850.

Report 850 examines frequency sharing by passive sensors and the fixed-satellite service in the 18.6 - 18.8 GHz band. It concludes that the maximum power flux-density that a fixed satellite could produce without exceeding the permissible interference threshold of the sensors over wide geographical areas would be -101 dB(W/m^2) in 200 MHz. As the requirement for the wide RF-band HDTV system's total beam centre power flux-density would be of the order of -103 to -95 dB(W/m^2) in 200 MHz, it can be concluded that sharing between passive sensors and wide RF-band HDTV satellites would be feasible for the digital systems but not for the analogue system in the 18.6 - 18.8 GHz band.

The primary passive sensors measurement in the 21.2 - 21.4 GHz and 22.21 - 22.50 GHz bands is water vapour. The interference threshold of -160 dBW in a reference bandwidth of 200 MHz (Report 694), is based on a sensor sensitivity of 0.2° K (Report 693). Sharing between passive sensors and wide RF-band HDTV satellites would not be feasible in the 21.2 - 21.4 GHz and 22.21 - 22.50 GHz passive bands.

The primary use of the 13.4 - 14.0 GHz and 17.2 - 17.3 GHz bands is by spaceborne altimeters and scatterometers. A spaceborne altimeter with an e.i.r.p. of 75 dBW in low-Earth orbit could produce interference into earth stations receiving HDTV transmissions 41 dB higher than the desired signal and cause unacceptable interference. Sharing would not be feasible. Interference from an active sensor into earth stations receiving HDTV transmissions would, as in the case of sound transmissions, cause unacceptable interference and it can be concluded that sharing would not be feasible.

7.4.7 Sharing with the space research service

Protection criteria for near-earth and deep-space missions are contained in Recommendations 609 and 578, respectively.

Sharing between DRS-LEO forward (DRS-to-user station) links (operating in the ISS) near 23 GHz and BSS links will be a function of the longitudinal spacing between the GSO DRS and BSS satellites. In the case of interference to BSS receivers, Report 951 applies an interference criterion of a carrier-to-interference ratio of 40 dB. At an orbital spacing of 3.2°, the C/I ratio is reduced sufficiently to meet the 40 dB criterion for both of the systems.

Interference into a DRS station receiving in the same band as a BSS down link can also be evaluated in a similar manner. For this calculation, it is assumed that two BSS satellites adjacent to the DRS have a common service area, thereby doubling the interference which would result from a single BSS. Power density information was derived from Report 1075.

Previous calculations showed that the interference-to-noise ratio decreases to the -6 dB level at an orbital spacing between the GSO DRS and BSS satellites of 4.7° to 15.5°, depending on BSS system characteristics. More recent studies based on the BSS system model given in § 7.2.6 yielded values of 3.5° to 7.9°. If the two adjacent satellites did not have a common service area, the interference would be halved and the required separation angle decreased.

It can be concluded that sharing between the ISS and BSS is feasible, provided there is sufficient orbital spacing between the geostationary satellites of both services.

7.4.8 Sharing with radiodetermination, mobile and mobile-satellite services

Several bands to be considered for HDTV include existing allocations to the radiodetermination, mobile and mobile-satellite services or their component services (e.g., aeronautical radionavigation) in the range from 12.7 to 23 GHz. For further information on system characteristics of these services, see §§ 17.5, 17.6, 17.7 and 17.8.

Currently, protection criteria have not yet been established for sharing with mobile, radiodetermination and amateur services in the range 12.7 to 23 GHz. Moreover, it is not certain that those power flux-density limits which have been established in some of the bands would provide adequate protection for radiodetermination and mobile services, particularly in bands not currently being shared with space systems.

More studies are needed to determine if sharing is feasible and, if appropriate, to identify necessary technical constraints prior to new allocations being made.

7.4.9 Sharing with new space services

The agenda of WARC-92 includes consideration of new space services above 20 GHz. This is discussed in § 4.

For links between GSO satellites and Earth, transmissions would be similar to those for existing GSO satellites. In bands shared with the fixed service, they could be accommodated under the same sharing conditions as currently used between the FSS and the fixed service.

Links between GSO and LEO satellites use the ISS bands 22.55 to 23.55 GHz and 25.25 to 27.5 GHz. The upper band is not considered for HDTV down links.

Links between LEO satellites are being considered for the 25.25 to 25.55 GHz band, and earth exploration-satellite bands. This is outside the range of frequencies of interest.

Links between GSO satellites and lunar or extra-orbital stations are similar to links between GSO and LEO satellites, but there is added discrimination because the GSO satellite antenna is expected to point away from the Earth.

7.5 Summary

W-HDTV is defined as producing virtually transparent pictures to the HDTV studio production system. Two levels of service reliability are defined. First the percentage of time during which the above quality objective is achieved (usually 99% of the worst month) and second, the percentage of time when the system performance is totally inadequate.

Propagation effects represent the main cause of degradation to HDTV service performance and availability. Rain attenuation and rain depolarization are the dominant propagation factors in the frequency range 10 to 31 GHz. Except for atmospheric absorption, which has a local maximum at 22.3 GHz, all other propagation effects increase continuously with frequency.

In principle both analogue and digital systems are possible. Analogue systems require very high satellite powers (about 1 kW) and also higher protection ratios. Low-level digital modulation systems (e.g., QPSK or 8-PSK) are rugged in the presence of noise and interference and offer efficiencies up to about 2 bit/(s Hz). Higher-order digital systems, (e.g., 16-PSK, 16-QAM) with appropriate channel coding offer channel efficiencies up to 3 bit/(s Hz) but are more vulnerable to interference and satellite non-linearities.

At present, some 110 Mbit/s would be required for coding of the vision signal and methods for getting lower figures are being studied. It is also necessary to add some 20 to 30 Mbit/s for sound, synchronization and other purposes.

As an example at 22 GHz in rain zone K and 30° elevation angle, satellite transmitter powers of between 170 - 350 W would be required, if receiving antennas of about 0.7 m diameter are going to be used.

After examination of existing BSS frequency bands in the range defined by the agenda of the Conference, for their suitability for W-HDTV, some other possible frequency bands are identified and presented, within or in the vicinity of this range. Comments have also been introduced on the long-term suitability of the 11.7 to 12.7 GHz band for W-HDTV.

Various computer exercises have been presented in input contributions. They make it possible to give an estimate of the bandwidth to be considered by the Conference, depending on the number of programmes and other technical assumptions. A figure of 600 MHz has been quoted in some of these exercises.

Possible frequency bands for the feeder links are discussed with general technical considerations to be taken into account.

As the possible frequency range covers a wide part of the spectrum, numerous sharing situations have to be examined. Some results existing in CCIR Reports are summarized. They have been complemented by new information, especially on sharing between the fixed service and the broadcasting-satellite service for W-HDTV.

Document 20 (Europe):

DRAFT

EUR/20/59
ADD

RESOLUTION No. ABC

Relating to the Introduction of HDTV Systems of the Broadcasting-Satellite Service (BSS) in the Band 21.4 - 22.0 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has re-allocated the band 21.4 - 22.0 GHz to the broadcasting-satellite service to be implemented after 1 April 2005 and that by ADD 873A it is intended for use by the BSS for wide RF-band high-definition television (HDTV);

b) that until 1 April 2005 the existing services operating in the band 21.4 - 22.0 GHz in accordance with the Table of Frequency Allocations are therefore entitled to continue in operation without harmful interference from other services;

c) that nevertheless it is desirable to facilitate the introduction of experimental HDTV systems into this band before the year 2005 without affecting the continued operation of existing services;

d) that it also may be possible to introduce operational HDTV systems into this band before the year 2005 without affecting the continued operation of existing services;

e) that after 1 April 2005 the introduction of HDTV systems into this band must be regulated in a flexible and equitable manner until such time as a future WARC has adopted definitive provisions for this purpose;

f) that procedures are required for the three sets of circumstances envisaged in **considerings** c), d) and e) above,

resolves

1. to adopt the interim procedures contained in the Annex hereto;

2. to invite all administrations to comply with the procedures;

3. to instruct the IFRB to apply the procedures;

4. to establish 1 April 1992 as the starting date for the application of the elements of these procedures which are relevant to the situation before 1 April 2005.

ANNEX TO RESOLUTION No. ABC

Interim Procedures for the Introduction of BSS (HDTV) Systems in the Band 21.4 - 22.0 GHz

Section I. General Provisions

1. It shall be understood that prior to 1 April 2005 all existing services in the band 21.4 - 22.0 GHz operating in accordance with the Table of Frequency Allocations shall be entitled to continue to operate. After that date they may continue to operate but only on the basis of No. 873A of the Radio Regulations; they shall neither cause harmful interference to BSS (HDTV) systems nor be entitled to claim protection from such systems. It shall be understood that prior to a future Conference the introduction of an operational BSS (HDTV) system into the band 21.4 - 22.0 GHz should be regulated by an interim procedure in a flexible and equitable manner and shall be ended when a new flexible procedure, to be adopted by this future Conference, comes into force.

Section II. Interim Procedure Relating to Experimental BSS (HDTV) Systems Introduced Before 1 April 2005

2. For the purpose of introducing experimental BSS (HDTV) systems in the band 21.4 - 22.0 GHz before 1 April 2005 under the provisions of Article 34 of the Radio Regulations, the procedures contained in Resolution No. 33 (WARC 1979) shall be applied.

Section III. Interim Procedure Relating to Operational BSS (HDTV) Systems Introduced Before 1 April 2005

3. For the purpose of introducing operational BSS (HDTV) systems in the band 21.4 - 22.0 GHz before 1 April 2005 the procedure contained in Article 14 of the Radio Regulations shall be applied, if the power flux-density at the Earth's surface produced by emissions from a space-station exceeds;

- [-115] dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

  or

- [-105] dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane;

  or

- values to be derived by linear interpolation between these limits for angles of arrival between 5 and 25 degrees above the horizontal plane.

If the power flux-density at the Earth's surface produced by emissions from a space-station does not exceed these limits, the procedures in Articles 11 and 13 of the Radio Regulations shall be applied.

Section IV. Interim Procedure Relating to BSS (HDTV) Systems Introduced After 1 April 2005

4. For the purpose of introducing and operating BSS (HDTV) systems in the band 21.4 - 22.0 GHz after 1 April 2005 and before a future Conference has taken decisions on definitive procedures the procedures in Articles 11 and 13 of the Radio Regulations shall be applied. In the application of these procedures BSS (HDTV) systems shall be treated as if they were networks of the fixed-satellite service.

5. For the purpose of this Section, BSS (HDTV) systems introduced under provisions of Section III of this Resolution shall be taken into account, however, those introduced under provisions of Section II shall be ignored.

6. Administrations shall to the maximum extent possible seek to ensure that operational BSS(HDTV) systems introduced into the band 21.4 - 22.0 GHz under Sections III or IV of this Resolution have characteristics which take into account the studies of the CCIR for the preparation of a future WARC (to conform with draft Resolution No. GGG) and with the understanding that these characteristics shall not limit a future Conference for a flexible planning procedure (to conform with draft Resolution No. FFF).

CCIR draft Recommendation (Document 9/BL/34):

Documents
CCIR Study Groups
Period 1990-1994

Document BL/34-E
8 November 1991

Reference: Document 9/58(Rev.1)

Study Group 9

DRAFT NEW RECOMMENDATION [DOC. 9/58]*

PROTECTION OF TERRESTRIAL LINE-OF-SIGHT RADIO-RELAY SYSTEMS AGAINST INTERFERENCE FROM THE BROADCASTING-SATELLITE SERVICE IN THE BAND 22.5 - 23 GHz

(Question 111/9)

The CCIR,

considering

(a) that according to the Radio Regulations, the fixed service and the broadcasting-satellite service share the band 22.5 - 23 GHz in Regions 2 and 3, with the broadcasting-satellite service subject to Article 14 of the Radio Regulations;

(b) that the fixed service uses this band heavily for line-of-sight radio-relay systems, particularly in urban areas;

(c) that, because of this use, it is necessary to ensure that emissions from satellites do not exceed permissible levels of interference to line-of-sight radio-relay systems;

(d) that radio-relay systems can be protected from the satellite emissions by determining suitable values of power flux-density, set up at the surface of the Earth, in a reference bandwidth;

(e) that the degree of correlation between the fading of the unwanted signal on the space-Earth interference path with the fading of the wanted signal on the radio-relay system is an important factor to consider when determining acceptable satellite power flux-density values;

(f) that in cases where fading on the wanted/unwanted signal path is highly correlated, the appropriate power flux-density limit will be more dependent on the fixed service receive antenna characteristics and the normal received carrier level,

---

* This Recommendation should be brought to the attention of Study Groups 10 and 11.

recommends

1. that in the frequency band 22.5 - 23 GHz, shared between systems in the broadcasting-satellite service and the line-of-sight radio-relay systems, the maximum power flux-density produced at the surface of the Earth by emissions from a satellite, for all conditions and methods of modulation, in any 1 MHz band, required for the protection of the fixed service is (see Note 1):

-115 $\quad dB(W/m^2)$ for $0° \leq \theta \leq 5°$

$-115 + 0.5(\theta - 5)$ $\quad dB(W/m^2)$ for $5° < \theta \leq 25°$

-105 $\quad dB(W/m^2)$ for $25° < \theta \leq 90°$

where θ is the angle of arrival of the radio frequency wave (degrees above the horizontal);

2. that the aforementioned values relate to the power flux-density and angles of arrival which would be obtained under free-space conditions;

3. that the model, and the considerations of this model, given in Annex I be used to represent the line-of-sight radio-relay systems for any further studies of sharing in the 23 GHz band.

Note 1 - Noting **considering** (a), these values are applicable as thresholds for Article 14 of the Radio Regulations application.

Annex: 1

ANNEX I

Permissible levels of interference into a radio-relay system from transmitting stations of the broadcasting-satellite service where the fixed and BSS services share on an equal primary basis

This annex describes the interference model from which the power flux-density limits for low and high angles of elevation are derived.

1. Characteristics of the model

As a basis for the calculations a model 64-QAM digital link is assumed, the parameters of which are listed below:

- transmitter power output: power output into antenna is -7 dBW (200 mW);
- receiver feeder/waveguide loss: feeder/waveguide loss is 3 dB;
- antenna gain: antenna gain for a 46 cm microwave antenna with radome is 38.5 dBi;
- effective antenna area: 0.09 m^2 (55% efficiency);
- free space loss: 139.7 dB for a 10 km path length;
- receiver bandwidth: 40 MHz;
- receiver noise figure: 5 dB.

With the above model parameters, the standard receive carrier power, C_r, is -73 dBW and the receiver noise floor, N_r, is -123 dBW. The model does not consider satellites in low-Earth orbits, which may be expected to be users of this band. The interference effects of low-Earth orbit satellites may be considerably different from the effects of satellites in geostationary orbit.

In the following calculations it is assumed that the interference power is uniformly distributed across the receiver passband.

2. Maximum power flux-density

First, the in-beam interference which determines the maximum power flux-density at low angles of elevation is considered. The error performance curves for a 64-QAM receiver determines the C/N and C/I ratios required to maintain a 10^{-3} BER in the presence of maximum permissible interference power (see Recommendation [4/54-9/85]).

The interference, I_r, is given as:

$$I_r \text{ (dBW)} = \text{pfd (dBW/m}^2\text{/MHz)} + 10 \log A_{r(m^2)} + 10 \log \text{BW(MHz)} - L_r$$

where:

pfd = power flux-density

A_r = effective receive antenna aperture = 0.09 m^2

BW = bandwidth = 40 MHz

L_r = receiver feeder/waveguide loss = 3 dB

Thus the maximum power flux-density = I_r - 3 (dBW/m^2/MHz)

Consider rain fading with perfect correlation of wanted and interfering signals, a rain fade of 25 dB will produce outage with no interference. Using the rain attenuation expression from Report 338, one finds that the probability of outage at the 0.005% level would increase by 10% for 0.8 dB reduction in fade margin (again no interference). Using, for instance, Figure 4 from Recommendation [4/54-9/85], one finds that the C/N is degraded by about 0.8 dB where the C/I is 8 dB more than the C/N, i.e. 33 dB.

The unfaded interference power is $I_r = C_r - 33 = -106$ dBW. This corresponds to a power flux-density of -109 dBW/m^2/MHz with no differential fading.

Differential fading in this Recommendation implies that the fading of the wanted signal and the interfering signal does not occur at the same time, i.e. the statistics of the two signals are not perfectly correlated. The power flux-density noted above may need further reduction to allow for differential fading caused by rain and/or multipath.

Propagation measurements of differential fading suggest that an allowance of 6 dB* for differential fading would be required to protect the fixed service receiver from interference in the presence of precipitation or clear-air fading.

Next, off-beam interference is considered. The aggregate of interference from all sources is mitigated by the receive antenna discrimination. A similar relationship between angle of arrival and angle of elevation is assumed as in setting the power flux-density limits for sharing with the fixed-satellite service in lower frequency bands. As a result the power flux-density limit will increase by 0.5 dB per degree up to 25° elevation and will remain at that value for higher elevation angels. A similar curve is generally applicable to space stations in other than low-Earth orbit, transmitting at frequencies above about 15 GHz. In frequency bands shared between the fixed service and low-Earth orbit satellites, different power flux-density limits may be applicable.

---

* Note from the Director of CCIR

For information, the derivation of this allowance is given in:

1. ALLEN, K.C., PAPAZIAN, L.B. and DEBOLT, R. [1991] - Presentation at N.A. Radio Science Meeting in London, Ontario, Canada. June 24-28, 1991.

2. COVER, D.A. and RUMMLER, W.D. [1992] - Conference Digest, IEEE 1992 International Conference on Communications, Chicago, IL, United States.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Corrigendum 2 to
Document DT/23(Rev.1)-E
18 February 1992
Original: English

WORKING GROUP 4C

Source: Document 99

Note by the Chairman of Working Group 4C

TEXTS TO BE CONSIDERED

1. **ADD**, to the end of § 1, the following new proposals:

Administration	Document	Proposal No.
TUN	99	26, 27

2. **ADD**, page 3, Annex A, 14.6 - 16.6 GHz, the following new proposals:

GHz
14.5 - 14.8

	Allocation to Services		
	Region 1	Region 2	Region 3
TUN/99/26 MOD	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) 863 MOBILE Space Research	

TUN/99/27
MOD **863** The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~by feeder links for the broadcasting-satellite service~~. This use~~ is reserved for countries outside Europe. The frequency assignments specified in Appendix 30A shall be duly protected against harmful interference.

Reasons: To offset the imbalance between up link and down link allocations to the fixed-satellite service in the range 10 - 17 GHz. This extra allocation is needed to meet the service's growing requirements.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Corrigendum 1 to
Document DT/23(Rev.1)-E
17 February 1992
Original: English

WORKING GROUP 4C

Note by the Chairman of Working Group 4C

TEXTS TO BE CONSIDERED

Please replace page 4 of Document DT/23(Rev.1) with the following.

ALG/40/27

MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~by feeder links for the broadcasting-satellite service~~. This use~~ is reserved for countries outside Europe. The frequency assignments specified in Appendix 30A to the Radio Regulations shall receive adequate protection against harmful interference.

B/30/49
EQA/45/32

MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~shall not cause harmful interference to feeder links for the broadcasting-satellite service operating in accordance with the provisions of Appendix 30A. ~~This use is reserved for countries outside Europe.~~

CHN/61/18

MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to feeder links for the broadcasting-satellite service~~should not cause any harmful interference to the assignments appearing in Appendix 30A of the Radio Regulations. ~~This use is reserved for countries outside Europe.~~

CUB/65/12

MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited ~~to feeder links for the broadcasting-satellite service. This use is reserved~~ to countries outside Europe.

CUB/65/13

ADD **863A**

In the band 14.5 - 14.8 GHz those feeder links for the broadcasting-satellite service which operate in accordance with Appendix 30A shall have priority over other uses of the fixed-satellite service.

The following proposals also concern the frequency bands dealt with in this document:

NIG/9/8

At present the frequency 14.5 - 14.8 GHz is allocated to the fixed-satellite service (FSS) including other services. However, the use of the band for the fixed-satellite service is limited to the broadcasting-satellite service (BSS) feeder links. This use is reserved for countries outside Europe.

The use of a satellite for communication purposes in Africa is expected to expand and in particular the RASCOM project may require the use of the Ku band for the fixed-satellite service Earth-to-satellite purposes. This Administration supports the use of the band 14.5 - 14.8 GHz for the fixed-satellite service including the Earth-to-space link without the current restriction in order to remove the imbalance between the up link and down link. This will also permit the use of the contiguous band of up to 800 MHz (14.5 - 14.8 GHz).

KEN/13/8

The Kenyan Administration favours the allocation of this frequency band to the fixed-satellite service (Earth-to-space) with due protection of the assignment appearing in Appendix 30A of the Radio Regulations.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/23(Rev.1)-E
14 February 1992
Original: English

WORKING GROUP 4C

Note by the Chairman of Working Group 4C

TEXTS TO BE CONSIDERED

1. Summary of written proposals on agenda item 2.2.5

The proposals on allocation of the frequency band 14.5 - 14.8 GHz to the FSS are listed below and are summarized in Annex A.

Administration	Document	Proposal No.
KOR	8	21
NIG	9(Add.1)	8, 13, 15
USA	12	108, 109
KEN	13	8
PNG	16	
EUR	20	130, 131
NZL	26	21, 22
J	27(+Corr.1)	59
B	30	48, 49
AUS	31	42, 43
IND	34	34, 35
MLI	39(Rev.1)	11
ALG	40	26, 27
PAK	44	
EQA	45	32
BFA	49 (+Add.1+Corr.1)	7,8,9
ISR	51	7
INS	52	7
CHN	61(+Corr.1)	18
CUB	65	11, 12, 13
TZA	74	12
SEN	75	
ZMB	91	4
BEN	111	9, 10
BGD	126	2

Additional documents: 4 (IFRB); 3 (CCIR)

2. Summary of written proposals on agenda item 2.2.8 (RR 797B)

The proposals on the examination of the Footnote RR 797B are listed below and are summarized in Annex B.

Administration	Document	Proposal No.
J	27	58
MLI	39(Rev.1)	13
PAK	44	
TZA	74	15
POR	77	1
BEL/LUX	115	1
GRC	130	1

H.G. KIMBALL
Chairman of Working Group 4C

Annexes: 2

ANNEX A

GHz
14.4 - 16.6

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/108 NZL/26/21 AUS/31/42 NOC	14.5 - 14.8	FIXED FIXED-SATELLITE (Earth-to-space) 863 MOBILE Space Research	
B/30/48 IND/34/34 ALG/40/26 MOD	14.5 - 14.8	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 MOBILE Space Research	
CUB/65/11 MOD	~~14.5 - 14.8~~	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 863A MOBILE Space Research	

USA/12/109
NZL/26/22
INS/52/7
NOC 863
Orb-88

KOR/8/21
MOD 863
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~gives priority to feeder links for the broadcasting-satellite service. ~~This use is reserved for countries outside Europe.~~Fixed-satellite services other than those for the feeder links of broadcasting-satellite services may use the band on a secondary basis, subject to the provision set forth in Article 15A.

J/27/59
MOD 863
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~ shall not cause harmful interference to existing plans for feeder links for the broadcasting-satellite service. This use by feeder links for the broadcasting-satellite service is reserved for countries outside Europe.

IND/34/35
MOD 863
Orb-88 The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. However, this band may also be used by fixed-satellite service (Earth-to-space) subject to the condition that no harmful interference shall be caused to the broadcasting-satellite service feeder link plan of Appendix 30A.

ALG/40/27
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~by feeder links for the broadcasting-satellite service~~. This use~~ is reserved for countries outside Europe. The frequency assignments specified in Appendix 30A to the Radio Regulations shall receive adequate protection against harmful interference.

B/30/49
EQA/45/32
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~shall not cause harmful interference to feeder links for the broadcasting-satellite service operating in accordance with the provisions of Appendix 30A. ~~This use is reserved for countries outside Europe.~~

CHN/61/18
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service and should not cause any harmful interference to the assignments appearing in Appendix 30A of the Radio Regulations. This use is reserved for countries outside Europe.

CUB/65/12
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited~~ to feeder links for the broadcasting-satellite service. This use is reserved~~ to countries outside Europe.

CUB/65/13
ADD **863A**

In the band 14.5 - 14.8 GHz those feeder links for the broadcasting-satellite service which operate in accordance with Appendix 30A shall have priority over other uses of the fixed-satellite service.

The following proposals also concern the frequency bands dealt with in this document:

NIG/9/8

At present the frequency 14.5 to 14.8 GHz is allocated to the fixed-satellite service (FSS) including other services. However, the use of the band for the fixed-satellite service is limited to the broadcasting-satellite service (BSS) feeder links. This use is reserved for countries outside Europe.

The use of a satellite for communication purposes in Africa is expected to expand and in particular the RASCOM project may require the use of the Ku band for the fixed-satellite service Earth-to-satellite purposes. This Administration supports the use of the band 14.5 to 14.8 GHz for the fixed-satellite service including the Earth-to-space link without the current restriction in order to remove the imbalance between the up link and down link. This will also permit the use of the contiguous band of up to 800 MHz (14.5 to 14.8 GHz).

KEN/13/8

The Kenyan Administration favours the allocation of this frequency band to the fixed-satellite service (Earth-to-space) with due protection of the assignment appearing in Appendix 30A of the Radio Regulations.

EUR/20/130

a) that there be no change (NOC) to the allocations, status of these allocations or the associated footnote (RR 863) in the band 14.5 - 14.8 GHz;

b) that the attached Resolution No. RRR be adopted for reference to the Administrative Council and inclusion of the question of balancing the FSS up link and down link allocations in the agenda of a future WARC.

AUS/31/43

Australia supports the thrust of draft Resolution No. RRR submitted by the CEPT countries concerning the 14.5 - 14.8 GHz band (Document 20, proposal EUR/20/131).

MLI/39/11

This supplementary allocation of the band 14.5 - 14.8 GHz to the fixed-satellite service would have a number of advantages: it is adjacent to the up link band at present in use; it can be successfully shared with the mobile and fixed services; and it can be operated while at the same time offering adequate protection for the assignments contained in Appendix 30A of the Radio Regulations.

It should be noted that the future Regional African Satellite Communication System (RASCOM) will use the Ku band.

BFA/49/7

Burkina Faso is in favour of the allocation of the frequency band 14.5 - 14.8 GHz to the fixed-satellite service (Earth-to-space) to remedy the present imbalance between the bandwidth allocated to up links and that allocated to down links.

This allocation will contribute to the effective use of the frequency spectrum allocated to the fixed-satellite service in the Ku band.

BFA/49/8

However, the protection of the assignments specified in Appendix 30A of the Radio Regulations must be assured.

BFA/49/9
MOD 863
Orb-88

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe.~~ shall not cause harmful interference to feeder links for the broadcasting-satellite service operating in accordance with the provisions of Appendix 30A.

ISR/51/7

Israel will give favourable consideration to the proposal to add the 14.5 -14.8 GHz band for the general use of FSS, that is to say, to remove the limitation on using this band to feeder links of the BSS in areas outside Europe.

This could be achieved by cancelling RR 863.

TZA/74/12

Tanzania is of the view that it is possible for the fixed satellite service (Earth-to-space) to share with the terrestrial services in the 14.5 - 14.8 GHz band. A major advantage of this band is that it is contiguous to the current FSS up link band, a fact which provides for the least expensive implementation of new earth segment and space segment equipment modification and retrofitting of existing earth stations.

ZMB/91/4

Zambia supports the proposals to allocate the band 14.5 - 14.8 GHz to the FSS (Earth-to-space).

BEN/111/9

Benin proposes that the frequency band 14.5 - 14.8 GHz be opened up to all FSS applications, while nevertheless providing due protection for assignments for feeder links of the broadcasting-satellite service contained in Appendix 30A to the Radio Regulations. This solution, at the same time as reducing the prevailing imbalance in the Ku band between up links and down links, would make it possible to satisfy more effectively the ever increasing demand for services in the Ku band.

BEN/111/10

Footnote 863 to the Table of Frequency Allocations should be amended accordingly.

For fixed-satellite service the present band (14.5 - 14.8 GHz) is adequate.

BGD/126/2

The Bangladesh Administration is of the view that there should be no change in the Radio Regulations in this respect.

ANNEX B

MLI/39/13

The Administration of Mali considers that Footnote 797B should be maintained and that the coordination provided for in Article 14 should be required so as to avoid harmful interference to the aeronautical radionavigation systems operating in the band 5 000 - 5 250 MHz.

TZA/74/15
NOC **797B**

J/27/58
MOD **797B**
Mob-87

Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Japan, Jordan, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14 and in Japan, this band is also allocated to the fixed service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

POR/77/1
MOD **797B**
Mob-87

Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Morocco, Norway, the Netherlands, Pakistan, Portugal, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

BEL/LUX/115/1
MOD **797B**
Mob-87

Additional allocations: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Luxembourg, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14

GRC/130/1
MOD **797B**
Mob-87

Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Greece, Israel, Italy, Jordan, Morocco, Norway, Netherlands, Pakistan, United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

Reasons: To include Greece in Footnote 797B of the Radio Regulations.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/23-E
10 February 1992
Original: English

WORKING GROUP 4C

Note by the Chairman of Working Group 4C

TEXTS TO BE CONSIDERED

1. Summary of written proposals on agenda item 2.2.5

The proposals on allocation of the frequency band 14.5 - 14.8 GHz to the FSS are listed below and are summarized in Annex A.

Administration	Document	Proposal No.
KOR	8	21
NIG	9(Add.1)	8, 13, 15
USA	12	108, 109
KEN	13	8
PNG	16	
EUR	20	130, 131
NZL	26	21, 22
J	27(+Corr.1)	59
B	30	48, 49
AUS	31	42, 43
IND	34	34, 35
MLI	39(Rev.1)	11
ALG	40	26, 27
PAK	44	
EQA	45	32
BFA	49	7, 8
ISR	51	7
INS	52	7
CHN	61(+Corr.1)	18
CUB	65	11, 12, 13
TZA	74	12
SEN	75	
ZMB	91	4
BEN	111	9, 10

Additional documents: 4 (IFRB), 3 (CCIR)

2. Summary of written proposals on agenda item 2.2.8 (RR 797B)

The proposals on the examination of the Footnote RR 797B are listed below and are summarized in Annex B.

Administration	Document	Proposal No.
J	27	58
MLI	39(Rev.1)	13
PAK	44	
TZA	74	15
POR	77	1
BEL/LUX	115	1

H.G. KIMBALL
Chairman of Working Group 4C

Annexes: 2

ANNEX A

GHz
14.4 - 16.6

	Allocation to Services		
	Region 1	Region 2	Region 3
USA/12/108 **NZL/26/21** **AUS/31/42** **NOC**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) 863 MOBILE Space Research	
B/30/48 **IND/34/34** **ALG/40/26** **MOD**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 MOBILE Space Research	
CUB/65/11 **MOD**	**14.5 - 14.8**	FIXED FIXED-SATELLITE (Earth-to-space) MOD 863 863A MOBILE Space Research	

USA/12/109
NZL/26/22
INS/52/7
NOC **863**
Orb-88

KOR/8/21
MOD **863**
Orb-88

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~gives priority to feeder links for the broadcasting-satellite service. ~~This use is reserved for countries outside Europe.~~Fixed-satellite services other than those for the feeder links of broadcasting-satellite services may use the band on a secondary basis, subject to the provision set forth in Article 15A.

J/27/59
MOD **863**
Orb-88

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~ shall not cause harmful interference to existing plans for feeder links for the broadcasting-satellite service. This use by feeder links for the broadcasting-satellite service is reserved for countries outside Europe.

IND/34/35
MOD **863**
Orb-88

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. This use is reserved for countries outside Europe. However, this band may also be used by fixed-satellite service (Earth-to-space) subject to the condition that no harmful interference shall be caused to the broadcasting-satellite service feeder link plan of Appendix 30A.

ALG/40/27
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited to~~by feeder links for the broadcasting-satellite service~~. This use~~ is reserved for countries outside Europe. The frequency assignments specified in Appendix 30A to the Radio Regulations shall receive adequate protection against harmful interference.

B/30/49
EQA/45/32
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) ~~is limited~~shall not cause harmful interference to feeder links for the broadcasting-satellite service operating in accordance with the provisions of Appendix 30A. ~~This use is reserved for countries outside Europe.~~

CHN/61/18
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service and should not cause any harmful interference to the assignments appearing in Appendix 30A of the Radio Regulations. This use is reserved for countries outside Europe.

CUB/65/12
MOD **863** **Orb-88**

The use of the band 14.5 - 14.8 GHz by the fixed-satellite service (Earth-to-space) is limited ~~to feeder links for the broadcasting-satellite service. This use is reserved~~ to countries outside Europe.

CUB/65/13
ADD **863A**

In the band 14.5 - 14.8 GHz those feeder links for the broadcasting-satellite service which operate in accordance with Appendix 30A shall have priority over other uses of the fixed-satellite service.

The following proposals also concern the frequency bands dealt with in this document:

NIG/9/8

At present the frequency 14.5 to 14.8 GHz is allocated to the fixed-satellite service (FSS) including other services. However, the use of the band for the fixed-satellite service is limited to the broadcasting-satellite service (BSS) feeder links. This use is reserved for countries outside Europe.

The use of a satellite for communication purposes in Africa is expected to expand and in particular the RASCOM project may require the use of the Ku band for the fixed-satellite service Earth-to-satellite purposes. This Administration supports the use of the band 14.5 to 14.8 GHz for the fixed-satellite service including the Earth-to-space link without the current restriction in order to remove the imbalance between the up link and down link. This will also permit the use of the contiguous band of up to 800 MHz (14.5 to 14.8 GHz).

KEN/13/8

The Kenyan Administration favours the allocation of this frequency band to the fixed-satellite service (Earth-to-space) with due protection of the assignment appearing in Appendix 30A of the Radio Regulations.

EUR/20/130

a) that there be no change (NOC) to the allocations, status of these allocations or the associated footnote (RR 863) in the band 14.5 - 14.8 GHz;

b) that the attached Resolution No. RRR be adopted for reference to the Administrative Council and inclusion of the question of balancing the FSS up link and down link allocations in the agenda of a future WARC.

AUS/31/43

Australia supports the thrust of draft Resolution No. RRR submitted by the CEPT countries concerning the 14.5 - 14.8 GHz band (Document 20, proposal EUR/20/131).

MLI/39/11

This supplementary allocation of the band 14.5 - 14.8 GHz to the fixed-satellite service would have a number of advantages: it is adjacent to the up link band at present in use; it can be successfully shared with the mobile and fixed services; and it can be operated while at the same time offering adequate protection for the assignments contained in Appendix 30A of the Radio Regulations.

It should be noted that the future Regional African Satellite Communication System (RASCOM) will use the Ku band.

BFA/49/7

Burkina Faso is in favour of the allocation of the frequency band 14.5 - 14.8 GHz to the fixed-satellite service (Earth-to-space) to remedy the present imbalance between the bandwidth allocated to up links and that allocated to down links.

This allocation will contribute to the effective use of the frequency spectrum allocated to the fixed-satellite service in the Ku band.

BFA/49/8

However, the protection of the assignments specified in Appendix 30A of the Radio Regulations must be assured.

ISR/51/7

Israel will give favourable consideration to the proposal to add the 14.5 -14.8 GHz band for the general use of FSS, that is to say, to remove the limitation on using this band to feeder links of the BSS in areas outside Europe.

This could be achieved by cancelling RR 863.

TZA/74/12

Tanzania is of the view that it is possible for the fixed satellite service (Earth-to-space) to share with the terrestrial services in the 14.5 - 14.8 GHz band. A major advantage of this band is that it is contiguous to the current FSS up link band, a fact which provides for the least expensive implementation of new earth segment and space segment equipment modification and retrofitting of existing earth stations.

ZMB/91/4

Zambia supports the proposals to allocate the band 14.5 - 14.8 GHz to the FSS (Earth-to-space).

BEN/111/9

Benin proposes that the frequency band 14.5 - 14.8 GHz be opened up to all FSS applications, while nevertheless providing due protection for assignments for feeder links of the broadcasting-satellite service contained in Appendix 30A to the Radio Regulations. This solution, at the same time as reducing the prevailing imbalance in the Ku band between up links and down links, would make it possible to satisfy more effectively the ever increasing demand for services in the Ku band.

BEN/111/10

Footnote 863 to the Table of Frequency Allocations should be amended accordingly.

ANNEX B

MLI/39/13

The Administration of Mali considers that Footnote 797B should be maintained and that the coordination provided for in Article 14 should be required so as to avoid harmful interference to the aeronautical radionavigation systems operating in the band 5 000 - 5 250 MHz.

TZA/74/15

NOC **797B**

J/27/58

MOD **797B**

Mob-87 Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Japan, Jordan, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14 and in Japan, this band is also allocated to the fixed service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

POR/77/1

MOD **797B**

Mob-87 Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Morocco, Norway, the Netherlands, Pakistan, Portugal, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

BEL/LUX/115/1

MOD **797B**

Mob-87 Additional allocations: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Luxembourg, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/24-E
10 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS TO BE CONSIDERED BY THE WORKING GROUP TO THE PLENARY

The following texts relevant to items 3.4, 3.5 and 3.6 of Document DT/5 (Rev. 1) have been enclosed to facilitate consideration:

Annex I:

- Radio Regulations, Art. 27, Nos. 2505-2509
  Art. 28, Nos. 2548A, 2561-2564

Annex II:

- CCIR Report, § 8.1.4.2.2 (Doc. 3)

Annex III:

- USA/12/200, MOD 2548 A (Add. 2 to Doc. 12) (USA)
- USA/12/72, ADD 733 Z, Art. 8 (Doc. 12) (USA)

Annex IV:

- USA/12/201, Resolution No. ZZZ, Sect. D (Add. 3 to Doc. 12) (USA)
- CAN/23/134-135, MOD 2562-2563, Art. 28 (Doc. 23) (Canada)

Annex V:

- CAN/23/65, ADD 749 A, Art. 8 (Doc. 23) (Canada)

Annexes: 5

ANNEX I

2505 § 3. (1) The maximum equivalent isotropically radiated power (e.i.r.p.) of a station in the fixed or mobile service shall not exceed +55 dBW.

2506 (2) Where compliance with No. 2502 is impracticable the maximum equivalent isotropically radiated power (e.i.r.p.) of a station in the fixed or mobile service shall not exceed:

+47 dBW in any direction within 0.5° of the geostationary-satellite orbit; *or*

+47 dBW to +55 dBW, on a linear decibel scale (8 dB per degree), in any direction between 0.5° and 1.5° of the geostationary-satellite orbit, taking into account the effect of atmospheric refraction [2].

2507 (3) The power delivered by a transmitter to the antenna of a station in the fixed or mobile service in frequency bands between 1 GHz and 10 GHz shall not exceed +13 dBW.

2508 (4) The power delivered by a transmitter to the antenna of a station in the fixed or mobile service in frequency bands above 10 GHz shall not exceed +10 dBW.

2509 (5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

1 626.5 - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
2 655 - 2 690 MHz [1]	(for Regions 2 and 3)
5 725 - 5 755 MHz [1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755 - 5 850 MHz [1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850 - 7 075 MHz	
7 900 - 8 400 MHz	

2548A Mob-87 (10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service in the band 1 610 - 1626.5 MHz shall not exceed −3 dBW in any 4 kHz band.

2561 (3) Power flux-density limits between 2 500 MHz and 2 690 MHz.

2562 Mob-87 *a)* The power flux-density at the Earth's surface produced by emissions from a space station in the broadcasting-satellite service or, the fixed-satellite service or the radiodetermination-satellite service for all conditions and for all methods of modulation shall not exceed the following values:

-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

$-152 + 0.75(\delta - 5)$ dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

2563 Mob-87 *b)* The limits given in No. 2562 apply in the frequency band:

2 500 - 2 690 MHz

which is shared by the broadcasting-satellite service or the fixed-satellite service with the fixed or mobile service; and in the frequency band 2 500 - 2 516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination-satellite service.

2564 *c)* The power flux-density values given in No. 2562 are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the band mentioned in No. 2563 and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed −168 dBW in any 4 kHz band.

ANNEX II

CCIR Report of 8.1.4.2.2 (Document 3):

8.1.4.2.2 Sharing with certain services

General situation

A number of general means used to reduce interference may enable frequency sharing:

- appropriate selection of modulation, error-correction, multiple access and channel allocation methods in order to resist or avoid interference;
- frequency assignment by location technique: to avoid the assignment of particular frequencies in protection areas;
- non-overlapping coverage areas;
- orbital separation and geographical separation;
- spot beam design for the satellites;
- satellite and earth station discrimination;
- earth station site shielding.

Sharing with the fixed service

A preliminary assessment of sharing between mobile satellite services and the fixed service indicates significant possibilities for harmful interference between these services. (See Annex I to Report 917 and Annex I to Report 1173.)

A recent study investigated the feasibility of sharing between fixed networks and GSO mobile-satellite networks operating in the general frequency range between 1 427 and 2 690 MHz.

This study dealt with two of the four types of possible interference interactions, shown in Table VIII-V; namely, interference from satellite down links into terrestrial stations and interference from terrestrial stations into satellite up links. It is noted that Article 27 of RR imposes constraints on transmitting stations of the fixed and mobile services to protect space services in frequency bands where the space service has equal allocation status with the terrestrial service. It may be practicable to use the same approach on a general basis to reduce interference between fixed service stations and space stations by avoiding pointing the main lobe of the fixed station antennas towards the geostationary orbit, noting that some mobile satellites have orbital inclinations of up to 5°.

Sharing is possible between mobile-satellite networks and fixed networks, provided additional constraints of the type listed in Table VIII-V are placed on networks of both services to allow sharing to take place. As an example, having higher power fixed networks avoid pointing at the GSO by about 4° to 6° would avoid interference into the space station of the mobile-satellite network. The fixed service receive antenna may require orbit avoidance of the same order. Off-axis antenna discrimination at the satellite could provide sufficient margin in some cases.

For the case of co-channel interference between a land or maritime mobile earth station and an assumed wideband fixed station, in a reference fixed radio-relay link as described in CCIR Reports, Table VIII-VI lists the required separation distances for I/N values of -10 dB for mobile earth stations and -6 dB for fixed stations. This analysis assumed frequencies near the middle of the 1 - 3 GHz range and propagation over smooth Earth with 4/3 effective earth radius. Larger separation distances would be required for aircraft earth stations.

Geographic or frequency separation would be required for the mobile earth stations to alleviate this interference situation. Such separation may be feasible, particularly in sharing with a multi-beam satellite system in which only a small portion of the available mobile-satellite spectrum is used in one satellite beam, i.e. in a given geographic area.

Following preliminary assessment of potential interference between AMSS mobile earth stations and fixed stations it is concluded that this matter requires further study.

A statistical analysis has also been used recently to evaluate the case of interference from multiple land mobile satellite up links into a digital terrestrial fixed station. As opposed to the criteria used to generate Table VIII-V, the performance criteria for the fixed service for this analysis were the CCITT Recommendations for severely errored seconds (SES) and degraded minutes (DM). It was further assumed that the statistics of the composite interference power from a number of mobile interferers could be approximated with a combined log-normal Rayleigh distribution. Using these assumptions, the required separation distance (i.e. sharing footprint) between the mobile interferers and the fixed service, in order to meet the SES and DM performance criteria, was calculated for the one model considered. The results of this analysis, for the case of ten INMARSAT Standard M type of mobile interferers, are shown in Figure 8.1.

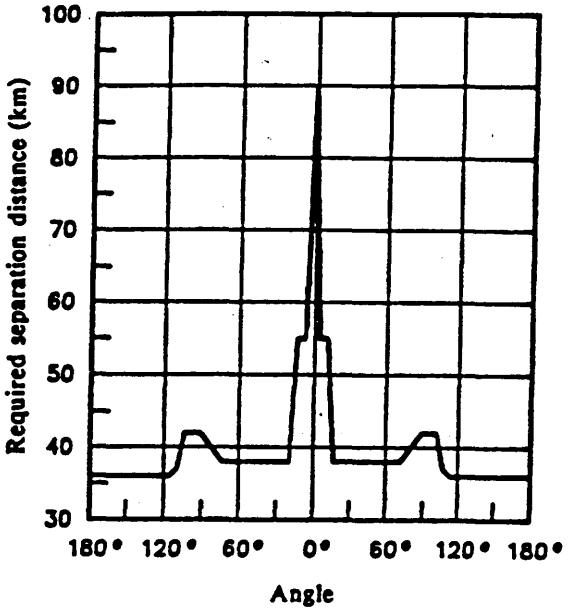


FIGURE 8.1

Sharing footprint for ten land mobile satellite interferers and fixed terrestrial service

Assumptions used in the development of the sharing footprint:

- ten INMARSAT Standard M land mobile satellite terminals are radiating in the direction of the fixed terrestrial station with their on-axis gain (G = 12 dBi), at each azimuth about the fixed station;
- terrestrial fixed station desired carrier is assumed to be 20 dB faded 100% of the time (nominal fade margin at input to terrestrial receiver for BER = 10^{-6} is 44 dB);
- aggregate statistical noise from LMSS terminals is allowed to be 10% of the CCITT Recommendations for severely errored seconds (SES) and degraded minutes (DM). These Recommendations state that:

  number of severely errored seconds: < 0.0075% for any month

  number of degraded minutes: < 0.2% for any month

TABLE VIII-V

Potential interference interactions between mobile-satellite and terrestrial systems

Interference interaction	Typical method for preventing unacceptable interference
Mobile satellite down links	
Interference from satellites to terrestrial stations Interference from terrestrial stations to mobile earth stations	Limitation on satellite pfd produced on earth surface at various arrival (elevation) angles (RR Article 28). Coordination of frequency assignments for earth stations located in the coordination areas of terrestrial transmitters (RR Article 11/Appendix 28).
Mobile satellite up links	
Interference from mobile earth stations to terrestrial stations	Coordination of frequency assignments for earth stations located in the coordination areas of terrestrial receivers and power limits (RR Article 11/Appendix 28 and Article 28).
Interference from terrestrial stations to satellites	Limits on terrestrial transmitter power, e.i.r.p. and antenna pointing (RR Article 27)

TABLE VIII-VI

Separation distances required between co-channel mobile earth stations and fixed stations

MSS Transmission direction	MSS system	Fixed antenna gain toward earth station	Earth station antenna gain toward fixed station	Required separation distance(1)
Down link	Global	33 dBi	0 dBi	65 km
Down link	Spot	33 dBi	12 dBi	176 km
Down link	Spot	33 dBi	0 dBi	74 km
Down link	Global	0 dBi	0 dBi	37 km
Down link	Spot	0 dBi	12 dBi	46 km
Down link	Spot	0 dBi	0 dBi	40 km
Up link	Global	33 dBi	0 dBi	75 km
Up link	Spot	33 dBi	12 dBi	70 km
Up link	Spot	33 dBi	0 dBi	46 km
Up link	Global	0 dBi	0 dBi	46 km
Up link	Spot	0 dBi	12 dBi	34 km
Up link	Spot	0 dBi	0 dBi	15 km

Note - (1) In general these separation distances represent interference paths which extend beyond the radio horizon.

Sharing with the mobile service

As for sharing with land mobile service systems it is concluded from consideration of typical system parameters that co-channel sharing in the same service area may present major design constraints upon the proposed LMSS. It is recognized, however, that the development of high gain, spot beam satellite antennas offers the possibility of reducing these constraints to manageable proportions in the foreseeable future (see Annex III to Report 770). Similar conclusions are applicable to sharing with other mobile services, except that co-channel sharing between AMSS and aeronautical mobile services appears to be impractical, because of extremely large separation distances that would be needed between the associated mobile earth stations and mobile or base stations.

Sharing between mobile-satellite and FPLMTS personal stations may not be practical on the MSS up link due to the cumulative effects of emissions from the FPLMTS terminals over the large geographic area of the mobile-satellite spacecraft antenna coverage. On the down link, sharing is possible considering interference from the space station transmissions into FPLMTS. However, protection of receivers would require geographic or frequency separation, and an aircraft MES would typically experience significantly more degradation than a ground based MES. Further studies of the possibility of interference from mobile satellite systems to FPLMTS are necessary.

Further study of the possibility of sharing between mobile-satellite services and aeronautical telemetry is required. (See also § 16.8.)

Because of the wide range of mobile service parameters, the feasibility of sharing in Table VIII-VII is characterized as "moderate-poor", pending further studies using detailed system parameters.

Sharing with the radiolocation service

Generally, separation distances for co-channel radar to mobile satellite sharing, (both global and spot-beam) were found to be very large, as computed for two frequencies; consequently, co-channel down-link MSS sharing with radiolocation service is of limited feasibility. However,it is noted that separation distances are reduced to much lower values for even 1 or 2 MHz of frequency offset tuning.

Sharing with the radioastronomy service

MSS up-link sharing may be feasible but difficult; coordination will be required for typical ground based and airborne MESs located within approximately 400 and 1,000 km, respectively of the radio-astronomy stations (Report 1182). It is important to note that some observatories particularly in North America and in Europe are located in the vicinity of international borders, and coordination which involves several administrations may be required in some cases.

It is concluded that mobile-satellite service down-link sharing with the radioastronomy service would not be feasible.

The radioastronomy service shares several allocations with the MSS, and the fixed and mobile services in the 500 - 3 000 MHz range. Radioastronomy is primary or co-primary in the bands: 608.0 - 614.0 MHz (see also footnote RR 689); 1 660.0 - 1 660.5 MHz; 1 660.5 - 1 668.4 MHz; 1 668.4 - 1 670.0 MHz.

In addition, the radioastronomy service has secondary allocations by footnote in this range which are in the following bands: 1 610.6 - 1 613.8 MHz (by footnote RR 734); 1 718.8 - 1 722.2 MHz (by footnote RR 744); 2 655.0 - 2 690.0 MHz.

Footnote RR 718 urges protection of the spectral line observations carried out in the band 1 330 - 1 400 MHz.

Radioastronomy may be able to share with feeder up links to satellites from transmitters at fixed locations, if radio telescopes operating in the band are shielded by terrain features and appropriate separation distances are established so that interference thresholds in Report 224 are not breached. It has been shown (Report 1182) that line-of-sight sharing between radioastronomy stations and mobile or mobile satellite stations is not possible. Report 1182 discusses frequency sharing between the RAS and the MSS at 1 660 MHz. Since the level of harmful interference to radioastronomy varies little (approximately 10 dB) over the 500 - 3 000 MHz range, the considerations of Report 1182 apply over this entire frequency range.

Line-of-sight sharing with satellite down links is not possible. For LEO mobile satellite above 1 GHz, at an altitude of about 700 km, a coordination distance of at least 4,000 km radius around an RAS station is required to protect the RAS station from harmful interference. The satellite is then below the radio horizon of the RAS station. The locations of RAS stations are well known, and are generally sited in areas remote from population centres (see Article 36 of the RR).

Sharing with earth stations in aircraft would require separation distances so large as to make sharing impractical (Report 1182). Sharing with ground based mobile stations also require large separation distances. Examples are given in Report 696, Table 1, and Report 1182, Table 1. The use of coordination areas can protect radioastronomy sites against mobile earth stations operating beyond the horizon, in a manner analogous to that used to protect terrestrial radio-relay stations from mobile earth stations (Reports 773 and 382). Since there are relatively few radioastronomy observatories, it appears practical to compute coordination areas around these, rather than around the mobile stations. The coordination distances required are estimated to be of the order of 200 to 500 km, depending on ground shielding.

Sharing with the FSS and BSS(sound)

If the down-link power flux-densities used in BSS(sound), FSS and MSS systems were at similar levels, then such systems would be able to share frequencies, provided that directional earth station antennas are used.

However, it is unlikely that the above conditions will be met in the case of BSS(sound). The likely use of receivers with near omni-directional antennas, and higher power flux-densities on Earth for BSS(sound) may necessitate large orbital separation between BSS(sound) and MSS satellites, and significant offset in frequencies to obtain compatibility.

Sharing with the meteorological-satellite, space research, earth exploration-satellite and space operation services

Meteorological satellite, space research, earth exploration-satellite and space operations systems in the 1 - 3 GHz range generally employ both wide- and narrow-band channels. Geostationary and low-earth-orbit satellites are used. Also, the increasing bandwidth requirements of meteorological satellite and space research services would likely preclude the possibility of MSS channel interleaving.

Sharing with passive and active microwave sensors

Report 694 analyses sharing considerations relating to passive microwave sensors. It concludes that sharing between passive sensors and the mobile service is generally not feasible at frequencies below 10 GHz.

Based on the analysis presented in § 7.4 it can be concluded that mobile stations would be subject to unacceptable pulse type interference from active sensors and that sharing would therefore not be feasible.

Mobile satellites in the frequency range between 1 and 3 GHz will utilize similar pfd as the BSS (sound). Therefore, based on the analysis presented in § 6.1.4, it can be concluded that sharing between either active or passive sensors and mobile satellites is also not feasible.

Protection of 2 GHz deep-space allocations

In the band 2 110 - 2 120 MHz, space research Earth-to-space transmissions are restricted to deep-space (footnote primary allocation under Article 14 of the RR). Up-link e.i.r.p. of 112 dBW from deep-space earth stations precludes the practicability of sharing with airborne or earth orbiting vehicles that may come within line-of-sight. For additional information see § 16.5.

Sharing with the space operations service

There are two different types of frequency band allocations to the space operations service. One type is characterized by wide-bandwidth, e.g. 2 025 - 2 110 MHz, capable of supporting channels containing telemetry, tracking and command (TT&C) data multiplexed with communications or science data, and usually coincident with space research allocations. The other type is characterized by narrow-bandwidth, e.g. 1 525 - 1 530 MHz, not wide enough to support multiplexed communications and science data along with T.T.& C. data. In the second case, space operation systems generally use one or two narrow-band channels (i.e. a few tens of kHz). In such cases, space operation and MSS systems may be able to share frequencies under certain circumstances. Further studies are required to identify specific sharing conditions.

Information concerning sharing with the space research, space operations and earth exploration-satellite services in the 2 025 - 2 110 MHz and 2 200 - 2 290 MHz bands may be found in §§ 13.3.1, 13.3.2.

Sharing with the radiodetermination-satellite service (RDSS)

MSS up-link sharing appears to be feasible in an RDSS Earth-to-space band. Under co-coverage conditions, there may exist interference driven capacity limits on both services, and these capacity limits may be severe if the MSS transmissions have higher e.i.r.p. densities than the level to which RDSS transmissions are restricted by RR 2548A. In addition, further studies are needed to take into account the effect of the increased loading of an RDSS transponder by aggregate MSS transmissions. Sharing could be facilitated by MSS mobile earth station antenna discrimination, by isolation of the up-link service areas of RDSS and MSS systems, or by the use of appropriate modulation schemes in the MSS.

Sharing between LEO MSS and radiodetermination-satellite service (RDSS)

Using the RDSS system parameters contained in Table XIV-I and the LEO MSS system characteristics described in § 8.1.2.7 (Table VIII-III), a preliminary analysis of sharing between RDSS and LEO MSS has been performed. Based on the assumptions used, which relate to the North American traffic situation, this analysis indicates that it appears possible for a LEO MSS system to share the up-link frequency with single or multi-beam RDSS systems as far as the effects on RDSS central earth station demodulator performance are concerned.

However, further studies are needed to take into account the effect of increased loading of an RDSS transponder by aggregate LEO MSS transmissions.

The analysis also shows that RDSS up-link transmissions are not likely to cause interference to the LEO MSS system.

ANNEX III

Document 12 (USA):

USA/12/200

MOD **2548A**
Mob-87

(10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service or the mobile-satellite service in the band 1 610 - 1 626.5 MHz shall not exceed -3 dBW in any 4 kHz band.

Reasons: To provide for the same level of protection to other services by the mobile satellite service in this band.

USA/12/72

ADD **733Z**

Systems in the mobile-satellite service shall be introduced into these bands in accordance with appropriate CCIR Recommendations in order to ensure compatibility with the radiodetermination-satellite service.

ANNEX IV

USA/12/201
ADD

RESOLUTION No. ZZZ

Relating to the Bringing into Use of Space Stations and Earth Stations Operating in the Mobile-Satellite Service in the Bands 137 - 138 MHz, 148 - 149.9 MHz and 400.15 - 401 MHz and in the Mobile-Satellite Service or Radiodetermination-Satellite Service in the Bands 1 610 - 1 626.5 MHz, 1 850 - 1 990 MHz and 2 483.5 - 2 500 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the present Conference has provided primary category of allocations to the mobile-satellite service in the bands 137 - 138 MHz, 148 - 149.9 MHz and 400.15 - 401 MHz;

b) that the present Conference has provided primary category of allocations to the mobile-satellite service or the radiodeterminiation-satellite service in the bands 1 610 - 1 626.5 MHz, 1 850 - 1 990 MHz and 2 483.5 - 2 500 MHz;

c) that some satellite systems being developed in these bands consist of multiple space stations in non-geostationary satellite orbits providing nearly continuous service throughout their service areas;

d) that such spacecraft in non-geostationary satellite orbits may pass within a few hundred kilometres of the Earth;

e) that other space and terrestrial services have primary allocations in these bands;

f) that multiple geostationary and non-geostationary satellite systems may operate in these bands;

g) that the procedures of Section I of Article 11 of the Radio Regulations apply to the advance publication of information on all satellite networks in these bands; furthermore, that these procedures can be used to achieve final coordination agreements;

h) that the procedures of Section II of Article 11 of the Radio Regulations apply to the coordination of frequency assignments to a space station on geostationary satellite or an earth station communicating with such a space station in relation to stations of other geostationary-satellite networks in these bands; furthermore, that an addition to these procedures can be used to achieve final coordination agreements between geostationary and non-geostationary satellite networks;

j) that the procedures of Section III of Article 11 of the Radio Regulations apply to coordination of mobile earth stations in relation to terrestrial stations as provided for in No. 1111, but an additional provision is needed to define coordination distances between earth stations operating below 1 GHz;

k) that an additional procedure, which may take into account relevant CCIR Recommendations, is required for coordination of frequency assignments to transmitting space stations with respect to terrestrial stations in certain bands,

resolves

1. that the following procedure shall be applied to the advance publication, coordination, notification and recording in the Master International Frequency Register of frequency assignments[1] to space stations and earth stations in the mobile-satellite service in the bands 137 - 138 MHz, 148 - 149.9 MHz and 400.15 - 401 MHz and in the mobile-satellite service or radiodetermination-satellite service in the bands 1 610 - 1 626.5 MHz, 1 850 - 1 990 MHz and 2 483.5 - 2 500 MHz as from 4 March 1992.

Section D. Coordination of Frequency Assignments to a Transmitting Space Station in the Mobile-Satellite Service with Respect to Terrestrial Stations in the Bands 137 - 138 MHz, 400.15 - 401 MHz and 1 850 - 1 990 MHz

5.1 Before an administration notifies to the Board or brings into use any frequency assignment to a transmitting space station in the mobile-satellite service in the bands 137 - 138 MHz, 400.15 - 401 MHz and 1 850 - 1 990 MHz, it shall coordinate the use of this assignment with any other administration whose terrestrial radiocommunication stations may be affected. For this purpose, it shall inform the Board of all the technical characteristics of the station, as listed in the relevant sections of Appendix 3 to the Radio Regulations, which are necessary to assess the risk of interference to a terrestrial radiocommunication service.

5.2 The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administrations by circular telegram.

5.3 Any administration which considers that its terrestrial radiocommunication services may be affected shall forward its comments to the administration seeking coordination and to the Board. These comments must be forwarded within four months from the date of the relevant IFRB weekly circular. It shall be deemed that any administration which has not forwarded comments within that period considers that its terrestrial radiocommunication services are unlikely to be affected.

5.4 Any administration which has forwarded comments on the projected space station shall either give its agreement, with a copy to the Board, or, if this is not possible, send to the administration seeking coordination pertinent characteristics set forth in Appendix 1 and any other data on which its comments are based, as well as any suggestions it may be able to offer with a view to a satisfactory solution to the problem.

5.5 The administration which plans to bring into use a space station, as well as any other administration which believes that is terrestrial radiocommunication services are likely to be affected by the station in question, may request the assistance of the Board at any time during the coordination procedure.

5.6 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination had been sought, the administration seeking coordination shall, except in cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of publication of the information according to paragraph 5.2.

---

[1] The expression frequency assignment, wherever it appears in this Resolution, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register (hereinafter called the Master Register).

Document 23 (Canada):

CAN/23/134

MOD 2562 Mob-87

a) The power flux-density at the Earth's surface produced by emissions from a space station in the broadcasting-satellite service or, the fixed-satellite service or the ~~radiodetermination~~ mobile-satellite service for all conditions and for all methods of modulation shall not exceed the following values:

-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

-152 + 0.75(δ - 5) dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

CAN/23/135

MOD 2563 Mob-87

b) The limits given in No. 2562 apply in the frequency bands:

2 483.5 - 2 500 MHz

2 500 - 2 690 MHz

which ~~is~~ are shared by the broadcasting-satellite service or the fixed-satellite service or the mobile-satellite service with the fixed or mobile service~~; and in the frequency band 2500 - 2516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination-satellite service~~.

Reasons: Consequential to MOD 2561, the proposal to allocate spectrum to mobile-satellite and to modify definition of mobile-satellite to include position determination information.

ANNEX V

Document 23 (Canada):

CAN/23/65

ADD **749A** Allocation: After 1 January 2003, the band 2 140 - 2 170 MHz is allocated to the mobile-satellite service (space-to-Earth) on a primary basis. The power flux-density at the Earth's surface shall not exceed -133 dBW/m^2 in any 4 kHz band for all angles of arrival.

Reasons: The allocation of the bands 1 960 - 1 990 MHz and 2 140 - 2 170 MHz to the mobile-satellite service will assist in meeting the evolving requirements for this service. The location of these bands near the proposed designation of spectrum for FPLMTS will promote synergy between the two services. The space-to-Earth allocation on a secondary basis will support bi-directional satellite systems in the 1 960 - 1 990 MHz band.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/25-E
10 February 1992
Original: English

WORKING GROUP 5C

Source : DT / 7
DT / 8
DT / 9

DRAFT

FIRST REPORT OF THE CHAIRMAN OF WORKING GROUP 5C

TO COMMITTEE 5

1. Introduction :

Included in this Report are the modifications to Article 1 prepared by Working Group 5C. These modifications are based on consideration of proposals submitted to the Conference by fifteen Administrations in documents 6, 7, 12, 23, 27, 31, 37, 39, 41, 44, 46, 52, 61, 63 and 75.

The proposals relating to Articles 61 and 69 in the documents 12 and 30 were also considered as well as four other papers from CCIR (Doc 3), IFRB (docs 4, 33) and VGE (Doc 22).

2. Conclusions :

The Working Group considered the proposals of Administrations concerning modifications to Article 1, 61 and 69. After discussion the Group agreed, subject to the decisions in Committee 4, to add two new, and to modify several other definitions.

With regard to the modification of the definition for the Inter-Satellite Service (RR24) concern and objections were expressed by ARS, B, CAN and URS. However, a large majority was in favor of the modification.

With regard to Articles 61 and 69 the two proposals submitted to the Conference were not adopted.

Attached is the result of the Working Group's recommendations concerning Article 1.

Annex : 1

J. F. BROERE

Chairman

ANNEX

CHAPTER I

Terminology

ARTICLE 1

Terms and Definitions

Section I. General Terms

NOC 3, 4, 7

Section III. Radio Services

ADD 22A [3.3A General-Satellite Service: A radiocommunication service using satellites for fixed and/or mobile applications.]

MOD 24 [3.5 Inter-Satellite Service: A radiocommunication service providing links between artificial ~~earth~~ satellites.]

NOC 26

NOC 36

ADD 46A [3.27A Radiolocation-Satellite Service: A radiodetermination-satellite service used for the purpose of radiolocation.

This service may also include feeder links necessary for its operation.]

MOD 48 3.29 Earth Exploration-Satellite Service: A radiocommunication service between earth stations and one or more space stations, which may include links between space stations, in which:

- information relating to the characteristics of the Earth and its natural phenomena, including data relating to the state of the environment, is obtained from active sensors or passive sensors on earth satellites;
- similar information is collected from airborne or Earth-based platforms;
- such information may be distributed to earth stations within the system concerned;
- platform interrogation may be included.

This service may also include feeder links necessary for its operation.

Section V. Operational Terms

NOC 110, 111, 112, 117

Section VII. Frequency Sharing

NOC 163

Section VIII. Technical Terms Relating to Space

MOD 181

8.13 Geostationary Satellite: A geosynchronous satellite whose circular and direct orbit lies in or near the plane of the Earth's equator and ~~which~~ thus ~~remains fixed relative to the Earth; by extension~~, a satellite which remains approximately fixed relative to the Earth.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/26-E
11 February 1992
Original: English

WORKING GROUP TO THE PLENARY

REPORT OF DRAFTING GROUP 1 TO WG/PL

1. The Drafting Group 1 to WG/PL has held one meeting to develop a draft Recommendation relating to implementation of wind profiler radars at frequencies near 50 MHz, 400 MHz and 1 GHz.

2. The Group worked on the basis of proposals from USA, PNG, AUS, IND, PAK, EUR and TZA, and the contribution of the CCIR (Document DT/11). The Group was composed of representatives from the Administrations of TCH, URS, CAN, G, F, AUS, J and IND.

3. The Group agreed on the text of the draft Recommendation as given in the annex.

C. VAN DIEPENBEEK
Chairman, GT - Plen. 1

Annex: 1

ANNEX

DRAFT RECOMMENDATION

Relating to Implementation of Wind Profiler Radars at Frequencies Near 50 MHz, 400 MHz and 1 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

referring to

a request to the Director of the CCIR and Chairman of the IFRB from the Secretary-General of the World Meteorological Organization, in May 1989, for advice and assistance in the identification of appropriate frequencies near 50 MHz, 400 MHz and 1 GHz in order to accommodate allocations and assignments for wind profiler radars;

considering

a) that wind profiler radars are important meteorological systems used to measure wind direction and speed as a function of altitude;

b) that in order to measure wind velocities up to a height of 30 kilometres it is necessary to allocate several frequency bands for these radars in the general vicinity of 50, 400 and 1 000 MHz;

c) that many administrations plan to deploy wind profiler radars in operational networks in order to improve meteorological predictions, support studies of the climate, and enhance the safety of navigation;

d) that it is highly desirable to use wind profiler radars in frequency bands which have been generally agreed, preferably on a worldwide basis;

e) that the CCIR has studied various proposals for these wind profiler radars and concluded that frequencies around 50 MHz, 400 MHz and 1 GHz are preferred, and that frequencies in the 400 MHz region are preferred for measurements of winds at altitudes that are of the greatest general interest;

f) that it is essential in the interests of safety to protect the COSPAS/SARSAT system and other safety services from harmful interference which may be caused by wind profiler radars;

g) that studies have already shown that wind profiler radars operating in the vicinity of 400 MHz must be sufficiently separated in frequency from the COSPAS/SARSAT system centred on 406.025 MHz;

h) that in the interests of efficient spectrum utilization it is necessary to include sharing criteria in future studies,

invites the CCIR

to continue as a matter of urgency its studies of the characteristics and requirements of wind profiler radars and make Recommendations as to the technically suitable frequency bands and associated standards and frequency sharing criteria necessary for compatibility with the services that may be affected, and to provide a report to the Conference referred to in **recommends**,

recommends

1. that, as an interim measure, administrations authorizing experiments with or the operational use of such radars should take all necessary action to ensure protection from harmful interference to the COSPAS/SARSAT system, particularly by avoiding assignments in the band 402 - 406 MHz and other safety services for example, aeronautical radionavigation systems in the band 960 - 1 215 MHz;

2. that administrations and international organizations concerned with wind profiler radars, particularly ICAO, IMO and WMO, should be invited to contribute to the CCIR studies;

3. that the Administrative Council should consider the inclusion in the agenda for the next WARC the question of appropriate frequency allocations for the operational use of wind profiler radars,

requests the Secretary-General

to bring this Recommendation to the attention of the World Meteorological Organization, the International Civil Aviation Organization, and the International Maritime Organization.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/27-E
11 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of the Working Group to the Plenary

TEXTS TO BE CONSIDERED BY THE WORKING GROUP TO THE PLENARY

The annexed texts have been excerpted by the documents referred in item 3.7 of Document DT/5 (Rev. 1) and enclosed to facilitate consideration:

- CCIR Report, § 11.4 (Doc. 3)
- Doc. 97 (Nigeria)

Addendum 9 to Doc. 12 (USA) is also relevant to the above mentioned item, but for practical reasons it has not been reproduced.

CCIR Report (Document 3):

11. The consideration of possible allocations of up to 5 MHz of a frequency band below 1 GHz to low-orbit satellites on the basis of appropriate sharing criteria (Resolves 2.2.4 (d) of Resolution No. 995 of the ITU Administrative Council)

11.1 Service objectives

Two-way mobile communication services including position determination services via LEO mobile satellite systems have been proposed which could fill service and geographic gaps in the existing world-wide telecommunications network. LEO systems have the ability to provide one or two-way data communications and positioning to terminals which are small and light weight. These pocket sized terminals could be in wide demand for purposes such as emergency alerting, data collection, paging, position determination and short message transmission.

A constellation of LEO satellites could provide time continuous coverage either regionally or nearly globally.

11.2 System characteristics

LEO mobile satellite systems operating below 1 GHz have the following characteristics:

- low launch cost;
- low mass simple satellites (about 150 kg);
- global time continuous coverage requires about 20 satellites in circular inclined orbits with an altitude of 750 - 1,500 km;
- reduced path loss allowing omni-directional terminal antenna;
- low cost hand-held terminal with nominal 2 watt burst transmitter with omni-directional antenna;
- automobile terminal can share antenna with the broadcasting receiver.

LEO mobile satellite systems have been proposed which use FDMA and CDMA techniques: using the FDMA approach separate bands are used for the up and down links to the satellite. The user (mobile) and gateway (feeder) links are formed by splitting each into a pair of contiguous sub-bands. The Code Division Multiple Access (CDMA) approach utilizes separate bands for the up and down links to the satellite. Direct sequence CDMA is used for the user and gateway links. Table XI-I summarizes the technical characteristics of each approach.

TABLE XI-I

Representative parameters for LEO mobile-satellite systems below 1 GHz

	FDMA	CDMA
Antenna type	Whip	Omnidirectional
Minimum G/T	-36.5 dB/K	-30 dB/K
Receive data rate	4800 bit/s	8334 bit/s
Nominal C/N_0	20.7 dBHz	51.4 dBHz
Transmit data rate	2400 bit/s	4116 bit/s
Minimum channel spacing	10 kHz (up link) 15 kHz (down link)	N/A N/A
Omnidirectional Earth-to-space transmission		
– Bandwidth	2.4 kHz(2)	1 MHz
– Antenna gain	1.5 dBi	0 dBi
– e.i.r.p.(1)	9 dBW	3 dBW
– Simultaneous channels	20	20
Directional Earth-to-space transmission		
– Bandwidth	56 kHz	1 MHz
– Max. Ant. beamwidth	10°	10°
– e.i.r.p. per channel	25 dBW	7.8 dBW
– Simultaneous channels	1	4
Satellite space-to-Earth transmission		
– pfd(1) dB(W/m²/4 kHz)	-124	-160
– Bandwidth	7.2 kHz(2)	1 MHz

Notes: (1) Values given are for frequencies near 150 MHz.
To convert to another frequency, f, add 20 log(f/150 MHz).

(2) For FDMA techniques these are minimum values per channel.

11.2.1 Position determination capabilities

A LEO mobile satellite system can calculate position using ranging and Doppler frequency shift measurement techniques. Subject to satellite visibility, the time for an initial position estimation, using just Doppler techniques, will be of the order of 5 - 10 minutes. This could be enhanced in accuracy or shortened in time by using ranging techniques.

11.3 Frequency aspects

11.3.1 Spectrum requirements

A world-wide frequency allocation for LEO mobile satellite systems has the potential to reduce equipment costs, and facilitate systems compatibility and operational aspects.

The spectrum which may be expected to be utilized by LEO satellite systems (utilizing CDMA and FDMA modulation techniques) is given in Table XI-II, based upon studies of the capacity required to accommodate the expected traffic. However, because of the differences in modulation techniques, a direct comparison of these spectrum requirements is not feasible, without considering other factors.

TABLE XI-II

LEO MSS spectrum utilization for LEO systems

	space-to-Earth	Earth-to-space
FDMA	320 kHz	250 kHz
CDMA(1)	850 - 1 000 kHz	850 - 1 000 kHz

Note: (1) Depending on system capacity requirements, this bandwidth would typically accommodate three or four similar CDMA LEO systems.

The FDMA systems use discrete carriers for each user message. These systems are expected to utilize algorithms which will permit selection of available channels over a predetermined band; therefore they do not require that all user transmissions fill a contiguous band. The CDMA systems generally do utilize contiguous spectrum, and permit overlaying of multiple similar systems within the same spectrum.

Spectrum of the order of 1 MHz (in each direction) would permit operation of three to four LEO systems of either type if there were no other services occupying the bands of concern. Allocations less than 850 kHz (in each direction) would not accommodate the foreseen CDMA systems. Allocations of greater size (e.g. up to 5 MHz as indicated by the WARC-92 agenda) may facilitate sharing with existing services and may permit a greater number of LEO mobile-satellite systems.

The nature of the system architecture is such that the feeder links to and from the gateway terminals and the satellites use the same allocation as the user terminals (see § 11.2). There is no special requirement for feeder links for this type of LEO system within the FSS bands.

11.3.2 Preferred operating frequency

For a LEO satellite system relying on simple, low mass satellites, a wide coverage beam antenna is desired. In systems employing these satellites and using omni-directional mobile antennas, the transmitted power requirement increase as the square of the operating frequency.

Accordingly, considering propagation effects and current technology the most desirable operating frequency is in the 100 - 150 MHz band. Each paired allocation needs to have at least 7 % separation between up link and down link.

11.4 Sharing considerations

LEO mobile satellite systems have been proposed which use FDMA and CDMA techniques. The possible sharing approaches which may be used with them differ. Technical parameters for protection with pfd and duty cycle limitations have been proposed in Table XI-III to facilitate sharing between these systems and fixed, mobile, space research, space operations, meteorological satellites, meteorological aids, and radioastronomy services. Existing CCIR Recommendations or reports concerning these services have been used to develop or derive pfd and duty cycle values to ensure protection of these existing services, see Table XI-III.

Sharing with other services was considered from the viewpoint of two possible operating systems: one using FDMA, and the other using CDMA. CDMA requires relatively low power density and FDMA is assumed to use dynamic sharing techniques, however it may need a small allocation for system control. While the LEO satellite systems may use these techniques, it is expected that no unacceptable interference will be caused to existing services. It is assumed that the development of LEO systems will take account of possible interference from these existing services.

TABLE XI-III

Protection parameters derived from CCIR references for certain existing services

	space-to-Earth		Earth-to space	
Service & CCIR Reference	pfd limit dB(W/m²/4 kHz)	Duty cycle(1)	pfd limit dB(W/m²/4 kHz)	Duty cycle(1)
Space operation(10) Report 396-5	-154(2)	1%	-141.9(2)	1%
Space research Recommendations 364-4 and 609	-158.5	0.1%	-158.5	0.1%
Fixed & mobile(7) Reports 358 and 567-3	-120(2)	1%	-120(2)	1%
Meteorological aids(8) Report 541-2	-140.5(3)	1%	-140.5(3)	1%
Radiolocation Reports 927-1 and 929-1	-136.3(2),(5) -149.3(2),(6)	1% 1%	-136.3(2),(5) -149.3(2),(6)	1% 1%
Radioastronomy(4) Report 224-6	-219(3) -223(2)	1% 1%	-219(3) -223(2)	1% 1%
Broadcasting	(9)	(9)	(9)	(9)

Notes: (1) Allowable percentage of the day during which interference criteria can be exceeded.

(2) Calculated for typical frequency around 150 MHz.

(3) Calculated for typical frequency around 400 MHz.

(4) Unwanted emissions can cause harmful interference to the RAS in nearby bands (see §§ 15.4 and 16.3). The pfds refer to interference entering the RAS system through 0 dBi sidelobes in a line-of-sight situation.

(5) For a CDMA system.

(6) For an FDMA system.

(7) Does not include aeronautical mobile services.

(8) In the band 401 - 403 MHz the METSAT service use of this band is for data collection systems. This band is presently being increasingly affected by interference. Sharing in this band is not feasible.

(9) In case sharing with TV broadcasting is foreseen, detailed study of Recommendations 655 and 417 will indicate the appropriate protection criteria.

(10) The meteorological satellite service requires up to 300 kHz of bandwidth within the range 137 - 138 MHz. Under the conditions described in this table, sharing with LEO systems is feasible.

11.5 Summary

LEO mobile satellite systems have the ability to provide two-way data communication and positioning to mobile earth stations which are small and light.

The characteristics of LEO mobile satellite systems include simple low mass satellites with wide coverage antennas, omni-directional mobile user antennas, and the use of Doppler shift for position determination. These, coupled with the practical boundaries of ionospheric absorption and other propagation effects, suggest that operation within the 100 - 500 MHz band is preferable.

Existing CCIR references are used to derive parameters for sharing between LEO MSS and the services listed in Table XI-III.

Spectrum of the order of 1 MHz (in each direction) would permit operation of three or four LEO systems of either type if there were no other services occupying the bands of concern. Allocations less than 850 kHz (in each direction) would not accommodate the CDMA systems foreseen. Allocations of greater size (e.g. up to 5 MHz as indicated by the WARC-92 agenda) may facilitate protection of existing services and may permit a greater number of LEO mobile satellite systems.

Federal Republic of Nigeria

PROPOSAL FOR THE WORK OF THE CONFERENCE

REGULATORY CONSIDERATIONS FOR THE MOBILE-SATELLITE SERVICE

Agenda item 2.2.4a

I. Introduction

Article 11 of the ITU Radio Regulations provides a means to ensure equitable access to the geostationary orbit through agreed-upon coordination procedures based on frequency reuse through geographic and orbit separation. These procedures do not apply to LEO systems because such systems necessarily transmit outside the territory of the notifying administration. Also, there are no agreed-upon technical criteria for coordinating subsequent LEO or GEO MSS systems with an earlier advance published LEO system. Hence, use of MSS frequencies by non-GEO systems should be subject to Article 14 pending the establishment of agreed-upon technical coordination criteria.

II. Discussion

There is considerable doubt as to whether more than one LEO MSS system can operate co-channel, or whether LEO and GEO systems can operate co-channel. Most non-GEO systems in operation today share by band segmentation (e.g. GPS and GLONASS). If multiple LEO systems cannot share co-channel, then the first LEO system to occupy a frequency band will preclude any other administration's LEO system. This situation may be contrary to the principle of equitable access.

Article 11 is based upon quantitative sharing criteria for GEO systems. Such criteria do not yet exist for LEO systems. Thus, Article 11 cannot yet logically apply to bands open to LEO systems.

Article 14 provides an approach to identify a frequency band for a new satellite service, but not permit the band to be used in derogation of the rights of other administrations with plans to implement the new satellite service. Once coordination of subsequent satellite systems can be assured through agreed-upon coordination criteria, then Article 14 is no longer necessary. Since it is not currently possible to assure the coordination of multiple LEO systems in an MSS band, implementation of such systems should be subject to Article 14.

III. Summary

Article 14 is a necessary regulatory provision for MSS bands used by LEO systems pending the establishment of agreed-upon coordination criteria.

INTERNATIONAL TELECOMMUNICATION UNION
WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/28-E
11 February 1992
Original: English

Working Group 4B

Source: DL/16, p. 17

DRAFT

FIRST REPORT OF THE CHAIRMAN OF SUB-WORKING GROUP 4B1 TO THE WORKING GROUP 4B

The text of RR635 as approved by Sub-Working Group 4B1 is presented for Working Group 4B

MOD 635

Alternative allocation: in Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe, the bands 223 - 238 MHz and 246 - 254 MHz are allocated to the broadcasting service on a primary basis subject to agreement obtained under the procedure set forth in Article 14.

K. KOSAKA
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/29-E
11 February 1992
Original: English

WORKING GROUP TO THE PLENARY

REPORT OF DRAFTING GROUP GT PL-3 TO WG PLEN

RECOMMENDATION No. 66

1. Introduction

Agenda item 2.3 of WG PLEN concerned Recommendation No. 66 of WARC-79 relating to studies by the CCIR of the maximum permitted levels of spurious emissions. WG PLEN had two documents to consider:

- Document 3, CCIR report, § 15.3;
- Document 31, Australian proposals 70-75.

WG PLEN set up a Drafting Group comprising India (Chair), Australia, Canada and the United States to amend the proposals in AUS/31/70-75 in the light of the discussion in WG PLEN.

2. Points considered

a) The Drafting Group considered the need for CCIR to make a Recommendation on spurious and out-of-band emissions in view of the increasing use of spread-spectrum and other wideband digital modulation techniques, particularly from transmitters operating in space stations.

b) The harmful interference caused to passive services by spurious and out-of-band emissions at frequencies far removed from the carrier frequency.

3. Conclusion

The modifications to Recommendation No. 66 of WARC-79 proposed in AUS/31/72, 73, 74, and 75 were agreed to with the following changes.

- Add **"considering** k)" concerning wideband and digital modulation techniques.
- Modify AUS/31/75 to delete reference to bands above 17.7 GHz and add specific reference to protection passive services.

R. SINHA
Chairman of Drafting Group GT PL-3

ANNEX

RECOMMENDATION No. 66

Relating to Studies of the Maximum Permitted Levels of Spurious Emissions

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that Appendix 8 to the Radio Regulations 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, for the frequency bands below 17.7 GHz;

b) that the principal objective of Appendix 8 is to specify the maximum permitted levels of spurious emissions that, while being achievable, provide protection against harmful interference;

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

d) that while Appendix 8 applies only to the mean power of the transmitter and the spurious emissions, there are a variety of emissions where the interpretation of the term "mean power" and its consequential measurement are difficult;

e) that whilst the CCIR is studying this problem, it has not yet furnished adequate Recommendations pertaining to Appendix 8 for frequency bands above 960 MHz;

f) that spurious emissions from transmitters operating in space stations may cause harmful interference, particularly in regard to intermodulation components from wide-band amplifiers which cannot be adjusted after launch;

ADD g) that spurious emissions can cause harmful interference to passive services including the radio astronomy service in bands above 17.7 GHz;

ADD ~~g~~h) that spurious emissions from earth stations also require particular study;

ADD ~~h~~i) that no information is available from the CCIR regarding spurious emissions from stations employing digital modulation techniques in the frequency bands above 960 MHz;

ADD k) that transmitters operating in space stations, are increasingly employing spread-spectrum and other wide-band digital modulation techniques that can produce out-of-band and spurious emission at frequencies far removed from the carrier frequency,

recommends that the CCIR

1. study as a matter of urgency the question of spurious emissions resulting from space services 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. 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 8;

3. establish appropriate measurement techniques for spurious emissions, including the determination of reference levels for wide-band transmissions as well as the applicability of reference measurement bandwidths;

4. study the categorizing of emissions and spurious emissions in terms of "mean power" and develop appropriate Recommendations to facilitate the interpretation and measurement of "mean power" as it applies to the various classes of emissions;

ADD

5. provide a report to the next competent conference on the results of its studies with a view to reviewing and including spurious and out-of-band emission limits in Appendix 8 of the Radio Regulations principally for the protection of the radio astronomy and other passive services.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/30-E
12 February 1992
Original: English

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

SUB-WORKING GROUP 5B2

Source: Document 5

Draft

REPORT TO WORKING GROUP 5B

1. As instructed by the Working Group 5B, and taking account of the discussions conducted in Committee 5, the Sub-Working Group examined the texts related to Agenda item 2.4 (in conjunction with Agenda item 2.6) and approved the following texts:

   1) the draft modifications to Article 12 of the Radio Regulations (Annex 1 to this report);
   2) the draft revision of Appendix 26 to the Radio Regulations, without Part II (Annex 2 to this report);
   3) the draft new Resolution on the implementation of the new provisions applicable in the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz (Annex 3 to this report).

2. The Delegation of the Kingdom of Morocco reserved its position with respect to these texts (see Annex [4] to this report*).

W. PAPPAS
Chairman of Sub-Working Group 5B 2

Annexes: 3

* To be provided later on.

ANNEX 1

DRAFT MODIFICATIONS TO ARTICLE 12 OF THE RADIO REGULATIONS AS A RESULT OF ACTIONS TAKEN WITH REGARD TO APPENDIX 26, AS INDICATED IN RESOLUTION No. 9 OF THE PLENIPOTENTIARY CONFERENCE (NICE, 1989) (FORMERLY RESOLUTION NO. PL-B/2)

Note: These draft modifications are prepared on the assumption that the revised Appendix 26 consists of the following parts:

Part I: General provisions and definitions
Part II: Technical bases used for the establishment of the Frequency Allotment Plan (channelling arrangement, classes of emission, power limits);
Part III: Frequency Allotment Plan;
Part IV: Criteria for compatibility assessment (repetition distances)
Part V: Procedure for modification and for maintenance of the Plan

1. Draft modifications to Sub-Section IIC (paragraph 27)

NOC 1343 §27. (1) *Examination of Notices Concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (OR) Service in the Bands Allocated Exclusively to that Service Between 3 025 kHz and 18 030 kHz (see No. 1239)*

NOC 1344 (2) The Board shall examine each notice covered by No. 1343 to determine whether:

MOD 1344A (a) the notice is in conformity with the provisions of No. 1240 and those contained in Part II of Appendix 26 (Rev.);

MOD 1345 (b) the assignment is in conformity with ~~the primary~~ an allotments in the Allotment Plan for the aeronautical mobile (OR) service ~~and the conditions specified in Appendix 26 (Parts III and IV)~~ contained in Part III of Appendix 26 (Rev.)

SUP 1346

SUP 1347

SUP 1348

(MOD) 1348A (3A) A notice which is not in conformity with the provisions of No. 1344A shall be examined with respect to Nos. 1267 and 1268. The date to be entered in Column 2b shall be determined in accordance with the relevant provisions of Section III of this Article.

Annex 1 (cont.)

ADD 1348B (4) Any frequency assignment for which the finding is favourable with respect to Nos. 1344A and 1345 shall be recorded in the Master Register. The date to be entered in Column 2a shall be that determined in accordance with the relevant provisions of Section III of this Article.

ADD 1348C (5) A notice which is in conformity with the provisions of No. 1344A, but not with those of No. 1345, shall be examined with respect to the allotments in the Plan and to assignments already recorded with a favourable finding with respect to this present provision. In so doing, the Board shall apply the technical criteria specified in Part IV of Appendix 26 (Rev.)... The date to be entered in Column 2a or 2b shall be that determined in accordance with the relevant provisions of Section III of this Article.

SUP 1349

2. Draft modifications to Section III

NOC 1406 §45. (1) *Frequency Bands Allocated Exclusively to the Aeronautical Mobile (OR) Service Between 3 025 kHz and 18 030 kHz*

MOD 1407 (2) If the finding is favourable with respect to Nos. 1344A and 1345, the date of 15 December 1992 shall be entered in Column 2a.

MOD 1408 (3) If the finding is favourable with respect to No. ~~1346~~ 1348C, the date of 15 December 1992 shall be entered in Column ~~2b~~ 2a.

SUP 1409

MOD 1410 (4) In all other cases covered by No. 1343, the date of ~~receipt of the notice by the Board~~ 16 December 1992 shall be entered in Column 2b.

(MOD) 1411 (5) For assignments to stations other than aeronautical stations in the aeronautical mobile (OR) service, the relevant date shall be entered in Column 2b (see Nos. 1271 and 1272).

ANNEX 2

DRAFT APPENDIX 26 (Rev.)
to the Radio Regulations

Provisions and associated Frequency Allotment Plan
for the aeronautical mobile (OR) service
in the bands allocated exclusively to that service
between 3 025 kHz and 18 030 kHz

(See Article 50 of the Radio Regulations)

PART I: General Provisions, definitions

26/1 The provisions of this Appendix shall apply to the aeronautical mobile (OR) service in the following frequency bands:

3 025 - 3 155 kHz
3 900 - 3 950 kHz (Region 1 only),
4 700 - 4 750 kHz
5 680 - 5 730 kHz
6 685 - 6 765 kHz
8 965 - 9 040 kHz
11 175 -11 275 kHz
13 200 -13 260 kHz
15 010 -15 100 kHz
17 970 -18 030 kHz.

26/2 For the purpose of this Appendix, the terms used comprise the following:

26/2.1 Frequency Allotment Plan : The Plan for the aeronautical mobile (OR) service, contained in Part III of this Appendix.

26/2.2 Allotment in the aeronautical mobile (OR) service: A frequency allotment in the aeronautical mobile (OR) service which comprises:

- a frequency channel from the channels appearing in the channelling arrangement in No. 26/3;
- a bandwidth of up to 2.8 kHz, situated wholly within the frequency channel concerned;
- a power within the limits laid down in No. 26/4.4 and/or against the allotted frequency channel;
- an allotment area which is the area in which the aeronautical station can be situated and which coincides with the territory of the country, or the geographical area, or with a part of the territory, as indicated against the frequency channel concerned in the Frequency Allotment Plan.

Annex 2 (cont.)

PART II: Technical bases used for the establishment of the Frequency Allotment Plan for the aeronautical mobile (OR) service in the exclusive bands between 3 025 kHz and 18 030 kHz

26/3 **Channelling arrangement**

26/3.1 The channelling arrangement for the frequencies to be used by aeronautical stations in the aeronautical mobile (OR) service in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz is indicated in Table 1 below:

TABLE 1

Frequency band 3 025 - 3 155 kHz: 43 + 1 channel

3 023[1)]	3 026	3 029	3 032	3 035	3 038	3 041	3 044	3 047	3 050
3 053	3 056	3 059	3 062	3 065	3 068	3 071	3 074	3 077	3 080
3 083	3 086	3 089	3 092	3 095	3 098	3 101	3 104	3 107	3 110
3 113	3 116	3 119	3 122	3 125	3 128	3 131	3 134	3 137	3 140
3 143	3 146	3 149	3 152						

Frequency band 3 900 - 3 950 kHz (Region 1 only): 16 channels

3 900	3 903	3 906	3 909	3 912	3 915	3 918	3 921	3 924	3 927
3 930	3 933	3 936	3 939	3 942	3 945				

Frequency band 4 700 - 4 750 kHz: 16 channels

4 700	4 703	4 706	4 709	4 712	4 715	4 718	4 721	4 724	4 727
4 730	4 733	4 736	4 739	4 742	4 745				

Frequency band 5 680 - 5 730 kHz: 15 + 1 channels

5 680[1)]	5 684	5687	5 690	5 693	5 696	5 699	5 702	5 705	5 708
5 711	5 714	5717	5 720	5 723	5 726				

Frequency band 6 685 - 6 765 kHz: 26 channels

6 685	6 688	6 691	6 694	6 697	6 700	6 703	6 706	6 709	6 712
6 715	6 718	6 721	6 724	6 727	6 730	6 733	6 736	6 739	6 742
6 745	6 748	6 751	6 754	6 757	6 760				

Frequency band 8 965 - 9 040 kHz: 25 channels

8 965	8 968	8 971	8 974	8 977	8 980	8 983	8 986	8 989	8 992
8 995	8 998	9 001	9 004	9 007	9 010	9 013	9 016	9 019	9 022
9 025	9 028	9 031	9 034	9 037					

Frequency band 11 175 - 11 275 kHz: 33 channels

11 175	11 178	11 181	11 184	11 187	11 190	11 193	11 196	11 199	11 202
11 205	11 208	11 211	11 214	11 217	11 220	11 223	11 226	11 229	11 232
11 235	11 238	11 241	11 244	11 247	11 250	11 253	11 256	11 259	11 262
11 265	11 268	11 271							

---

1) For use of the carrier (reference) frequencies 3 023 kHz and 5 680 kHz see No. 26/3.4

Annex 2 (cont.)

Frequency band 13 200 - 13 260 kHz: 20 channels

13 200	13 203	13 206	13 209	13 212	13 215	13 218	13 221	13 224	13 227
13 230	13 233	13 236	13 239	13 242	13 245	13 248	13 251	13 254	13 257

Frequency band 15 010 - 15 100 kHz: 30 channels

15 010	15 013	15 016	15 019	15 022	15 025	15 028	15 031	15 034	15 037
15 040	15 043	15 046	15 049	15 052	15 055	15 058	15 061	15 064	15 067
15 070	15 073	15 076	15 079	15 082	15 085	15 088	15 091	15 094	15 097

Frequency band 17 970 - 18 030 kHz: 20 channels

17 970	17 973	17 976	17 979	17 982	17 985	17 988	17 991	17 994	17 997
18 000	18 003	18 006	18 009	18 012	18 015	18 018	18 021	18 024	18 027

26/3.2 The frequencies indicated in No. 26/3.1 are the carrier (reference) frequencies.

26/3.3 With the exception of the carrier (reference) frequencies 3 023 kHz and 5 680 kHz (see 26/3.4 below), one or more frequencies from Table 1 may be assigned to any aeronautical station and/or aircraft station, in accordance with the Frequency Allotment Plan, as contained in Part III of this Appendix.

26/3.4 The carrier (reference) frequencies 3 023 kHz and 5 680 kHz are provided for worldwide common use (see also Nos. 27/208 to 27/214).

26/3.5 The aeronautical radiotelephone stations shall use only single-sideband emissions (J3E). The upper sideband mode shall be employed, and the assigned frequency (see No. RR142) shall be 1 400 Hz higher than the carrier (reference) frequency.

26/3.6 The channelling arrangement established in No. 26/3.1 does not prejudice the rights of administrations to establish, and to notify assignments to stations in the aeronautical mobile (OR) service other than those using radiotelephony, provided that

- the occupied bandwidth does not exceed 2 800 Hz and is situated wholly within one frequency channel (see also Resolution No. AER-1);
- the limits of unwanted emission are met (see No. 27/66C).

26/4 **Classes of emission and power**

26/4.1 In the aeronautical mobile (OR) service, in the bands governed by this Appendix, the use of the emissions listed below is permissible; additionally the use of other emissions is also permissible, subject to compliance with No. 26/3.6

26/4.2 Telephony :

- J3E (single-sideband, suppressed carrier).

26/4.3 Telegraphy (including automatic data transmission):

- A1A, A1B, F1B;
- (A,H)2(A,B);
- (R,J)2(A,B,D);
- J(7,9)(B,D,X).

Annex 2 (cont.)

26/4.4 Unless otherwise specified in Part III of this Appendix, the following transmitter power limits (i.e. power supplied to the antenna), shall be respected:

Class of emission	Power limit values (Peak envelope power supplied to the antenna)	
	Aeronautical station	Aircraft station
J3E	36 dBW (PX)	23 dBW (PX)
A1A, A1B	30 dBW (PX)	17 dBW (PX)
F1B	30 dBW (PX)	17 dBW (PX)
A2A, A2B	32 dBW (PX)	19 dBW (PX)
H2A, H2B	33 dBW (PX)	20 dBW (PX)
(R,J)2(A,B,D)	36 dBW (PX)	23 dBW (PX)
J(7,9)(B,D,X)	36 dBW (PX)	23 dBW (PX)

26/4.5 On the assumption that no antenna gain is involved, the transmitter powers, specified in No. 26/4.4 above, will result in a mean effective radiated power of 1 kW (for the aeronautical stations) and 50 W (for the aircraft stations) used as the basis for the establishment of the Plan contained in Part III of this Appendix.

Annex 2 (cont.)

PART III: Plan for the allotment of frequencies for the aeronautical mobile (OR) service in the exclusive bands between 3 025 kHz and 18 030 kHz

26/5.1 Column headings

Column 1: Carrier (reference frequency), in kHz
Column 2: Allotment area (designated by the symbol of the country or the geographical area the meaning of which is given in the Preface to the IFL)

26/5.2 Whenever the allotment area is followed by another administration's code, indicated in parentheses, the notifications are receivable only from this latter administration, unless there is an agreement between the administrations concerned indicating otherwise, which has been communicated to the Union. In all other cases the provisions of Resolution No. 1 shall apply.

The Frequency Allotment Plan is under preparation and will be communicated at a later date, in accordance with the time-scale indicated in IFRB Circular-letter No. 823 of 15 June 1990.

Annex 2 (cont.)

PART IV: Criteria for compatibility assessment

26/6 For assessment of the sharing possibilities between the allotments contained in Part III of this Appendix, and any new assignment which is not covered by an appropriate allotment, the following criteria shall be used:

26/6.1 A new station, not covered by an allotment, which uses the standardized transmission characteristics (J3E, 36 dBW PX), shall be considered compatible with the Plan, if it fulfils the criterion of being separated from any point of any allotment area, indicated in the Plan on the given channel, by the half-repetition distance, determined for the given conditions of operation (frequency band used, geographical position of the station, direction of propagation), which are given below:

Frequency band (kHz)	Half-repetition distances (in km)			
	Northern hemisphere		Southern hemisphere	
	North-South	East-West	North-South	East-West
3 025 - 3 155	550	600	550	600
3 900 - 3 950	650	650	650	650
4 700 - 4 750	725	775	725	775
5 680 - 5 730	1 175	1 325	1 150	1 300
6 685 - 6 765	1 350	1 600	1 225	1 425
8 965 - 9 040	2 525	3 525	2 225	3 075
11 175 - 11 275	3 375	5 575	2 675	3 925
13 200 - 13 260	4 550	6 650	3 475	5 625
15 010 - 15 100	5 050	7 450	4 800	7 100
17 970 - 18 030	5 750	8 250	5 675	7 475

26/6.2 The relevant value of the half-repetition distance, for paths which are situated partially in the northern hemisphere and partially in the southern hemisphere, shall be corrected using the linear interpolation procedure. The linear interpolation procedure shall be used for calculation of the correction due to the azimuth of the propagation path with respect to the true North.

26/6.3 The relevant value of the half-repetition distance, obtained in accordance with No. 26/6.2, shall be corrected, where necessary, to take into account the difference in the radiated power of the assignment with respect to the reference radiated power (30 dBW, mean radiated power), on the basis that a variation of 1 dB in the radiated power corresponds to a variation of 4% in the repetition distance.

PART V: Procedure for modification and for maintenance of the Plan

26/7 The Plan will be updated, by the Board, in accordance with the following procedure:

26/7.1 a) when a country, which has no allotment in the Plan, requests an allotment, the Board shall select an appropriate allotment on a priority basis and shall enter it in the Plan;

26/7.2 b) when a notice, which is submitted under Article 12 of the Radio Regulations and which is not covered by appropriate allotment, receives a favourable finding with respect to the provisions of No. 1348C, the corresponding allotment shall be entered in the Plan;

26/7.3 c) when a country informs the Board that it renounces the use of an allotment, the Board shall cancel the allotment concerned from the Plan;

26/7.4 d) when no notification, under Article 12 of the Radio Regulation, is received within a period of 2 years following the entry of the allotment in the Plan, the Board shall consult the administration concerned within the next six months about the deletion of that allotment from the Plan: if the administration so wishes an extension of a period not exceeding twelve months may be granted: if, thereafter no notification is received the allotment shall be deleted.

26/8 The Board shall maintain an up-to-date master copy of the Plan, taking account of the application of the procedure specified in this Appendix; and shall periodically prepare recapitulative documents listing all amendments made to the Plan since its last publication.

26/9 The Secretary-General shall publish an up-to-date version of the Plan in an appropriate form every [four] years.

ANNEX 3

DRAFT NEW RESOLUTION NO. [AER-1] RELATING TO THE IMPLEMENTATION OF THE NEW PROVISIONS APPLICABLE IN THE FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (OR) SERVICE BETWEEN 3 025 KHZ AND 18 030 KHZ

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, Malaga - Torremolinos, 1992,

considering

a) that the conditions for use of each of the frequency bands between 3 025 kHz and 18 030 kHz allocated exclusively to the aeronautical mobile (OR) service were modified by this Conference so as to enable a more efficient usage of the frequency spectrum available;

b) that the implementation of the modified conditions of use will require a considerable workload for the administrations since a large number of frequency assignments to both aircraft and aeronautical stations will have to be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;

c) that the full implementation of the modified provisions for the frequency usage may require considerable investments in replacement of the existing equipment;

d) that, nevertheless, the full implementation of the modified provisions for the frequency usage should be made as soon as possible so that the advantages of the new arrangement may be realized at the earliest opportunity;

e) that the changeover to the new conditions of operation should be made with the least possible disruption to the service rendered by each station,

recognizing

a) that the implementation of the decisions made by the present Conference relating to the new arrangement of the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz should follow an orderly procedure for the transfer of existing services from the old to the new conditions of operation;

b) that the transfer procedures of the existing frequency assignments in the aeronautical mobile (OR) service, in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz, are dealt with in Resolution No. [AER-2] adopted by the present Conference,

resolves

1. that the provisions of Appendix 26 (Rev.), as well as the relevant provisions of Article 12 of the Radio Regulations, as modified by the present Conference, shall apply to any new frequency assignment, as from 0001 UTC on 15 December 1992.

Annex 3 (cont.)

2. that administrations shall take all the necessary measures to conform with the new conditions of use of the bands governed by Appendix 26 (Rev.) by not permitting the installations of new equipment whose emissions require a necessary bandwidth exceeding 2 800 Hz as from 15 December 1992;

3. that, until [15 December 1995], the administrations may continue to use their existing assignments in accordance with the characteristics recorded in the Master International Frequency Register; after that date the administrations shall take all necessary measures to modify the characteristics of their assignments so as to bring them in conformity with the provisions of Appendix 26 (Rev.);

4. that, not later than [15 December 1997], the administrations shall discontinue all emissions whose bandwidth exceeds 2 800 Hz,

[**invites the administrations**

to make every effort to eliminate the mutual incompatibilities which may occur in the transition period.]

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/31 (Rev.1)-E
13 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

DRAFT

NOTE BY THE CHAIRMAN OF THE WORKING GROUP TO THE PLENARY TO THE CHAIRMAN OF COMMITTEE 5

At the request of the Chairman of Committee 5 (see Document 121), the Working Group to the Plenary has examined possible values of power-flux density of BSS (HDTV) systems as proposed in Section III of the annex to proposal EUR/20/59, and confirms these values assuming that they relate to the power-flux density which would be obtained under assumed free-space propagation conditions.

M. MUROTANI
Chairman, Working Group to the Plenary

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/31-E
11 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

DRAFT

NOTE BY THE CHAIRMAN OF THE WORKING GROUP TO THE PLENARY TO THE CHAIRMAN OF COMMITTEE 5

At the request of the Chairman of Committee 5 (see Document 121), the Working Group to the Plenary has examined possible limiting values of power-flux density of BSS (HDTV) systems in the band 21.4-22.0 GHz as proposed in Section III of the annex to proposal EUR/20/59, and confirms these values assuming that these limits relate to the power-flux density which would be obtained under assumed free-space propagation conditions.

M. MUROTANI
Chairman, Working Group to the Plenary

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/32(Rev.2)-E
14 February 1992
Original: English

WORKING GROUP 4C

Note of the Chairman of Working Group 4C

As agreed in the fourth meeting of Working Group 4C, ad hoc Group 1 to 4C was established under the chairmanship of Mr. R. Taylor of the United States. The terms of reference of this ad hoc Group are:

to consider the proposals from Administrations on the services of space research, earth exploration-satellite and inter-satellite between the bands 25.25 - 158 GHz.

A table illustrating the proposals is given below.

FREQUENCY ALLOCATION SERVICE	PROPOSALS
25.25 - 27.5 GHz EARTH EXPLORATION-SATELLITE SPACE RESEARCH	CAN/23(+ Add.2)/152, 153 PAK/44(+ Add.2) EUR/46/5, 6, 7
25.25 - 27.5 GHz INTER-SATELLITE	USA/12/(+ Add.5)116, 117, 143 J/27/63-65 MEX/63/68, 69
27.5 - 40.5 GHz SPACE RESEARCH EARTH EXPLORATION-SATELLITE	

27.5 - 28.5 GHz SPACE RESEARCH	URS/7(+ Corr.1, 2)/2, 6
29.5 - 31.0 GHz 37.5 - 40.5 GHz EARTH EXPLORATION-SATELLITE	URS/7(+ Corr.1)/4, 5, 8-10
31.8 - 32.3 GHz 34.2 - 34.7 GHz SPACE RESEARCH (deep space)	USA/12/121-126 AUS/31/52-57 MEX/63/71-81
37.0 - 38.0 GHz 39.5 - 40.5 GHz SPACE RESEARCH	USA/12/127-130
37.0 - 37.5 GHz 40.0 - 40.5 GHz EARTH EXPLORATION-SATELLITE	EUR/46/11, 13, 14
74 - 84 GHz SPACE RESEARCH	URS/7(+ Corr.1)/11-15
156 - 158 GHz EARTH EXPLORATION-SATELLITE	USA/12/134-136

H.G. KIMBALL
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/32(Rev.1)-E
11 February 1992
Original: English

WORKING GROUP 4C

Note of the Chairman of Working Group 4C

As agreed in the fourth meeting of Working Group 4C, ad hoc Group 1 to 4C was established under the chairmanship of Mr. R. Taylor of the United States. The terms of reference of this ad hoc Group are:

> to consider the proposals from Administrations on the services of space research, earth exploration-satellite and inter-satellite between the bands 25.25 - 158 GHz.

A table illustrating the proposals is given below.

FREQUENCY ALLOCATION SERVICE	PROPOSALS
25.25 - 27.5 GHz EARTH EXPLORATION-SATELLITE SPACE RESEARCH	CAN/23(+ Add.2)/152, 153 PAK/44(+ Add.2) EUR/46/5, 6, 7
25.25 - 27.5 GHz INTER-SATELLITE	USA/12/(+ Add.5)116, 117 J/27/63-65 MEX/63/68, 69
27.5 - 40.5 GHz SPACE RESEARCH EARTH EXPLORATION-SATELLITE	URS/7(+ Corrs.1, 2)/2, 4, 5, 6, 8-10 USA/12/121-130 AUS/31/52-57 PAK/44 EUR/46/11, 13, 14 MEX/63/71-81 IUCAF/88

74 - 84 GHz SPACE RESEARCH	URS/7(+ Corr.1)/11-15
156 - 158 GHz EARTH EXPLORATION-SATELLITE	USA/12/134-136

H.G. KIMBALL
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/32-E
11 February 1992
Original: English

WORKING GROUP 4C

Note of the Chairman of Working Group 4C

As agreed in the fourth meeting of Working Group 4C, ad hoc Group 1 to 4C was established under the chairmanship of Mr. R. Taylor of the United States. The terms of reference of this ad hoc Group are:

> to consider the proposals from Administrations on the services of space research, earth exploration-satellite and inter-satellite between the bands 25.25 - 84 GHz.

A table illustrating the proposals is given below.

FREQUENCY ALLOCATION SERVICE	PROPOSALS
25.25 - 27.5 GHz EARTH EXPLORATION-SATELLITE SPACE RESEARCH	CAN/23(+ Add.2)/152, 153 PAK/44(+ Add.2)
25.25 - 27.5 GHz INTER-SATELLITE	USA/12/116, 117 J/27/63-65 MEX/63/68, 69
25.5 - 40.5 GHz SPACE RESEARCH EARTH EXPLORATION-SATELLITE	URS/7 (+ Corrs.1, 2)/2, 4, 5, 6, 8-10 USA/12/121-130 CAN/23(+ Add.2)/152, 153 AUS/31/52-57 PAK/44 EUR/46/5, 6, 7, 11, 13, 14 MEX/63/71-81

31.8 - 32.3 GHz SPACE RESEARCH	MEX/63/71, 72, 73, 73A
34.2 - 34.7 GHz SPACE RESEARCH	MEX/63/74-77
37 - 38 GHz SPACE RESEARCH	MEX/63/78, 79, 80, 80A
39.5 - 40.5 GHz SPACE RESEARCH	MEX/63/81
74 - 84 GHz SPACE RESEARCH	URS/7 (+ Corr.1)/11-15
156 - 158 GHz EARTH EXPLORATION-SATELLITE	USA/12/134-136

H.G. KIMBALL
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/33(Rev.1)-E
14 February 1992
Original: English

WORKING GROUP 4C

Note from the Chairman of Working Group 4C

PROPOSAL FOR THE SPACE RESEARCH SERVICE IN THE 74 - 84 GHz BAND

An informal group of delegates from several Administrations met on 10 February to discuss the implications of proposals URS/7/11-15. The informal group has requested that the results of that discussion be presented to the participants of ad hoc Group 1 to WG 4C for their consideration. This note presents that information.

The informal group considers that the proposals from the Russian Federation, the Ukraine and Belarus, embodied in URS/7/11-15, could be adopted by this Working Group.

H.G. KIMBALL
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/33-E
11 February 1992
Original: English

WORKING GROUP 4C

Note from the Chairman of Working Group 4C

PROPOSAL FOR THE SPACE RESEARCH SERVICE IN THE 74 - 84 GHz BAND

An informal group of delegates from several Administrations met on 10 February to discuss the implications of proposals URS/7/11-15. The informal group has requested that the results of that discussion be presented to the participants of WG 4C for their consideration. This note presents that information.

The informal group considers that the proposals from the Russian Federation, the Ukraine and Belarus, embodied in URS/7/11-15, could be adopted by this Working Group provided that a footnote was also adopted that would protect the interests of the amateur and amateur-satellite services in the band 76 - 81 GHz. The proposed footnote would read as follows:

"Use of the band 76 - 81 GHz by the space research service shall not impose any constraints on the amateur and amateur-satellite services."

H.G. KIMBALL
Chairman of Working Group 4C

INTERNATIONALE TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/34-E
12 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP 5A

Source: DL/5

Draft

SECOND REPORT OF THE CHAIRMAN OF WORKING GROUP 5A TO COMMITTEE 5

1.0 Introduction:

This Report is a result of consideration given to Article 55 by Working Group 5A. The conclusion is based on proposals submitted to the Conference by twenty Administrations in documents: 9, 12, 20, 23, 26, 27, 30, 31, 44, 52, 57, 61, 62, 63, 65, 74, 75, 79, 101 and [126]. Three information papers from IMO (Doc. 11), ICS (Doc. 83) and ITF (Doc. 87) were also considered.

2.0 Background Material:

Texts from IMO Resolution A.703(17) on training of radio personnel in the GMDSS, IMO Resolution A.702 (17) on guide-lines for ensuring availability of radio equipment and Resolution No. 5 of the IMO GMDSS Conference (London, 1988) on Regulation IV/15.7 on maintenance requirements were considered by the Working Group.

3.0 Conclusions:

A number of substantial modifications to Article 55 had been proposed concerning the number of certificates issued to personnel of ship stations and ship earth stations using the frequencies and techniques prescribed in Chapter N IX. However, having noted the decisions taken by IMO at its 17th Assembly in November 1991 (Resolutions A.702 (17) and A.703 (17) refer) the Group came to the conclusion that no change to Article 55 is required to harmonize this Article of the Radio Regulations with relevant IMO texts (see Annex 1 attached).

The Working Group was also of the view that the Editorial Committee should ensure the alignment of the French text in RR 3873 with the English text particularly as it relates to the use of the word "name".

Annex: 1

Robert C. McIntyre
Chairman, Working Group 5A

ANNEX 1

ARTICLE 55

NOC Mob-87

Certificates for Personnel of Ship Stations and Ship Earth Stations

NOC

Section I. General Provisions

NOC 3860 Mob-87 to 3877A Mob-87

NOC Mob-87

Section II. Categories of Certificates for Operators of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter IX and for Public Correspondence

NOC 3878 to 3890

NOC Mob-87

Section IIA. Categories of Certificates for Personnel of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter N IX and for Public Correspondence

NOC 3890A Mob-87 to 3890F Mob-87

NOC Mob-87

Section III. Conditions for the Issue of Certificates for Operators of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter IX and for Public Correspondence

NOC 3891 to 3949

NOC Mob-87

Section IIIA. Conditions for the Issue of Certificates for Personnel of Ship Stations and Ship Earth Stations Using the Frequencies and Techniques Prescribed in Chapter N IX and for Public Correspondence

NOC 3949A Mob-87 to 3949DE Mob-87

NOC

Section IV. Qualifying Service

NOC 3950 to 3953

3954 to 3978 NOT allocated.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/ 35 Rev 1- E

14 February 1992

SUB WORKING GROUP 5C - 1

DRAFT

RESOLUTION

RELATING TO IMPLEMENTATION OF CHANGES IN FREQUENCY ALLOCATIONS

BETWEEN [4000 KHZ AND 20000 KHZ]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that parts of the frequency bands between [4 000 kHz and 20 000 kHz] which were previously allocated on an exclusive or shared basis to the fixed and mobile services have been re-allocated to the broadcasting service;

b) that the existing fixed and mobile assignments must be removed progressively from those re-allocated bands to make way for the broadcasting or amateur services ;

c) that the assignments to be removed, termed "displaced assignments", must be re-accommodated in other frequency bands,

recognizing

the difficulties that might face administrations and the IFRB during the period of transition from the previous allocations to those made by this Conference,

resolves that

1. The duration of the transition period shall be from [1.4.1992] to [1.1.2007].

2. Administrations should no longer notify any frequency assignments to stations of the fixed and mobile services in the reallocated bands as of [ ] . Assignments notified in these bands after the date[ ] , shall bear a symbol to indicate that they will be deleted from the Master Register on [ ].

3. As of [ ], the IFRB shall undertake a continuing action to review the MIFR with the help of the administrations. In this respect the IFRB shall periodically consult the administrations for the frequency assignments for links for which another satisfactory means of telecommunication exists; with a view to either downgrading Class A assignments or deleting such assignments.

4. Administrations shall, for Class A assignments in the reallocated bands , either notify the IFRB the replacement frequencies or request the IFRB assistance in selecting the replacement frequencies in application of RR1218 and Resolution No.103.

5. The IFRB shall develop in due time a draft procedure to be used for the replacement of remaining frequency assignments and shall consult administrations in accordance with RR 1001.1.

6. The IFRB should modify the draft procedures taking account to the extent practicable of comments received from administrations and propose replacement assignments at the latest [ ] year(s) before [ ]. In so doing, the IFRB shall request administrations to take appropriate action in relation to their assignments to be in conformity with the Table of Frequency Allocations by the due date .

7. A replacement frequency assignment whose basic characteristics have not been modified in the above process, shall keep its original date in accordance with RR1445 - RR1449 . However, if the basic characteristics of a replacement frequency assignment are different from those of the displaced assignment, the replacement assignment shall be treated in accordance with RR1376 - RR1380 .

Invites administrations

When seeking re-accommodation of the displaced assignments for their fixed and mobile services in the bands between [4 000 kHz and 20 000 kHz] which have been re-allocated to the broadcasting or amateur services, to make every effort to find replacement assignments in the bands allocated to the fixed and mobile services concerned.

V. Rubio Carretón

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/35-E
13 February 1992
Original: English

SUB WORKING GROUP 5C1

Source: EUR/20/34

DRAFT

RESOLUTION

RELATING TO IMPLEMENTATION OF CHANGES IN FREQUENCY ALLOCATIONS

BETWEEN [4000 KHZ AND 20000 KHZ]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that parts of the frequency bands between [4 000 kHz and 20 000 kHz] which were previously allocated on an exclusive or shared basis to the fixed and mobile services have been re-allocated to the broadcasting service;

b) that the existing fixed and mobile assignments must be removed progressively from those re-allocated bands to make way for the broadcasting or amateur services;

c) that the assignments to be removed, termed "displaced assignments", must be re-accommodated in other frequency bands,

recognizing

the difficulties that will face administrations and the IFRB during the period of transition from the previous allocations to those made by this Conference,

resolves

1. The duration of the transition period shall be from [1.4.1992] to [1.1.2007].

2. Administrations should no longer notify any frequency assignments to stations of the fixed and mobile services in the reallocated bands as of [ ] . Assignments notified in these bands after the date[ ] , should bear a symbol to indicate that they will be deleted from the Master Register on [ ].

3. As of [ ], the IFRB shall undertake a continuing process to review the MIFR with the help of the administrations. In this respect the IFRB shall periodically consult the administrations for the frequency assignments for links for which another satisfactory means of telecommunication exist; with a view to either downgrading or deleting such assignments.

4. Administrations shall, for Class A assignments, either notify the IFRB the replacement frequencies or request the IFRB assistance in selecting the replacement frequencies in application of RR1218 and Resolution No.103.

5. Two years before the date [ ], IFRB shall develop a procedure to be used for the replacement of remaining frequencies, consult the administrations on this draft procedure in accordance with RR 1001.1 and clear the reallocated bands accordingly.

invites administrations

When seeking re-accommodation of the displaced assignments for their mobile services in the bands between [4 000 kHz and 20 000 kHz] which have been re-allocated to the broadcasting or amateur services, to make every effort to find replacement assignments in the bands allocated exclusively to the mobile service concerned.

V. RUBIO CARRETÓN
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/36-E
12 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Draft

REPORT OF DRAFTING GROUP 2 TO THE WG/PL

Agenda item 2.8

1. The WG/PL created DG-2 to consider the material appearing in Document DT/12. DT/12 addresses proposals from the United States, Japan, India, Pakistan, China and Mexico for upgrading the status of the meteorological and earth exploration-satellites to primary in the band 401 - 403 MHz.

2. Administrations participating in DG-2 were China, Spain, France, India, Japan, Mexico, Senegal and the United States.

3. DG-2, conducting its work by correspondence, has completed the text of a Resolution inviting the Administrative Council to place on the agenda of the next competent world administrative radio conference a request that meteorological satellites and earth exploration-satellites be given a primary allocation status in the 401 - 403 MHz band.

4. The agreed upon text appears in the annex.

Annex: 1

ANNEX

DRAFT RESOLUTION

Relating to Primary Service Requirements for Earth Exploration-Satellite and Meteorological-Satellite Services in the Bands 401 - 403 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that many administrations use frequencies in the bands 401 - 402 and 402 - 403 MHz for reporting to satellites from airborne, land-based and maritime data collection platforms (DCPs);

b) that the CCIR has conducted studies of the characteristics, requirements and sharing criteria necessary for compatibility with the services sharing the bands with these systems, the results are reported in CCIR Report 541-2 and Recommendation 514-2;

c) that the meteorological-satellite and earth exploration-satellite services in the bands 401 - 402 and 402 - 403 MHz are secondary to other services in these bands and that in order for continuous reliable observations to be made, it is essential that transmission of the data be achieved without harmful interference,

resolves

that the next competent world administrative radio conference examine the allocation to the meteorological-satellite and earth exploration-satellite services in the bands 401 - 402 and 402 - 403 MHz with the intent of raising the allocation status to primary,

invites the Administrative Council

to take the necessary action to place this matter on the agenda of the next competent world administrative radio conference.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/37-E
12 February 1992
Original: English

SUB WORKING GROUP 5C2

Source: D/21
E/32

DRAFT

RESOLUTION

RELATING TO TERRESTRIAL DIGITAL SOUND BROADCASTING

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that advances in technology have made available digital sound broadcasting systems of high quality;

b) that such a digital sound broadcasting system will offer a considerably higher sound quality as well as additional system characteristics which are not supported by the present FM broadcasting system;

c) that digital sound broadcasting will, in addition to the properties mentioned above, have a higher frequency efficiency than conventional FM sound broadcasting;

d) that digital sound broadcasting systems require less effective radiated power ;

e) that the bands 87.5 - 108 MHz in Region 1, 88 - 108 MHz in Region 2 and 87 - 108 MHz in Region 3 are generally much used for the high-powered FM sound broadcasting service;

f) that several European countries are considering the implementation of digital sound broadcasting on an interim basis in the band 87.5 - 108 MHz or other broadcasting bands;

resolves

to invite the Administravite Council to consider, when technical system characteristics and compatibility criteria are available, the need for future administrative radio conference to revise the Radio Regulations to provide for the introduction of terrestrial digital sound broadcasting.

Invites the CCIR

as a metter of urgency, to undertake the relevant studies to determine the required technical parameters, propagation characteristics and compatibility criteria for terrestrial digital sound broadcasting systems, for the same and adjacent bands.

Invites administrations

to contribute actively to the CCIR in this respect.

Instructs the Secretary-General

to bring this Resolution to the attention of a forthcoming session of the Administrative Council.

T. HAHKIO
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/38(Rev.1)-E
12 February 1992
Original: English

WORKING GROUP TO THE PLENARY

Report of Drafting Group 5 to the Working Group to the Plenary

1. Drafting Group 5 to the Working Group to the Plenary has held one meeting to consider technical issues relating to the proposed modification to the definition of "geostationary satellite", RR 181, which can be found in Document 132 prepared by Working Group 5C.

2. Drafting Group 5 was composed of representatives from the Administrations of Australia, Italy, United Kingdom, Argentina, Canada, United States, Japan, Indonesia, France, Russian Federation and the IFRB.

3. After careful consideration of the technical issues relating to the proposed modification of RR 181, a draft liaison statement from WG/PL to Working Group 5C was agreed. The proposed text of the liaison statement is given in the annex.

C.J. CHEESEMAN
Chairman of Drafting Group 5
to WG/PL

Annex: 1

ANNEX

Draft liaison statement from WG/PL to Committee 5

The Working Group to the Plenary have carefully considered the proposed modification to the definition of "geostationary satellite", RR 181, as given in Document 132 prepared by Committee 5.

The proposed modification to RR 181 would be acceptable from a technical viewpoint only if the definition of the "geostationary-satellite orbit", RR 182, is also modified. The reason for this is that elsewhere in the Radio Regulations the location of the geostationary-satellite orbit is assumed to lie in the plane of the Earth's equator and is used as a reference point for the application of certain Radio Regulations (RR 2502, RR 2503 in Article 27, for example).

For the above reason, a clear definition of the "geostationary-satellite orbit", RR 182, is required and WG/PL offers the following appropriate text.

"Geostationary-satellite orbit: The orbit of a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator."

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/38-E
12 February 1992
Original: English

WORKING GROUP TO THE PLENARY

Report of Drafting Group 5 to WG/PL

1. Drafting Group 5 to the WG/PL has held one meeting to consider technical issues relating to the proposed modification to the definition of "geostationary satellite", RR 181, which can be found in Document 132 prepared by Working Group 5C.

2. Drafting Group 5 was composed of representatives from the Administrations of Australia, Italy, United Kingdom, Argentina, Canada, United States, Japan, Indonesia, France, Russian Federation and the IFRB.

3. After careful consideration of the technical issues relating to the proposed modification of RR 181, a draft liaison statement from WG/PL to Working Group 5C was agreed. The proposed text of the liaison statement is given in the annex.

C.J. CHEESEMAN
Chairman of Drafting Group 5
to WG/PL

Annex: 1

ANNEX

Draft liaison statement from WG/PL to Working Group 5C

The Working Group to the Plenary has carefully considered the proposed modification to the definition of "geostationary satellite", RR 181, as given in Document 132 prepared by Working Group 5C.

In order to maintain the technical integrity of the Radio Regulations, WG/PL suggests that Working Group 5C may also wish to reconsider the definition of the "geostationary-satellite orbit", RR 182. After careful consideration, WG/PL offers the following appropriate text.

"Geostationary-satellite orbit: The orbit of a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator."

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/39-E
12 February 1992
Original: English

WORKING GROUP 4C

Draft

REPORT OF THE DRAFTING GROUP ON THE 30 GHz BAND BEACON

The Drafting Group on the 30 GHz band beacon met on 7 and 11 February. Delegations from five administrations concerned and one international organization participated in the meeting and discussed the harmonization of five proposals.

Among the five proposals, there were two concepts of allocation to the beacon transmission:

i) allocation of the specific band-edge frequency points; and

ii) allocation of the whole frequency band.

After some discussion, the group agreed to integrate both approaches with different allocation status and made the modification of the relevant parts of the frequency table and footnotes, which is indicated in the Annex to this document.

It is the view of the United States that the up-link power control beacon may be used to provide up-link power control to any space service operating in an Earth-to-space direction within this portion of the spectrum. Consequently, the footnote establishing frequencies for such beacons would also apply in the event of a decision to allocate a frequency band to the general-satellite service within this portion of the spectrum.

T. TAKEI
Chairman

Annex: 1

ANNEX

Proposed Draft Text for Agenda Item 2.2.1

Note - If the FSS allocation in the band 29.5 - 30 GHz is changed, consequential amendments to the footnotes aaa and bbb may be required.

GHz
27.5 - 30

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**27.5 - 29.5**	FIXED FIXED-SATELLITE (Earth-to-space) MOBILE aaa bbb	
MOD	**29.5 - 30**	FIXED-SATELLITE (Earth-to-space) Mobile-Satellite (Earth-to-space) 882 883 aaa bbb	

ADD **aaa** Additional allocation: the bands 27.500 - 27.501 GHz and 29.999 - 30.000 GHz are also allocated to the fixed-satellite service (space-to-Earth) on a primary basis for beacon transmissions for the purpose of up-link power control.

Such space-to-Earth transmissions shall not exceed an effective isotropic radiated power (e.i.r.p.) of +10 dBW in the direction of adjacent satellites on the geostationary-satellite orbit, and shall not produce a power flux-density in excess of the values in No. 2578 on the Earth's surface in the band 27.500 - 27.501 GHz.

ADD **bbb** Additional allocation: the band 27.501 - 29.999 GHz is also allocated to the fixed-satellite service (space-to-Earth) on a secondary basis for beacon transmissions for the purpose of up-link power control.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/40-E
12 February 1992
Original: English

WORKING GROUP 5B

Note by the Chairman of Working Group 5B

ALLOTMENT ARRANGEMENT FOR THE AERONAUTICAL MOBILE (OR) SERVICE IN THE EXCLUSIVE BANDS BETWEEN 3 025 kHz AND 18 030 kHz

1. The attached version of the allotment arrangement is a revision of the allotment arrangement contained in Addendum 1 to Document 5, adjusted as follows:

1.1 It contains allotments derived from the notifications, received under Article 12 of the Radio Regulations, in the period after 1 April 1991 which are referred to in paragraph 9 of Addendum 2 to Document 5.

1.2 It also contains the following allotments, as decided at the last meeting of Working Group 5B:

- CTI: as presented in Document 94;
- IRN: as received from the Delegation of IRN;
- ISR: as presented in Addendum 1 to Document 51.

2. It contains editorial amendments concerning the allotments for the allotment area ATA(USA), since that allotment area was listed differently on different channels. The adjusted version of the allotment arrangement contains entries for this allotment area only under REGY.

3. With respect to the other requests for adjustments, the situation was clarified with the delegations concerned as follows:

3.1 The Delegation of Zambia was shown the communication from the Administration of Zambia, in response to the IFRB request for requirements, that the Administration of Zambia has no need for an allotment.

3.2 The Delegations of INS, MLA, SEN, SNG and SUR were informed of their situations in the current AP26 Plan and in the proposed new allotment arrangement. The new allotment arrangement correctly reflects their allotments resulting from the application of the IFRB approach. Their future needs could be satisfied through the procedure of modification to the Plan, as contained in Part V of Appendix 26(Rev.).

J.P. LUCIANI
Chairman of Working Group 5B

Attachment: Part III of Appendix 26(Rev.).

Attachment 1

APPENDIX 26(Rev.)

PART III: Plan for the Allotment of Frequencies for the Aeronautical Mobile (OR) Service in the Exclusive Bands Between 3 025 kHz and 18 030 kHz

26/5.1 Column headings

Column 1: Carrier (reference frequency), in kHz

Column 2: Allotment area (designated by the symbol of the country or the geographical area the meaning of which is given in the Preface to the IFL)

26/5.2 Whenever the allotment area is followed by another administration's code, indicated in parenthesis, the notifications are receivable from the latter administration on the basis of an agreement in accordance with Resolution No. 1.

3026	REG1 ARS G MCO URS REG3 KOR
3029	REGY ATA(ARG) REG1 ARS AZR BLR COG F G I IRQ NOR POL SEN TUN URS REG2 ALS ARG B BER(USA) CLM HWA USA REG3 AUS CHN GUM IND J KOR MRL NZL PNG VTN
3032	REGY ATA(ARG) REG1 AZR BLR COG CTI F HNG IRQ MDG MLT NOR OMA POL SEN TUN URS REG2 ALS ARG B BER(USA) CLM DOM HWA USA REG3 AUS CHN GUM IND J J(USA) MRL NZL PHL(USA) PNG VTN
3035	REGY ATA(ARG) REG1 ARS BFA BHR(USA) BLR COG F G G(USA) I(USA) ISL MLT MRC NOR SEN TCD TUN TUR URS YUG REG2 ALS ARG B BER(USA) BRB(USA) CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS CHN GUM IND INS J J(USA) NZL PHL(USA) PNG
3038	REGY ATA(ARG) REG1 ARS BFA BHR(USA) BLR COG CTI CYP(G) F G G(USA) GRC I(USA) ISL MDG MTN NOR OMA REU SEN TCD TUN URS YUG REG2 ALS ARG ATG(USA) B BAH(USA) BER(USA) BRB(USA) CUB(USA) HWA MDW MRT PNR PTR TCA(USA) TRD(USA) USA REG3 AUS CHN GUM IND INS J J(USA) MRL NCL NZL OCE PHL(USA) PNG
3041	REG1 ALG G I ISL KWT NMB URS REG3 HKG IRN KRE PHL
3044	REGY ATA(ARG) REG1 AFS ALG CME COG DJI(F) F G GAB I ISR MDG MLI MTN POR ROU SEN TCD TCH UKR URS REG2 ARG CAN CLM JON MEX REG3 AUS BGD CHN GUM IRN J(USA) NCL NZL OCE PAK PHL(USA) PNG
3047	REGY ATA(ARG) REG1 AFS ALG BLR CME COG CTI DJI(F) F GAB IRL ISR MDG MLI MLT MTN POR SEN TCD TCH TUR UKR URS REG2 ARG CAN CLM JON MEX REG3 AUS BGD CHN GUM J(USA) NCL NZL OCE PNG
3050	REGY ATA(ARG) REG1 AZR BLR CME COG DNK F G GIB I MDG MLI MLT MRC POR REU SEN TCD UKR URS REG2 ALS ARG B BER(USA) CAN CUB HWA MDW PNR PTR USA REG3 AUS CHN DGA(USA) FJI GUM IND IRN J(USA) MRL NZL PAK PHL(USA) PNG
3053	REGY ATA(ARG) REG1 AZR CME COG CTI DNK F G GIB HNG MDG MLI MRC POR SEN TCD UKR URS REG2 ALS ARG ATN B BER(USA) CAN CUB HWA MDW PNR PTR USA REG3 AUS CHN FJI GUM IND IRN J(USA) MRL NZL PHL(USA) PNG
3056	REG1 BLR COG D F G GAB GIB MDG MLI ROU SEN TCD UKR URS REG2 ATN B CAN HWA JON MEX MRT USA REG3 AUS IND INS J(USA) KOR PNG
3059	REG1 BLR COG CTI D F G GAB GRC I MDG MLI REU ROU SEN TCD UKR URS REG2 B CAN HWA JON MEX MRT USA REG3 AUS IND INS J(USA) KOR NZL PNG
3062	REG1 G GUI I ROU URS REG3 IRN J
3065	REGY ATA(ARG) REG1 AZR D F G POR ROU S UKR URS REG2 ALS ARG B BER(USA) CUB GRL HWA JON PNR USA REG3 AUS GUM IND IRN J J(USA) MRL PHL(USA) PNG
3068	REGY ATA(ARG) REG1 AZR F G POR S UKR URS YUG REG2 ALS ARG B BER(USA) CUB HWA JON PNR USA REG3 AUS GUM J J(USA) MRL PHL(USA) PNG
3071	REGY ATA(ARG) REG1 AGL BUL DJI(F) F G HOL I ISL MOZ POR REU STP TUN UKR URS REG2 ALS ARG B BER(USA) CLM JON MDW USA REG3 AUS BGD CHN HKG J MRL PAK PNG

3074	REGY ATA(ARG) REG1 AGL AZR BUL F G GIB HNG I MLT MOZ POR STP TUN UKR URS REG2 ALS ARG B BER(USA) CLM GRL JON MDW USA REG3 AUS BGD CHN HKG J MRL PAK PHL(USA) PNG
3077	REGY ATA(ARG) REG1 ARS AZR CYP(G) D F G MLT POR UKR URS REG2 ALS ARG B CAN HWA PRG URG USA VEN REG3 AUS CHN HKG J(USA) KOR NZL PNG SNG
3080	REGY ATA(ARG) REG1 ARS AZR CYP(G) D F G GIB MLT POR TUR UKR URS REG2 ALS ARG B CAN CUB HWA PRG URG USA VEN REG3 AUS CHN GUM HKG IND J(USA) KOR NZL PNG SNG
3083	REG1 CYP(G) G I URS REG3 HKG J
3086	REG1 AFS BLR CYP(G) D F G OMA ROU TCH UKR URS REG2 ALS B BER(USA) CAN CHL CUB(USA) HWA MDW PNR PTR USA REG3 AUS BRM CHN GUM J J(USA) MRL PHL(USA) PNG
3089	REGY ATA(USA) REG1 ALG BLR D G GRC(USA) I I(USA) MRC ROU TCH UKR URS REG2 ALS B BER(USA) CHL CUB(USA) HWA MDW PNR PTR USA REG3 AUS CHN GUM J J(USA) MRL PHL(USA) PNG
3092	REGY ATA(ARG) REG1 ALG ARS AZR DJI(F) F G GIB ISL POL REU URS REG2 ALS ARG B BER(USA) CAN CUB(USA) DOM HWA MDW MEX PNR PTR USA REG3 AUS BGD CHN GUM J MRL NZL PNG
3095	REGY ATA(ARG) REG1 ALG ARS CYP(G) F G GIB GRC(USA) I ISR POL URS REG2 ALS ARG B CAN CUB(USA) DOM HWA MDW MEX PNR PTR USA REG3 AUS BGD CHN GUM J MRL NZL PNG
3098	REG1 ALB AZR BHR(USA) BLR E G GIB I I(USA) UKR URS REG2 ALS ATG(USA) B BAH(USA) BER(USA) BRB(USA) CHL HWA MDW MRT PNR PTR TCA(USA) TRD(USA) USA REG3 AUS BGD GUM HKG J MRL PAK PHL(USA) PNG
3101	REG1 AFS ALB AZR BHR(USA) BLR E G GIB GRC(USA) HNG I I(USA) ISL LBY TUN UKR URS REG2 ALS B BER(USA) BRB(USA) CHL HWA MDW MRT PNR PTR TRD(USA) USA REG3 AUS BGD CHN GUM HKG J MRL PAK PHL(USA) PNG SNG
3104	REG1 GIB I IRL ISL TUN UKR URS REG2 ALS REG3 J
3107	REG1 D E F G GRC(USA) I MNG S UKR URS REG2 ALS B BER(USA) CHL CUB(USA) HWA MDW PNR PTR USA REG3 AUS BRM CHN GUM IND INS J J(USA) MRL PAK PHL(USA) PNG
3110	REG1 ALB AZR D E G GRC(USA) I ISL MNG S TUR UKR URS REG2 ALS B BER(USA) CAN CHL CUB(USA) HWA MDW PNR PTR USA REG3 AUS CHN DGA(USA) GUM IND INS J J(USA) MRL PAK PHL(USA) PNG
3113	REG1 ALB ALG BLR F G G(USA) KEN TCH TUN UKR URS REG2 B CAN CHL DOM MEX USA VEN REG3 AUS CHN GUM HKG J J(USA) PAK PNG SNG
3116	REG1 AFS ALG BLR G GIB I ISL MLT MNG TCH TUN UKR URS REG2 B CAN CHL DOM MEX USA VEN REG3 AUS CHN HKG IND J J(USA) NZL PAK PNG SNG
3119	REGY ATA(ARG) REG1 ALB BLR F G GRC(USA) I I(USA) MRC ROU UKR URS YUG REG2 ALS ARG B BER(USA) HWA MDW PNR PTR USA REG3 AUS BGD CHN FJI GUM IND INS J KIR MRL PHL(USA) PNG

3122	REGY ATA(ARG) REG1 AZR BLR F G GRC(USA) HOL I I(USA) MRC ROU TUR UKR URS REG2 ALS ARG B BER(USA) HWA MDW PNR PTR USA REG3 AUS BGD CHN FJI GUM INS J KIR MRL NZL PAK PHL(USA) PNG
3125	REG1 BLR CYP(G) G MLT MNG ROU URS REG3 J PAK
3128	REG1 BEL BLR G HNG HOL I ROU UKR URS REG2 ALS ATN CAN CUB HWA MDW PNR PTR URG USA REG3 AUS CHN FJI GUM HKG IND INS J MRL NCL NZL OCE PAK PNG
3131	REG1 G I MNG UKR URS REG2 ALS ATN CAN CUB HWA MDW PNR PTR SUR URG USA REG3 AUS CHN CKH FJI GUM IND INS J MRL NCL NZL OCE PAK PNG
3134	REG1 ARS(USA) AZR BUL D(USA) G HOL I OMA TUR(USA) UKR URS REG2 ALS B BER(USA) DOM HWA JON PRG USA VEN REG3 AUS CHN GUM IND J J(USA) MRL PNG TMP(POR)
3137	REG1 ARS(USA) AZR BHR BUL D(USA) F G G(USA) I MNG MRC TUR(USA) UKR URS REG2 ALS B BER(USA) CHL DOM HWA JON PRG SUR USA VEN REG3 AUS CHN GUM IND J J(USA) MRL PHL(USA) PNG TMP(POR)
3140	REGY ATA(ARG) REG1 ALG CME COG D F G GAB I MDG MLI ROU SEN TCD UKR URS YUG REG2 ALS ARG B BER(USA) GRL HWA JON PNR USA REG3 AUS CHN GUM J J(USA) MRL PHL(USA) PNG
3143	REGY ATA(ARG) REG1 ALG CME COG CTI CYP(G) D F G GAB GIB MDG MLI MLT ROU SEN TCD TUN UKR URS YUG REG2 ALS ARG B BER(USA) GRL HWA JON PNR USA REG3 AUS BRM CHN GUM J J(USA) MRL PHL(USA) PNG
3146	REG1 G GHA I MLT MNG URS REG3 J PAK
3149	REG1 AGL ALG BLR BUL CME COG D D(F) G GAB GHA I MDG MLI MLT MTN ROU SEN TCD TUN UKR URS REG2 ALS CAN DOM HWA MDW MEX PNR PTR USA REG3 AUS BRM CHN GUM INS J PAK PNG WAK
3152	REG1 ALG BLR BUL CME COG CTI D D(F) G GAB MDG MLI ROU SEN TCD TUN UKR URS REG2 ALS B CAN DOM HWA MDW MEX PNR PTR SUR USA REG3 AUS CHN GUM INS J NZL PNG WAK
3900	REG1 ALG CME COG D F G ISL MDG MLI OMA SEN TCD TCH TUN TUR UKR URS YUG
3903	REG1 AFS ALG CME COG CTI D F G ISL MDG MLI REU SEN TCD TCH TUN TZA UGA UKR URS YUG
3906	REG1 ALB IRL MLT TZA UGA UKR URS YUG
3909	REG1 BLR COG DJI(F) F G GIB MDG REU SEN TCD UKR URS YUG
3912	REG1 BLR COG CTI F G GIB MDG SEN TCD UKR URS YUG
3915	REG1 ALB ALG BLR F G MNG ROU TCH UKR URS
3918	REG1 AFS ALB ALG BLR ETH F G I ROU TCH UKR URS
3921	REG1 ALG F G KWT MLT POR ROU UKR URS
3924	REG1 CYP(G) F G GIB MLT POR ROU UKR URS
3927	REG1 BUL G GIB IRL TUR URS
3930	REG1 AFS ALG BUL CAF CME CYP(G) DJI(F) G GIB MDG MLI MLT ROU TCH TUN UKR URS

3933	REG1 ALG CAF CME CTI CYP(G) DJI(F) F G GIB I MDG MLI MLT ROU TCH TUN UKR URS
3936	REG1 AFS E G I POL TUR URS
3939	REG1 AFS CYP(G) E F G I MLT POL TUN URS
3942	REG1 F G GIB ISL NOR POL TCH UKR URS
3945	REG1 AFS ETH F G GIB ISL NOR POL SEN TCH UKR URS
4700	REG1 ARS BHR(USA) CYP(G) G GIB I KEN LBY MLT POL URS REG2 ALS B CAN DOM HWA MDW MEX PNR PTR USA REG3 AUS BGD BRM CHN DGA(USA) FJI GUM HKG IND J J(USA) KOR MAC MRL NZL PAK PNG TMP(POR)
4703	REG1 AFS ALG ARS AZR BHR(USA) CYP(G) DNK F G GIB I KEN LBY MLT MRC POL TUR URS REG2 ALS B CAN CHL DOM HWA MDW MEX PNR PTR SUR USA REG3 AUS BGD BRM CHN FJI GUM HKG IND J J(USA) KOR MAC MRL NZL PAK PNG TMP(POR)
4706	REGY ATA(USA) REG1 ALG BLR CYP(G) D F G I I(USA) KEN LBY MLT TUR UKR URS YUG REG2 ALS B BER(USA) CAN CUB(USA) HWA MDW PAQ PNR PRG PTR URG USA REG3 AUS CHN DGA(USA) GUM IND J J(USA) MRL NZL PHL(USA) SNG THA
4709	REG1 AFS ALG ARS BLR CYP(G) D F G I I(USA) KEN LBY MLT OMA TUR UKR URS YUG REG2 ALS B BER(USA) CHL CUB(USA) HWA MDW PAQ PNR PRG PTR URG USA REG3 AUS CHN GUM IND INS J J(USA) MRL NZL PHL(USA) THA
4712	REGY ATA(USA) REG1 AZR BLR CYP(G) F G GIB I(USA) IRL ISL MLT MRC POL ROU UKR URS REG2 ALS BER(USA) CAN CUB(USA) HWA MDW PNR PTR USA REG3 AUS GUM J(USA) KRE MRL PHL
4715	REGY ATA(ARG) ATA(USA) REG1 AGL ALB AZR BHR(USA) BLR CME DJI(F) F G HOL I ISL ISR MNG MOZ POL POR STP TCD TUN TUR UKR URS REG2 ALS ARG ATG(USA) ATN BAH(USA) BER(USA) BRB(USA) CAN CLM HWA MDW PNR PTR TCA(USA) TRD(USA) USA REG3 AUS BGD BRM FJI GUM HKG IND J(USA) MLA MRL PAK THA
4718	REGY ATA(ARG) ATA(USA) REG1 AGL ALB ALG AZR BHR(USA) CME DJI(F) F G I ISL ISR MDG MLT MOZ POR STP TCD TUN UKR URS REG2 ALS ARG ATN BER(USA) BRB(USA) CAN CLM HWA MDW PNR PRU PTR TRD(USA) USA REG3 AUS BGD BRM FJI GUM HKG IND J(USA) MLA MRL NZL PAK THA
4721	REGY ATA(ARG) REG1 AGL ALG BLR CME D D(USA) DJI(F) E F G I MLT MOZ POR ROU STP TCD TUR(USA) UKR URS REG2 ALS ARG BER(USA) CAN CUB GRL HWA JON PNR PRU USA REG3 AUS BGD CHN GUM IND J J(USA) MRL NCL NZL OCE PAK PHL(USA) PNG THA TMP(POR)
4724	REGY ATA(ARG) REG1 AGL ALG BEL BLR CME D D(USA) DJI(F) E F G G(USA) HNG I MDG MOZ POR REU STP TCD TUR(USA) UKR URS REG2 ALS ARG BER(USA) CUB HWA JON PNR USA REG3 AUS CHN GUM IND INS J J(USA) MRL NCL NZL OCE PAK PHL(USA) PNG THA TMP(POR)
4727	REG1 BEL BUL COG CYP(G) DJI(F) F G MDG ROU SEN TCD TCH TUN TUR UKR URS REG2 ALS BER(USA) CAN CUB FLK GRL HWA JON URG USA REG3 AUS BRM CHN GUM IND J MRL PHL(USA) THA
4730	REG1 AFS BUL COG CTI CYP(G) F G I MDG MNG ROU SEN TCH TUN UKR URS REG2 ALS BER(USA) CAN CUB FLK GRL HWA JON URG USA REG3 AUS BRM CHN GUM IND INS J J(USA) MRL NZL PHL(USA) THA
4733	REG1 BDI G GUI KWT MLT NMB URS REG2 HND USA REG3 AUS BTN GUM J PHL(USA)

4736	REGY ATA(ARG) REG1 AFS ALB ALG ARS AUT AZR BLR BUL COG D D(F) DJI(F) ETH F I IRL LBN MDG MLI MRC NOR OMA POR REU SEN TCD UKR URS REG2 ALS ARG B BER(USA) CAN CUB(USA) HND HWA JON MDW MEX MRT PNR PTR USA REG3 AUS CHN GUM IND J MRL NZL PHL(USA) THA WAK
4739	REGY ATA(ARG) REG1 ALB ALG ARS AUT AZR BLR COG CTI D D(F) F G GIB I ISL LBN MDG MLI NOR POR ROU SEN TCD UKR URS REG2 ALS ARG B CAN CUB(USA) HWA JON MDW MRT PNR PTR USA REG3 AUS CHN FJI GUM IND J MRL NZL PAK PHL(USA) THA WAK
4742	REG1 ALG CME COG DJI(F) F G GIB I MDG MLI MNG POL POR REU ROU SEN TCD TGO TUN URS YUG REG2 ALS BER(USA) CAN CHL GRL HND HWA JON PRG URG USA VEN REG3 AUS CHN FJI GUM HKG IND IRN J J(USA) KOR MRL PAK PNG
4745	REG1 AZR CME COG CTI DJI(F) F G I ISL MDG MLI POL POR REU SEN TCD TGO TUN TUR URS REG2 ALS BER(USA) CAN CHL GRL HND HWA JON PRG URG USA VEN REG3 AUS CHN FJI GUM IND IRN J J(USA) KOR MRL NZL PNG
5684	REGY ATA(ARG) REG1 AGL ALB AZR BLR CPV D F G I KWT MOZ POR STP UKR URS REG2 ARG ATN CAN MEX PRG USA REG3 AUS CHN GUM HKG IND J J(USA) KOR THA VTN
5687	REGY ATA(ARG) REG1 AFS AGL ALB AZR BLR CPV D G GIB I MOZ OMA POR STP UKR URS YUG REG2 ARG ATN CAN MEX PRG USA REG3 AUS CHN GUM IND INS IRN J J(USA) KOR NZL PNG THA
5690	REG1 BDI G GRC I IRL ROU TUR URS REG2 HTI REG3 CHN IRN
5693	REGY ATA(ARG) REG1 AFS ARS AZR CME COG CYP(G) F G GIB I IRQ ISL ISR MLI MRC ROU TCH TUN TUR UKR URS REG2 ALS ARG ATG(USA) BAH(USA) BER(USA) BRB(USA) CAN CUB(USA) HWA MDW PNR PTR TCA(USA) TRD(USA) USA VEN REG3 AUS BGD BRM GUM HKG J J(USA) MLA NZL PAK PHL(USA) PNG THA
5696	REGY ATA(ARG) REG1 ARS CME COG CTI CYP(G) G GIB GRC(USA) IRQ ISL MCO MDG MLI OMA ROU TCH TUR UKR URS REG2 ALS ARG BER(USA) BOL BRB(USA) CAN CUB(USA) GTM HWA MDW MEX PNR PTR TRD(USA) USA VEN REG3 AUS BGD BRM GUM J J(USA) NZL PAK PHL(USA) THA
5699	REGY ATA(ARG) REG1 ALG AZR BFA BLR CME DJI(F) F G GAB MLI TCD TUR UKR URS YUG REG2 ALS ARG CAN GRL GTM HWA MEX USA REG3 AUS BRM CHN IND IRN J MAC MRL NZL PAK THA VTN
5702	REGY ATA(ARG) REG1 ALG AZR BFA BLR CME CTI DJI(F) ETH F G G(USA) GAB HOL MDG MLI MTN OMA REU ROU SEN TCD UKR URS YUG REG2 ALS ARG CAN CLM GRL MEX USA REG3 AUS BRM CHN FJI IND IRN J MAC NZL PNG THA
5705	REG1 CYP(G) ETH F G GIB MLT ROU UKR URS REG2 B REG3 HKG J
5708	REG1 AFS AGL COG F HNG IRL IRQ LBN MTN NOR OMA POL ROU SEN SYR TUN TUR URS REG2 ALS B BER(USA) BOL CAN CHL CLM GRL HWA MDW USA REG3 AUS BRM CHN IND J(USA) KOR MRL NZL PNG SNG THA TMP(POR)
5711	REG1 AGL COG CTI F G GIB IRQ ISL LBN MDG MTN NOR POL SEN SYR TUN TUR UKR URS REG2 ALS B BER(USA) BOL CAN CHL CLM GRL HWA MDW USA REG3 AUS BRM CHN IND J(USA) KOR MRL NZL PNG THA TMP(POR)

5714	REGY ATA(USA) REG1 AFS AUT BLR BOT BUL CME CTI CYP(G) D D(F) DJI(F) F G GIB I MLI MLT MNG NMB(AFS) REU ROU TCD TGO TUN UKR URS YUG REG2 ALS B CAN CUB HWA MDW PNR PTR USA REG3 AUS CHN DGA(USA) FJI GUM J J(USA) MRL NZL PAK PHL(USA) THA
5717	REGY ATA(USA) REG1 AFS AUT AZR BLR BOT BUL CME CTI CYP(G) D D(F) DJI(F) ETH F G MDG MLI MLT NMB(AFS) OMA REU ROU SEN TCD TGO TUN UKR URS REG2 ALS B BOL CAN CUB GTM HWA MDW MEX PNR PTR USA REG3 AUS CHN DGA(USA) FJI GUM J J(USA) MRL NZL PAK PHL(USA) PNG THA
5720	REG1 ALG CYP(G) G GIB ISL MLT NMB OMA ROU URS REG2 BOL GTM REG3 HKG IND KRE PHL
5723	REGY ATA(USA) REG1 AFS ALG BHR(USA) BLR COG F G GRC(USA) HNG I ISL MRC MTN NMB(AFS) POR SEN SOM TCH UKR URS REG2 ALS ATG(USA) B BER(USA) BRB BRB(USA) CAN CHL CUB(USA) HND HWA MDW PNR PTR TCA(USA) URG USA REG3 AUS CHN GUM IND J J(USA) KOR MRL NCL OCE PHL(USA) PNG THA
5726	REGY ATA(USA) REG1 AFS ALG AZR BHR(USA) BLR COG CTI F G GIB I ISL MDG MTN NMB(AFS) POR ROU SEN TCH UKR URS REG2 ALS ATG(USA) B BAH(USA) BER(USA) BRB CAN CHL CUB(USA) HND HWA MDW PNR PTR TCA(USA) URG USA REG3 AUS CHN GUM IND J J(USA) KOR MRL NCL NZL OCE PHL(USA) THA VUT
6685	REG1 AFS ALB BHR(USA) EGY G GRC(USA) I I(USA) ISL MRC NOR POR TCH TUR URS YUG REG2 ALS B BER(USA) CAN CUB(USA) DOM EQA HWA MDW MEX PNR PTR URG USA REG3 AUS CHN GUM HKG IND J J(USA) MRL PAK PHL(USA) PNG SNG
6688	REG1 ALB ALG EGY F G GRC(USA) I I(USA) ISL MLT MRC TCH TUN URS YUG REG2 ALS CUB(USA) DOM HWA MDW PNR PTR USA REG3 AFG AUS BGD GUM J J(USA) KRE MRL PAK PHL(USA)
6691	REGY ATA(ARG) REG1 ALG ARS AZR BUL CYP(G) G GHA GIB HNG I I(USA) KEN LBY MLT ROU TCH URS REG2 ALS ARG CAN CLM HWA MDW MEX PNR PTR USA REG3 AUS BGD BRM CHN GUM HKG IND J J(USA) KOR PAK PHL(USA) SLM SNG WAK
6694	REGY ATA(ARG) REG1 ALG ARS AZR BLR BUL CYP(G) ETH G GIB I I(USA) KEN LBY OMA ROU TCH URS REG2 ALS ARG CAN HWA MDW MEX PNR PTR USA REG3 AUS BRM CHN GUM HKG IND J J(USA) KOR NZL PHL(USA) PNG SNG WAK
6697	REGY ATA(ARG) REG1 ARS BDI BHR(USA) BLR CYP(G) D G I I(USA) ISL MLT MRC URS REG2 ALS ARG BER(USA) CAN CUB(USA) HWA MDW PNR PTR TRD USA REG3 AUS BGD GUM HKG J J(USA) PAK PHL(USA) THA
6700	REGY ATA(ARG) REG1 ARS AZR BHR(USA) CYP(G) D F G GIB I I(USA) ISL KEN MLT MRC TUR URS REG2 ALS ARG ATG(USA) BAH(USA) BER(USA) BRB CAN CUB(USA) HWA MDW PNR PTR TCA(USA) TRD USA REG3 AUS BGD CLN GUM HKG J J(USA) MRL NZL PAK PHL(USA) PNG THA
6703	REG1 ALB ETH G I IRL ISL LUX NMB UKR URS YUG REG2 HTI REG3 PHL
6706	REG1 AFS BLR CYP(G) EGY G GIB GRC MLT TCH UKR URS YUG REG2 ALS B CAN CUB HWA MDW PNR PTR USA REG3 AUS BGD CHN DGA(USA) FJI GUM HKG IND INS J J(USA) KIR MAC MRL NZL PAK PHL(USA) THA

6709	REG1 BLR CYP(G) G MLT ROU URS YUG REG2 ALS B CAN CUB HWA MDW PNR PTR SUR USA REG3 AUS BGD CHN FJI GUM HKG IND INS J J(USA) KIR MAC MRL NZL PAK PHL(USA) PNG THA VTN
6712	REG1 AFS ALG AUT BLR CME COG CYP(G) D D(F) DJI(F) F G ISL ISR MDG MLI MLT MTN OMA REU ROU SEN TCD TGO TUN TUR TUR(USA) UKR URS REG2 B CAN HWA MEX PNR USA REG3 AUS BRM CHN IND J(USA) KOR PAK PHL(USA) THA TMP(POR) VTN
6715	REG1 AFS ALG AUT BLR CME COG CTI D D(F) DJI(F) F G G(USA) HNG ISR MDG MLI MTN REU ROU SEN TCD TGO TUN TUR(USA) UKR URS REG2 B CAN GRL HWA MEX PNR SUR USA REG3 AUS BRM CHN FJI GUM IND J(USA) KOR NZL PAK PHL(USA) PNG THA TMP(POR)
6718	REG1 AGL ALG F IRL MLT ROU TUR TZA URS REG3 IND PAK
6721	REGY ATA(ARG) ATA(USA) REG1 AGL ARS AZR BHR(USA) F G GRC(USA) HOL I I(USA) JOR MRC TZA UKR URS REG2 ALS ARG BER(USA) CAN CUB(USA) HWA MDW MEX PNR PTR USA REG3 AUS CHN FJI GUM IND J J(USA) MRL NZL PHL(USA) SNG THA
6724	REGY ATA(ARG) ATA(USA) REG1 ARS BHR(USA) E G GRC(USA) I I(USA) MRC UKR URS YUG REG2 ALS ARG BER(USA) CUB(USA) HWA MDW MEX PNR PTR SUR USA REG3 AUS CHN FJI GUM IND J J(USA) MRL NZL PHL(USA) PNG SNG THA
6727	REGY ATA(ARG) REG1 AGL ALG ARS ARS(USA) AZR D(USA) ETH G MOZ STP TUR(USA) UKR URS REG2 ALS ARG BER(USA) CAN CUB GRL GUY HWA JON MDW PNR USA REG3 AUS CHN GUM IND J(USA) MRL PHL(USA) THA
6730	REGY ATA(ARG) REG1 AGL ALG ARS ARS(USA) AZR D D(USA) DNK ETH F G MOZ STP TUR(USA) UKR URS REG2 ALS ARG BER(USA) CAN CUB GRL GUY HWA JON MDW PNR USA REG3 AUS CHN GUM IND J J(USA) MRL NZL PAK PHL(USA) PNG THA
6733	REG1 ALG F G GUI I KEN TUR URS REG2 B REG3 IND VTN
6736	REG1 AFS ASC(USA) CYP(G) G GIB I ISL KEN MLT MRC NMB(AFS) OMA ROU SEY(USA) TCH URS REG2 ALS B BER(USA) CAN CHL CLM GTM HWA PNR PTR URG USA REG3 AUS BRM CHN GUM J J(USA) KOR MRL PAK PHL(USA) SNG THA VTN
6739	REG1 AFS ASC(USA) CYP(G) F G G(USA) I MLT NMB(AFS) ROU TCH TUR(USA) UKR URS REG2 ALS BER(USA) CHL CLM GRL GTM HWA PNR PTR SUR URG USA REG3 AUS BRM CHN GUM J J(USA) KOR MRL NZL PAK PHL(USA) PNG THA VTN
6742	REG1 BFA BLR CAF CME COG CYP(G) DJI(F) F FNL G GIB GRC MDG MLI NGR POL REU SEN TCD TGO TUN TUR UKR URS REG2 ALS BER(USA) CAN CHL CUB CUB(USA) GTM HWA JON MDW PNR PTR USA REG3 AUS CHN GUM HKG IND IRN J J(USA) MRL NZL SNG THA VTN WAK
6745	REG1 ASC(USA) BFA BLR CAF CME COG CTI CYP(G) DJI(F) E F FNL G GIB HNG MDG MLI MLT NGR POL REU SEN SEY(USA) TCD TCH TGO TUN UKR URS REG2 ALS BER(USA) BOL CAN CHL CUB CUB(USA) GTM HWA JON MDW PNR PTR USA REG3 AUS BGD CHN GUM HKG IND IRN J J(USA) MRL NZL PNG SNG THA WAK
6748	REG1 BUL CYP(G) G KWT MLT POR REU UKR URS ZWE REG3 BGD

6751	REG1 ASC(USA) BFA BUL CME COG CTI CYP(G) D F G HNG MTN OMA POR SEN TCD TUN UKR URS YUG REG2 B CAN CHL HWA JON MEX USA REG3 AUS CHN FJI GUM IND INS J J(USA) MRL NZL PHL(USA) THA VTN
6754	REG1 ASC(USA) BFA COG CTI D ETH F G MDG SEN TCD TUN UKR URS REG2 B BOL CAN CHL HWA JON MEX SUR USA REG3 AUS FJI GUM IND INS J J(USA) MRL NZL THA VTN
6757	REGY ATA(ARG) REG1 ARS BLR COG F G GIB MLT SEN TCD TCH TUN UKR URS REG2 ARG ATN BER(USA) BOL HWA JON USA REG3 AUS BRM CHN GUM IND J J(USA) MRL THA TMP(POR)
6760	REGY ATA(ARG) REG1 ARS BLR COG CTI F G ISL ISR MDG SEN TCD TCH TUN UKR URS REG2 ALS ARG ATN BER(USA) HWA JON USA REG3 AUS BRM CHN GUM IND J J(USA) MRL NZL PHL(USA) PNG SNG THA TMP(POR)
8965	REG1 AFS ASC(USA) CTI CYP(G) D EGY ETH G GIB KEN NMB(AFS) TUR URS REG2 ALS B CAN GRL HWA MEX PNR USA REG3 AUS BRM FJI HKG J(USA) KRE MRL NZL PAK PHL(USA) PNG
8968	REG1 AFS ARS CYP(G) D G GIB KEN NMB(AFS) OMA URS YUG REG2 ALS B BOL CAN GRL HWA MEX PNR USA REG3 AUS BRM FJI HKG INS J(USA) MRL NZL PNG
8971	REGY ATA(ARG) REG1 ARS AZR BHR(USA) BLR F G GRC(USA) HOL I I(USA) ISL ISR MRC S UKR URS YUG REG2 ALS ARG ATG(USA) ATN BAH(USA) BER(USA) BOL BRB(USA) CUB(USA) DOM HWA MDW PNR PTR TCA(USA) TRD(USA) USA REG3 AUS BRM CHN DGA(USA) GUM J J(USA) MRL PHL(USA) PNG VTN
8974	REGY ATA(ARG). REG1 AFS AZR BLR GRC(USA) I I(USA) IRL ISL ISR MRC UKR URS REG2 ALS ARG ATG(USA) ATN BAH(USA) BER(USA) BRB(USA) CUB(USA) DOM HWA MDW PNR PTR TCA(USA) USA REG3 AUS BRM CHN GUM J J(USA) MRL NZL PHL(USA) PNG VTN
8977	REG1 ALB ARS BHR(USA) G GRC(USA) I ISL MRC OMA UKR URS REG2 ALS BRB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS DGA(USA) GUM INS J(USA) PHL(USA)
8980	REGY ATA(ARG) REG1 ALB ALG ARS AZR BFA BHR(USA) CME COG CYP(G) D DJI(F) F G I LBN MDG REU SEN TCD TGO TUN URS REG2 ALS ARG ATG(USA) BAH(USA) BER(USA) BRB BRB(USA) CUB(USA) HWA MDW PNR PTR TCA(USA) USA REG3 AUS CHN GUM HKG IND INS J(USA) MRL PHL(USA)
8983	REGY ATA(ARG) REG1 ALG BFA BHR(USA) CME COG CYP(G) D DJI(F) F G HNG I LBN MDG MLT MNG MTN OMA REU SEN TCD TGO TUN URS REG2 ALS ARG BER(USA) BRB(USA) CUB(USA) HWA MDW PNR PTR USA REG3 AUS CHN GUM IND J J(USA) MRL NZL PHL(USA) PNG
8986	REG1 ALG BHR(USA) CYP(G) F G GRC MDG MLT ROU TUR UKR URS REG2 BRB(USA) CUB(USA) REG3 J(USA) PHL
8989	REG1 AGL BEL BLR G MCO MOZ POL POR ROU STP UKR URS REG2 ALS BER(USA) CAN GRL HWA MEX USA REG3 AUS BRM FJI IND J(USA) NZL
8992	REG1 AGL ASC(USA) BLR F G ISL MOZ POL POR S STP UKR URS REG2 ALS BER(USA) CAN CHL HWA MEX USA REG3 AUS BRM CHN FJI GUM IND J(USA) NZL PHL(USA) PNG
8995	REG1 ARS AZR CYP(G) G GIB ISL MLT MNG UKR URS REG3 HKG
8998	REGY ATA(USA) REG1 AGL AZR BHR(USA) BLR COG F G GRC(USA) HOL ISL MDG MTN NOR SEN TUN UKR REG2 ALS B BER(USA) CUB CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS CHN GUM IND J J(USA) MRL NZL PHL(USA)

9001	REGY ATA(USA) REG1 AGL ATA(USA) BHR(USA) BLR COG CTI CYP(G) F G GRC(USA) I(USA) ISL JOR MDG MLT MRC MTN NOR SEN TUN UKR URS REG2 ALS ATA(USA) B BER(USA) CUB CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS CHN DGA(USA) GUM HKG IND J J(USA) MRL NZL PHL(USA)
9004	REG1 BDI BLR CYP(G) G IRL ISL KWT LUX MLT ROU URS REG2 B REG3 HKG IRN
9007	REG1 AZR BUL CME COG G GIB GRC(USA) I(USA) ISL MDG MLT REU ROU SEN TCD URS YUG REG2 ALS B CAN HWA MDW MEX PNR PTR USA REG3 AUS BRM CHN FJI GUM INS IRN J KIR VTN WAK
9010	REG1 ARS AZR BUL CME COG CTI G MDG REU SEN TCD TUR URS REG2 ALS ARG B CAN HWA MDW MEX PNR PTR USA REG3 AUS BRM FJI GUM INS IRN J KIR NZL PAK PHL(USA) VTN WAK
9013	REG1 AFS ARS ETH G GRC MLT MOZ UKR URS YUG REG2 ARG GTM REG3 AUS FJI IND J
9016	REG1 AUT COG F G GIB HNG MDG SEN TCD TUN TUR UKR URS REG2 BER(USA) CHL CUB REG3 AUS CHN FJI HKG IRN J(USA) NZL PAK SNG THA
9019	REG1 ALG AUT COG CTI E F G GIB MDG MLT SEN TCD TUN UKR URS REG2 ALS BER(USA) CHL CUB HWA REG3 AUS CHN IRN J(USA) NZL PAK PNG SNG THA
9022	REGY ATA(ARG) REG1 AFS ALG AZR COG CYP(G) D(USA) EGY ETH F G MDG MLT REU SEN SOM TCH URS REG2 ARG BER(USA) CAN GRL HWA JON PNR PTR USA REG3 AUS CHN GUM HKG IND J J(USA) MRL NZL PHL(USA)

9025	REGY ATA(ARG) ATA(NZL) REG1 AFS ALG AZR COG CYP(G) D D(USA) EGY G GIB MDG MLT REU ROU SEN TCH URS REG2 ARG BER(USA) CUB HWA JON MEX PNR PTR USA REG3 AUS CHN FJI GUM HKG IND J J(USA) MRL NZL PAK PHL(USA) PNG SNG THA
9028	REG1 G G(USA) GIB MLT ROU URS ZAI REG2 CAN CUB HWA MEX USA REG3 AUS J J(USA)
9031	REGY ATA(USA) REG1 CYP(G) G G(USA) GIB GRC(USA) I I(USA) MLT MRC POL TCH TUR URS REG2 ALS BER(USA) CAN CHL CLM HWA MDW PNR PTR URG USA REG3 AUS BGD BRM CHN GUM J J(USA) MLA MRL NZL PAK PHL(USA) TMP(POR) WAK
9034	REGY ATA(USA) REG1 AUT DNK G G(USA) GHA GRC(USA) I I(USA) MRC POL TUR URS REG2 ALS BER(USA) CHL CLM EQA HWA MDW PNR PTR URG USA REG3 BGD BRM CHN GUM INS J(USA) MLA MRL NZL PAK PHL(USA) SMO(NZL) TMP(POR) WAK
9037	REGY ATA(USA) REG1 AUT G I I(USA) MRC NMB TUR URS REG2 ALS CAN HWA MDW PNR PTR USA REG3 AUS DGA(USA) GUM J J(USA) MRL PHL(USA) WAK
11175	REG1 ASC(USA) G MLT TUR(USA) REG2 ALS HWA USA REG3 AUS GUM PHL(USA)
11178	REGY ATA(ARG) REG1 AGL G GRC MOZ NOR POL POR STP TUN TUR(USA) URS REG2 ALS ARG ATN CLM HWA JON USA REG3 AUS CHN GUM IND INS J J(USA) MRL NZL PHL(USA)
11181	REGY ATA(ARG) REG1 AGL G ISL MOZ NOR POL POR STP TUR TUR(USA) URS REG2 ALS ARG ATN CLM JON USA REG3 AUS CHN GUM IND INS J J(USA) MRL NZL PHL(USA)

11184	REG1 CYP(G) G ISL MLT MNG ROU TUR YUG REG3 J
11187	REGY ATA(USA) REG1 ALG BHR(USA) BLR CME COG DJI(F) ETH GRC(USA) ISL ISR MDG ROU SEN TCD UKR URS REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB(USA) CAN CHL HWA MDW MEX PNR PTR TCA(USA) TRD(USA) USA REG3 AUS CHN DGA(USA) GUM J(USA) MRL PHL(USA)
11190	REGY ATA(USA) REG1 ALG BHR(USA) BLR CME COG DJI(F) ISR MDG ROU SEN TCD UKR URS REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB(USA) CAN CHL HWA MDW MEX PNR PTR TCA(USA) TRD(USA) USA REG3 AUS BRM CHN DGA(USA) GUM INS J(USA) MRL NZL PHL(USA)
11193	REG1 CYP(G) G MNG URS REG2 MEX URG REG3 IND PHL
11196	REG1 ARS BHR(USA) CYP(G) D G KEN URS REG2 ALS ATG(USA) B BAH(USA) BER(USA) BRB(USA) CUB(USA) HWA MDW PNR PTR TCA(USA) TRD(USA) URG USA REG3 AUS CHN GUM HKG J(USA) MRL PHL(USA) WAK
11199	REG1 ARS BHR(USA) CYP(G) D G I(USA) KEN MLT MRC OMA URS REG2 ALS ATG(USA) B BAH(USA) BER(USA) BRB(USA) CUB(USA) HWA MDW PNR PTR TCA(USA) TRD(USA) USA REG3 AUS CHN GUM HKG J(USA) PHL(USA) PNG SNG WAK
11202	REG1 BHR(USA) IRL TUN REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB(USA) CUB(USA) HWA MDW PTR TCA(USA) TRD(USA) USA REG3 AUS GUM J(USA) PHL(USA) WAK
11205	REGY ATA(ARG) REG1 AZR CME COG DJI(F) F G MDG MNG REU SEN TGO TUN URS REG2 ALS ARG CAN CUB HWA JON MDW PNR PTR USA REG3 AUS GUM J J(USA) PHL(USA) WAK
11208	REGY ATA(ARG) REG1 AZR CME COG CYP(G) DJI(F) F G GIB GRC(USA) HNG LBY MDG REU SEN TGO TUN TUR URS REG2 ALS ARG CAN CUB HWA JON MDW PNR PTR USA REG3 AUS GUM J J(USA) PHL(USA) PNG WAK
11211	REG1 G OMA TUN URS REG2 ALS HWA JON MDW PNR PTR REG3 GUM J J(USA) MRL PHL(USA) WAK
11214	REGY ATA(ARG) REG1 AUT COG DJI(F) F G GAB GIB ISL MDG MLT REU SEN TCD TUN URS REG2 ALS ARG BER(USA) CAN HWA MRT USA REG3 AUS NCL OCE
11217	REGY ATA(ARG) REG1 ASC(USA) AUT COG D DJI(F) F G GRC MDG SEN SEY(USA) TCD TUN URS REG2 ALS ARG BER(USA) CAN GRL HWA MRT USA REG3 AUS CHN NCL NZL OCE PHL(USA)
11220	REG1 BDI KWT ROU URS REG2 CAN USA REG3 AUS CHN J PHL(USA)
11223	REG1 G MLT ROU S UKR REG2 ALS CAN REG3 AUS J KRE
11226	REG1 ARS(USA) AZR D D(USA) G TUR(USA) UKR URS YUG REG2 ALS BER(USA) CHL CUB GRL HWA JON MDW PNR USA REG3 AUS BGD CHN GUM J J(USA) MRL NZL PAK PHL(USA)
11229	REG1 ARS(USA) AZR D D(USA) G TUR(USA) URS YUG REG2 ALS BER(USA) CAN CUB GRL HWA JON MDW PNR USA REG3 AUS BGD CHN GUM J J(USA) MRL NZL PAK PHL(USA)
11232	REG1 IRL URS REG2 CAN REG3 AUS J PHL(USA) SNG

11235	REG1 AFS BLR CYP(G) D G MNG SEN TUN UKR URS REG2 ALS ARG BER(USA) CAN GRL HWA MEX USA REG3 AUS BRM GUM J(USA) PNG SNG
11238	REG1 BLR D SEN TUN UKR URS REG2 ALS ARG BER(USA) CAN HWA MEX REG3 AUS CHN J(USA) NZL
11241	REG1 CYP(G) G GIB MLT TUR(USA) URS REG2 USA REG3 CHN HKG
11244	REG1 ALG CYP(G) DNK G G(USA) GIB MNG TUR(USA) URS REG2 B BER(USA) CAN USA REG3 AUS FJI J J(USA) NZL PNG
11247	REG1 ALG CYP(G) G GIB URS REG2 B BER(USA) CAN HWA REG3 AUS CHN FJI GUM HKG J J(USA) NZL PHL(USA)
11250	REG1 ALG F G GIB GUI I TUR URS REG2 CAN REG3 AUS CHN
11253	REGY ATA(USA) REG1 AZR BHR(USA) BLR ETH F G GRC(USA) I I(USA) MOZ MRC UKR URS REG2 ALS B BER(USA) BRB(USA) CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 CHN GUM J(USA) MRL PHL(USA)
11256	REGY ATA(USA) REG1 BHR(USA) BLR G GRC(USA) HOL I I(USA) ISL MRC UKR URS REG2 ALS B BRB(USA) CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS BRM CHN FJI GUM J(USA) PHL(USA)
11259	REGY ATA(USA) REG1 AZR BHR(USA) CYP(G) G ISL MLT UKR REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB(USA) CUB(USA) HWA MDW PNR PTR TCA(USA) TRD(USA) USA REG3 GUM J(USA) PHL(USA)

11262	REGY ATA(ARG) ATA(USA) REG1 D G GRC(USA) I I(USA) ISL MRC TCH TUR UKR URS REG2 ALS ARG BER(USA) CAN CUB(USA) HWA MDW PNR PTR USA REG3 AUS CHN DGA(USA) GUM IND J J(USA) MRL PHL(USA)
11265	REGY ATA(ARG) ATA(USA) REG1 BEL D GRC(USA) I I(USA) ISL MNG MRC OMA TCH UKR URS REG2 ALS ARG BER(USA) CAN CUB(USA) HWA MDW PNR PTR USA REG3 CHN GUM IND J J(USA) MRL PHL(USA)
11268	REGY ATA(USA) REG1 ALG ARS BEL COG G ISL MDG MLT REU SEN URS YUG REG2 ALS BER(USA) HWA MDW PNR PTR USA REG3 AUS GUM J(USA) MRL PHL(USA)
11271	REG1 ALG ARS BLR BUL COG G MDG MLT REU SEN URS REG2 B CAN REG3 AUS J(USA)
13200	REG1 AFS ALG G URS REG2 ALS GRL HWA USA REG3 AUS J(USA) KRE
13203	REGY ATA(ARG) REG1 ALG ARS CYP(G) D EGY G GIB KEN ROU TUR TUR(USA) URS YUG REG2 ALS ARG ATN HWA JON MEX USA REG3 AUS HKG J(USA) PNG
13206	REGY ATA(ARG) REG1 ALG ARS CYP(G) D G GIB ISL KEN ROU SUI TUR TUR(USA) URS REG2 ALS ARG ATN GRL HWA JON MEX USA REG3 AUS HKG J(USA) NZL
13209	REG1 CYP(G) G GIB MLT MNG URS REG3 HKG J
13212	REGY ATA(ARG) REG1 ARS(USA) AZR CAF CME COG D(USA) ETH GRC IRL MDG SEN TCH TUR(USA) URS REG2 ALS ARG BER(USA) CAN CUB GRL HWA JON PNR PTR USA REG3 AUS BGD CHN GUM J J(USA) MRL NZL PAK PHL(USA)

13215	REGY ATA(ARG) REG1 ARS(USA) AZR CAF CME COG D(USA) EGY G MDG OMA SEN TCH TUR(USA) URS REG2 ALS ARG BER(USA) CAN CUB GRL HWA JON MEX PNR PTR USA REG3 AUS BGD CHN GUM J J(USA) MRL NZL PAK PHL(USA)
13218	REG1 CYP(G) G MLT URS REG2 ALS CAN HWA MDW MEX URG USA REG3 AUS HKG J MRL
13221	REG1 ALG BLR CME COG D DJI(F) GRC(USA) MDG MLI REU SEN TCD TGO TUN UKR URS REG2 ALS B CAN HWA MDW PNR PTR URG USA REG3 AUS CHN FJI GUM J(USA) KIR MRL NZL PHL(USA)
13224	REG1 ALG ASC(USA) BLR CME COG CTI D DJI(F) G HNG JOR MDG MLI MNG REU S SEN SEY(USA) TCD TGO TUN UKR URS REG2 ALS B CAN CUB HWA MDW PNR PTR USA REG3 AUS CHN FJI GUM J J(USA) KIR MRL NZL PHL(USA) PNG
13227	REG1 IRL TUR URS REG2 ALS CAN CUB HWA MDW PNR PTR USA REG3 AUS GUM HKG J J(USA) PHL(USA)
13230	REG1 G MLT URS REG2 ALS CAN CUB(USA) HWA MDW PNR PTR USA REG3 GUM J(USA) MRL PHL
13233	REGY ATA(ARG) REG1 AUT AZR CME COG D D(F) DJI(F) F ISL MDG MLI MNG REU SEN TCD TGO TUN URS REG2 ALS ARG BER(USA) CAN CUB(USA) HWA MDW MRT PNR PTR USA REG3 CHN GUM J J(USA) MRL NCL OCE PHL(USA)
13236	REGY ATA(ARG) REG1 AUT AZR CME COG CTI D D(F) DJI(F) F G GRC(USA) I(USA) MDG MLI REU SEN TCD TGO TUN URS REG2 ALS ARG BER(USA) CAN CUB(USA) HWA MDW MRT PNR PTR USA REG3 AUS CHN GUM J J(USA) MRL NCL NZL OCE PHL(USA)

13239	REG1 AZR G KWT LUX NMB ROU URS REG3 J
13242	REG1 ALG BLR CAF CME COG F G G(USA) MDG POL REU ROU SEN TUN UKR URS REG2 B BER(USA) HWA JON USA REG3 AUS CHN FJI GUM J J(USA) MRL NZL OCE PHL(USA)
13245	REG1 ALG ASC(USA) BLR CAF CME COG G GRC ISR MDG MNG POL REU SEN TUN UKR URS REG2 B BER(USA) CAN HWA JON USA REG3 AUS BRM CHN FJI GUM J J(USA) MRL NZL OCE PHL(USA) VTN
13248	REG1 ALG BLR CYP(G) G G(USA) MLT UKR URS YUG ZAI REG2 USA REG3 AUS HKG J SNG
13251	REGY ATA(ARG) ATA(USA) REG1 AGL ALB AZR BHR(USA) BLR CYP(G) F GRC(USA) I I(USA) MOZ MRC NOR POR STP UKR URS REG2 ALS ARG CAN CUB(USA) HWA JON MDW MEX PNR PTR USA REG3 AUS CHN GUM IND J(USA) NZL PHL(USA) WAK
13254	REGY ATA(ARG) ATA(USA) REG1 AGL AZR BHR(USA) GRC(USA) HOL I I(USA) MNG MOZ MRC NOR POR STP URS REG2 ALS ARG BER(USA) CAN CUB(USA) HWA JON MDW MEX PNR PTR USA REG3 AUS BRM CHN GUM IND J(USA) NZL PHL(USA) WAK
13257	REGY ATA(USA) REG1 BHR(USA) G MRC URS YUG REG2 CAN CUB(USA) HWA JON MDW PTR USA REG3 AUS GUM J(USA) MRL PHL(USA) WAK
15010	REG1 IRL MLT URS REG2 CAN HWA REG3 AUS GUM KRE

15013	REGY ATA(ARG) REG1 D(USA) G GRC MLT TUR(USA) URS REG2 ALS ARG BER(USA) CUB GRL HWA JON PNR USA REG3 GUM J(USA) MRL PHL(USA)
15016	REGY ATA(ARG) REG1 ASC(USA) D(USA) E G ROU TUR(USA) URS REG2 ALS ARG BER(USA) CAN CUB GRL HWA JON PNR PRU USA REG3 AUS CHN GUM J(USA) MRL NZL PHL(USA)
15019	REG1 ARS F MLT ROU UKR URS REG2 ALS CAN GRL URG USA REG3 AUS J
15022	REGY ATA(USA) REG1 AGL ALB ARS BHR(USA) BLR ISL MOZ MRC POR S STP TUR UKR URS REG2 ALS BRB(USA) CAN HWA MDW PNR PTR TRD(USA) URG USA REG3 AUS CHN DGA(USA) GUM IND J(USA) MAC PHL(USA) TMP(POR) WAK
15025	REGY ATA(USA) REG1 AGL ARS BHR(USA) BLR G ISL MLT MOZ MRC OMA POR STP TUR UKR URS REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB(USA) HWA MDW PNR PTR TCA(USA) TRD(USA) USA REG3 AUS FJI GUM IND J(USA) MAC NZL PHL(USA) TMP(POR) WAK
15028	REGY ATA(USA) REG1 ALG BHR(USA) GRC(USA) ISL MLT URS REG2 ALS BRB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS GUM J J(USA) PHL(USA) WAK
15031	REG1 ALG CYP(G) G MLT URS REG2 CAN REG3 AUS J(USA)
15034	REG1 ALG ARS(USA) AZR BLR CME COG D(USA) DJI(F) F G GRC ISR MDG MLI REU SEN TCD TUR(USA) UKR URS REG2 B CAN GRL HWA USA REG3 AUS GUM NZL PHL
15037	REG1 ARS(USA) AZR BLR CME COG CTI D(USA) G MDG MLI REU SEN TCD TUR(USA) UKR URS YUG REG2 ALS B CAN HWA USA REG3 AUS J(USA)
15040	REG1 CYP(G) G GUI URS REG2 USA REG3 AUS J J(USA)
15043	REGY ATA(ARG) REG1 CYP(G) DNK ETH G URS REG2 ALS ARG CUB REG3 AUS BGD FJI J J(USA) PAK
15046	REGY ATA(ARG) REG1 CYP(G) ETH G ISL MLT SUI URS YUG REG2 ALS ARG CUB USA REG3 AUS BGD FJI J NZL PAK PNG
15049	REG1 CYP(G) G GIB URS ZAI REG2 USA REG3 AUS HKG J
15052	REGY ATA(ARG) REG1 BHR(USA) G GRC(USA) I I(USA) MRC NOR URS REG2 ALS ARG BER(USA) HWA MDW PNR PTR TRD(USA) USA REG3 CHN GUM IND J J(USA) MRL NZL PHL(USA) VTN
15055	REGY ATA(ARG) REG1 AFS ALG BHR(USA) G G(USA) GRC(USA) I I(USA) ISL MRC NOR URS REG2 ALS ARG BER(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS CHN GUM IND J J(USA) MRL NZL PHL(USA) VTN
15058	REG1 ALG BHR(USA) G GRC(USA) I(USA) URS REG2 ALS HWA MDW PNR PTR TRD(USA) USA REG3 AUS GUM J J(USA) MRL PHL(USA)
15061	REG1 ALG E F G URS REG2 ALS BRB(USA) CUB(USA) HWA MDW PNR PTR USA REG3 AUS GUM J(USA) MRL PHL(USA)

15064	REG1 AZR CME COG DJI(F) F G GRC ISL MDG MLI MTN REU SEN TCD TGO TUN URS REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB BRB(USA) CHL CUB(USA) HWA MDW PNR PTR TCA(USA) USA REG3 AUS DGA(USA) GUM J(USA) PHL(USA) PNG
15067	REG1 AZR CME COG CTI DJI(F) F MDG MLI REU SEN TCD TGO TUN URS REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB BRB(USA) CUB(USA) HWA MDW PNR PTR TCA(USA) USA REG3 AUS GUM J(USA) PHL(USA)
15070	REG1 BHR(USA) TUR URS REG2 ALS HWA JON MDW PNR PTR USA REG3 AUS GUM J J(USA) PHL(USA) WAK
15073	REGY ATA(ARG) REG1 BHR(USA) COG D DJI(F) F GRC(USA) ISL MDG MNG SEN TUN UKR URS REG2 ALS ARG BER(USA) CAN HWA JON MDW PNR PTR USA REG3 AUS CHN GUM IND J J(USA) MRL NCL OCE PHL(USA) WAK
15076	REGY ATA(ARG) REG1 BHR(USA) COG CTI D DJI(F) F G MDG SEN TUN UKR URS REG2 ALS ARG BER(USA) HWA JON MDW PNR PTR USA REG3 AUS CHN GUM IND J J(USA) MRL NCL NZL OCE PHL(USA) WAK
15079	REG1 BDI G KWT ROU URS REG2 PTR USA REG3 J
15082	REG1 BHR(USA) BLR E GRC(USA) I I(USA) MRC POL ROU UKR URS REG2 ALS B BER(USA) BRB(USA) HWA MDW MEX PNR PTR USA REG3 AUS FJI GUM J(USA) KIR NZL PHL(USA)
15085	REG1 BHR(USA) BLR E G GRC(USA) I I(USA) MNG MRC POL UKR URS REG2 ALS B BER(USA) BRB(USA) HWA MDW MEX PNR PTR TRD(USA) USA REG3 AUS CHN FJI GUM J(USA) KIR MRL NZL PHL(USA) PNG
15088	REG1 BHR(USA) BLR URS REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB(USA) HWA MDW PNR PTR TCA(USA) USA REG3 AUS GUM HKG J(USA) PHL(USA)
15091	REG1 G MLT URS YUG REG2 B MEX USA REG3 AUS HKG J(USA) PHL(USA)
15094	REGY ATA(ARG) REG1 HOL MLT MNG TUR URS REG2 ALS ARG ATN BER(USA) GTM HWA USA REG3 AUS CHN GUM J
15097	REG1 IRL TUR URS REG2 ALS ARG BER(USA) REG3 J
17970	REG1 AFS ALG G KWT MCO URS REG3 PHL
17973	REGY ATA(ARG) REG1 AGL ALG ARS(USA) AZR BLR CYP(G) D F G I MNG MOZ POR ROU STP UKR URS YUG REG2 ALS ARG BER(USA) GRL HWA JON USA REG3 AUS GUM IND J(USA) MAC MRL PHL(USA) TMP(POR)
17976	REG1 D G G(USA) I ROU TUR(USA) URS YUG REG2 GRL URG USA REG3 AUS J
17979	REG1 BHR(USA) CYP(G) G GIB GRC(USA) I I(USA) MRC URS REG2 ALS B BER(USA) CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS BGD GUM HKG J(USA) NZL PAK PHL(USA)
17982	REG1 ARS AZR BHR(USA) CYP(G) EGY G GIB GRC(USA) I I(USA) ISL JOR KEN MLT MRC OMA S UKR URS REG2 ALS B BER(USA) CAN CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS BGD GUM HKG J(USA) MRL NZL PAK PHL(USA) PNG

17985	REG1 BHR(USA) G ISL MNG UKR REG2 ALS BER(USA) CUB(USA) HWA MDW PNR PTR TRD(USA) USA REG3 AUS GUM J(USA) PHL(USA)
17988	REG1 CYP(G) G GIB MLT TUN URS REG3 AUS HKG IND J
17991	REGY ATA(ARG) REG1 AFS CME COG D D(F) DJI(F) F GAB GRC HOL ISL MDG MLI MTN REU SEN TCD TGO TUN URS REG2 ALS ARG BER(USA) GRL HWA JON MRT USA REG3 AUS CHN FJI GUM J J(USA) NCL NZL OCE PHL(USA)
17994	REGY ATA(ARG) REG1 ALG CME COG CTI D D(F) DJI(F) F ISR MDG MLI MNG REU SEN TCD TGO TUN UKR URS REG2 ALS ARG CAN GRL HWA JON MRT USA REG3 AUS CHN FJI GUM J J(USA) NCL NZL OCE PHL(USA)
17997	REG1 ALG CYP(G) G GIB LUX MLT UKR URS REG3 HKG J
18000	REGY ATA(ARG) REG1 ALG BLR G POL TUR UKR URS REG2 ARG CAN MEX USA REG3 AUS BGD J(USA) NZL PAK
18003	REGY ATA(ARG) REG1 ALG BLR CYP(G) G MLT MNG POL TUR UKR URS REG2 ALS ARG MEX USA REG3 AUS J(USA) NZL PHL(USA) PNG
18006	REG1 G MLT URS REG3 AUS J PHL(USA)
18009	REGY ATA(USA) REG1 BHR(USA) CME COG CYP(G) D DJI(F) F G GRC(USA) I I(USA) ISL MDG MLI MLT MRC REU ROU SEN TCD TGO TUN URS REG2 ALS ATG(USA) BAH(USA) BER(USA) BRB BRB(USA) CAN CUB(USA) HWA MDW PNR PTR TCA(USA) USA REG3 AUS CHN FJI GUM J J(USA) MRL NZL PHL(USA)

18012	REGY ATA(USA) REG1 BHR(USA) CME COG CTI D DJI(F) F G GRC(USA) I I(USA) MDG MLI MRC MTN REU ROU SEN TCD TGO TUN URS REG2 ALS BER(USA) BRB(USA) CAN CHL CUB(USA) HWA MDW PNR PTR USA REG3 CHN FJI GUM J J(USA) MRL NZL PHL(USA)
18015	REGY ATA(USA) REG1 BHR(USA) E F G GRC(USA) I(USA) MNG MRC UKR URS REG2 ALS BRB(USA) CAN CUB(USA) HWA MDW PNR PTR USA REG3 AUS CHN GUM HKG J(USA) PHL(USA)
18018	REG1 ASC(USA) G G(USA) UKR URS YUG REG2 CAN REG3 AUS HKG J J(USA) PHL(USA)
18021	REG1 BLR G GHA GRC OMA UKR URS REG2 B BER(USA) USA REG3 GUM J
18024	REG1 BLR G MNG MOZ POR S SUI TUR UKR URS REG2 B BER(USA) CAN GRL USA REG3 AUS FJI J
18027	REG1 G NMB TUR URS REG2 CAN USA REG3 AUS KRE

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Corrigendum 1 to
Document DT/41(Rev.1)-E
17 February 1992
Original: English

WORKING GROUP 4C

Draft

REPORT OF SUB-WORKING GROUP 4C1 TO WORKING GROUP 4C

FACTORS RELATED TO THE CHOICE OF A FREQUENCY BAND FOR WIDE-RF BAND HDTV

This corrigendum concerns the English text only.

Please insert in section 3, band 21.4 - 22 GHz, after the second sentence, the following sentence:

"Alternative new spectrum for the fixed service will therefore need to be identified."

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/41(Rev.1)-E
12 February 1992
Original: English

WORKING GROUP 4C

Draft

REPORT OF SUB-WORKING GROUP 4C1 TO WORKING GROUP 4C

FACTORS RELATED TO THE CHOICE OF A FREQUENCY BAND FOR WIDE-RF BAND HDTV

1. Introduction

The Conference is to consider the allocation of a frequency band for wide-RF band HDTV. There is emphasis on the need to have a worldwide allocation. Several Administrations indicate that the current 22.5 - 23 GHz allocation in Regions 2 and 3 is not optimum and alternatives should be considered which could harmonize the choice for all Regions.

The principle issues are summarized below.

2. Propagation/cost

The cost of the space segment is directly related to the satellite power required to provide the service. Although the power is directly related to the propagation conditions, the number of variables involved complicates attempts to illustrate the effects in a general way. Annex 1 provides information designed to assist Administrations to assess implications for their country.

(The TWT powers referred to in the tables of Annex 1 are for wide-RF band HDTV System 1. For System 2, the powers would be halved.)

3. Sharing

The sharing implications differ for each of the candidate bands in respect of the services involved, the level of implementation of those services by Administrations and the degree to which alternative accommodation can be provided for services displaced by a BSS allocation.

17.3 - 17.8 GHz: This band is used for feeder links in the Appendix 30, and Appendix 30A Plans.The band proposed is 500 MHz of which 100 MHz would be incompatible with currently allocated services in use by the FSS (space-to-Earth), fixed and mobile services which would need to be removed. Sharing with transportable earth stations is considered by some to be a major difficulty. Sharing with fixed location feeder-link station would also be difficult.

These problems of reverse band sharing would be alleviated by the use of an alternative feeder-link band. Alternative feeder-link spectrum would be above 20 GHz and would require around 800 MHz of bandwidth for Regions 1 and 3 and may have planning implications for those Regions.

21.4 - 22 GHz: This band is currently allocated to fixed and mobile services. The band proposed is 600 MHz all of which would be incompatible with currently allocated services in use. In Regions 2 and 3, the band 22.5 to 23 GHz is allocated to the BSS, sharing with fixed and mobile, but also with ISS and has minor implications for radio astronomy.

24.65 - 25.25 GHz: This 600 MHz band is part of a 1 GHz band allocated to radionavigation. Only one Administration has a service implemented and that could be moved below 24.65 GHz. Some precautions against interference to BSS would be needed for radar operations in the adjacent band.

4. Regional issues

Regions 2 and 3 have a BSS allocation at 22.5 - 23 GHz but due to sharing difficulties is not favoured by most Administrations. Several Administrations in Regions 2 and 3 indicate a preference for a more favourable allocation for wide-RF band HDTV, preferably on a worldwide basis. Several Administrations in high rain climate zones wish to have capacity provided in the 12 GHz BSS band for HDTV.

A majority of Region 1 countries proposed the 21 GHz band. In Region 2, there is support for a change from 22.5 GHz which include proposals for either 17 GHz or 25 GHz. In Region 3, there is similar support for change related to all three bands.

Annex: 1

ANNEX 1

Zone C (light rain)

Latitude	Elev. Angle (1)	TOTAL ATTENUATION (2)			TWT POWER (WATTS) (3)		
		17.5 G	21.7 G	25.0 G	17.5 G	21.7 G	25.0 G
0°	90°	0.89	1.8	1.92	28.2	49.1	59.7
10°	78.2	0.95	1.9	2.1	29.3	51.5	63.1
20°	66.6	1.06	2.1	2.3	31.5	56.5	69.6
30°	55.0	1.23	2.4	2.6	35.0	65.2	80.0
40°	43.7	1.4	2.8	2.9	38.8	76.1	93.4
50°	32.7	1.44	3.1	3.2	42.0	89.0	105.0
60°	22.0	1.60	3.8	3.7	48.3	119.3	131.9
70°	11.5	2.3	6.1	5.4	65.9	238.7	227.6

(1) Assuming satellite due south/north.

(2) Climatic Zone C for 1% of Worst Month.

(3) For 1° x 1° Beam/System 1 (Table VII-III of CCIR Report to WARC-92).

Zone K (temperate)

Latitude	Elev. Angle (1)	TOTAL ATTENUATION (2)			TWT POWER (WATTS) (3)		
		17.5 G	21.7 G	25.0 G	17.5 G	21.7 G	25.0 G
0°	90°	2.4	3.9	4.6	53.5	99.6	140
10°	78.2	2.6	4.1	4.9	57.4	108.3	154
20°	66.6	2.8	4.6	5.3	64.4	125.0	181.5
30°	55.0	3.2	5.2	6.1	76.2	154.6	230
40°	43.7	3.5	5.7	6.7	87.2	186.4	278
50°	32.7	3.6	6.0	6.9	92.4	210.7	303
60°	22.0	3.8	6.8	7.6	106.4	278.6	381

(1) For satellite located due south/north.

(2) Climatic Zone K for 1% of Worst Month.

(3) For 1° x 1° Beam/System 1 (Table VII-III of CCIR Report to WARC-92).

Zone N (Tropical)

Latitude	Elev. Angle (1)	TOTAL ATTENUATION (2)			TWT POWER (WATTS) (3)		
		17.5 G	21.7 G	25.0 G	17.5 G	21.7 G	25.0 G
0°	90°	5.7	8.2	9.9	151.2	326.8	574
10°	78.2	5.8	8.4	10.3	160.3	351.4	625
20°	66.6	6.2	8.9	10.8	179.4	405.8	737
30°	55.0	6.7	9.7	11.8	213.0	507.0	950
40°	43.7	7.0	10.2	12.3	237.0	591.0	1108

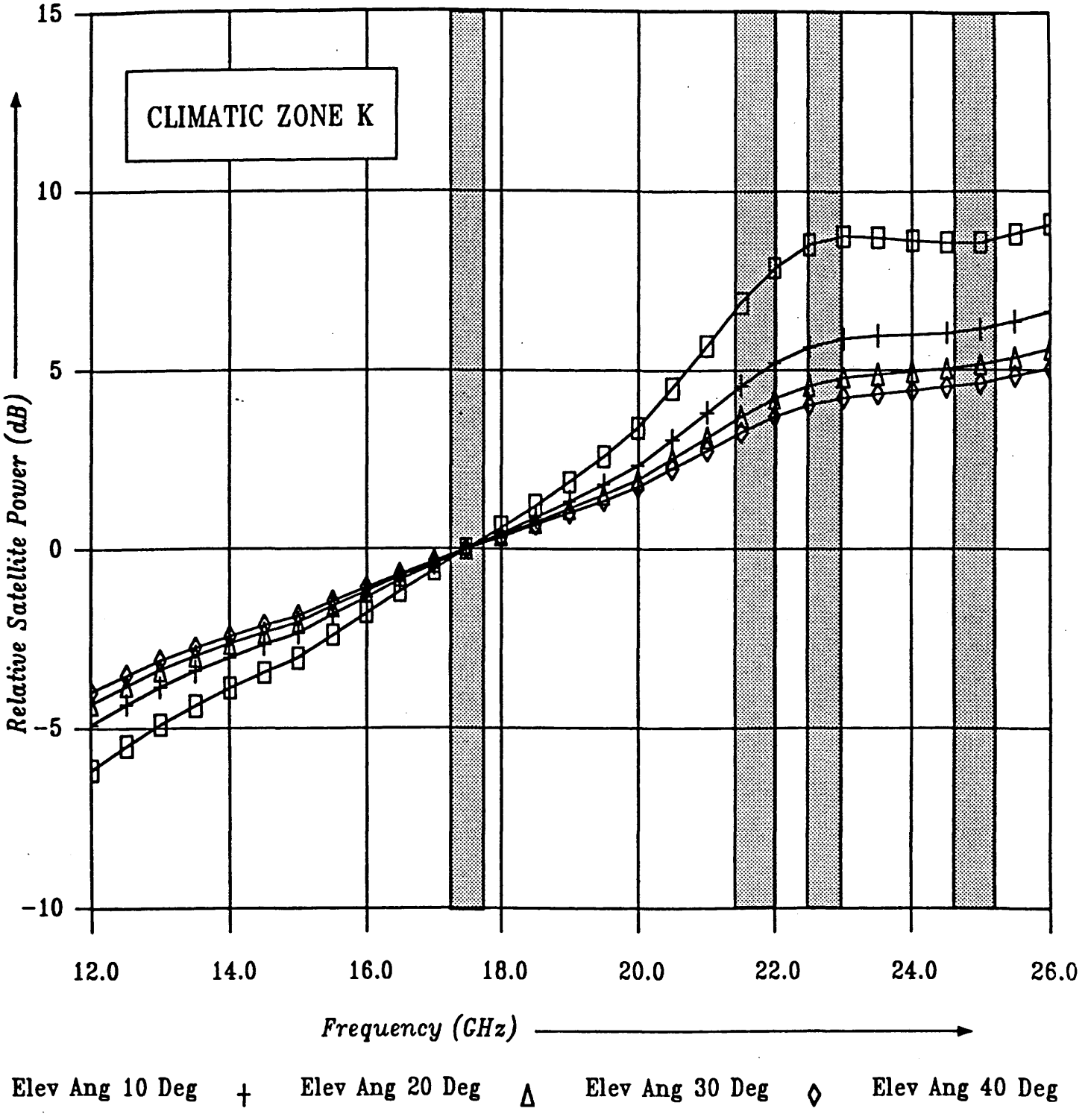
(1) Assuming satellite located due south/north.

(2) Climatic Zone N for 1% of Worst Month.

(3) For 1° x 1° Beam/System 1 (Table VII-III of CCIR Report to WARC-92).

VARIANCE OF SATELLITE POWER WITH FREQUENCY

(Relative to 17.5 GHz and Constant Antenna Diameter)



1INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/41-E
12 February 1992
Original: English

Sub-Working Group 4C-1

Report of ad hoc 1 to Sub-Working Group 4C-1

FACTORS RELATED TO THE CHOICE OF A FREQUENCY BAND FOR WIDE-RF BAND HDTV

1. Introduction

The Conference is to consider the allocation of a frequency band for wide-RF band HDTV. There is emphasis on the need to have a worldwide allocation. Several Administrations indicate that the current 22.5 - 23 GHz allocation in Regions 2 and 3 is not optimum and alternatives should be considered which could harmonize the choice for all Regions.

The principle issues are summarized below.

2. Propagation/cost

The cost of the space segment is directly related to the satellite power required to provide the service. Although the power is directly related to the propagation conditions, the number of variables involved complicate attempts to illustrate the effects in a general way. Annex 1 provides information designed to assist Administrations to assess implications for their country.

(The TWT powers referred to in the tables are for wide-RF band HDTV System 1. For System 2, the powers would be halved.)

3. Sharing

The sharing implications differ for each of the candidate bands in respect of the services involved, the level of implementation of those services by Administrations and the degree to which alternative accommodation can be provided for services displaced by a BSS allocation.

17.3 - 17.8 GHz: This band is used for feeder links in the Appendix 30, and Appendix 30A Plans.The band proposed is 500 MHz and 100 MHz of the band would need to be cleared by FSS (space-to-Earth), fixed and mobile services. Sharing with transportable earth stations is considered by some to be a major difficulty. Sharing with fixed location feeder-link station would also be difficult.

These problems of reverse band sharing would be alleviated by the use of an alternative feeder-link band. Alternative feeder-link spectrum would be above 20 GHz and would require around 800 MHz of bandwidth for Regions 1 and 3 and may have planning implications for those Regions.

21.4 - 22 GHz: This band is currently allocated to fixed and mobile services. Some Administrations have fixed systems in use which would require to be moved to another band. Alternative fixed spectrum could be above 24 GHz. For Regions 2 and 3, their current 22.5 to 23 GHz allocation is shared with fixed and mobile, but also with ISS and has minor implications for radio astronomy.

24.65 - 25.25 GHz: This band is part of a 1 GHz band allocated to radionavigation. Only one Administration has a service implemented and that could be moved below 24.65 GHz. Some precautions against interference to BSS would be needed for radar operations in the adjacent band.

4. Regional issues

Regions 2 and 3 have a BSS allocation at 22.5 - 23 GHz but due to sharing difficulties is not favoured by most Administrations. Several Administrations in Regions 2 and 3 indicate a preference for a more favourable allocation for wide-RF band HDTV, preferably on a worldwide basis. Several Administrations in high rain climate zones wish to have capacity provided in the 12 GHz BSS band for HDTV.

A majority of Region 1 countries proposed the 21 GHz band. In Region 2, there is support for a change from 22.5 GHz which include proposals for either 17 GHz or 25 GHz. In Region 3, there is similar support for change related to all three bands.

Annex: 1

ANNEX 1

Zone C (light rain)

Latitude	Elev. Angle (1)	TOTAL ATTENTUATION (2)			TWT POWER (WATTS) (3)		
		17.5	21.7	25.0	17.5	21.7	25.0
0°	90°	0.89	1.8	1.92	28.2	49.1	59.7
10°	78.2	0.95	1.9	2.1	29.3	51.5	63.1
20°	66.6	1.06	2.1	2.3	31.5	56.5	69.6
30°	55.0	1.23	2.4	2.6	35.0	65.2	80.0
40°	43.7	1.4	2.8	2.9	38.8	76.1	93.4
50°	32.7	1.44	3.1	3.2	42.0	89.0	105.0
60°	22.0	1.60	3.8	3.7	48.3	119.3	131.9
70°	11.5	2.3	6.1	5.4	65.9	238.7	227.6

(1) Assuming satellite due south/north.

(2) Climatic Zone C for 1% of Worst Month.

(3) For 1° x 1° Beam/System 1 [Table VII-III of JIWP Report].

Zone K (temperate)

Latitude	Elev. Angle (1)	TOTAL ATTENTUATION (2)			TWT POWER (WATTS) (3)		
		17.5	21.7	25.0	17.5	21.7	25.0
0°	90°	2.4	3.9	4.6	53.5	99.6	140
10°	78.2	2.6	4.1	4.9	57.4	108.3	154
20°	66.6	2.8	4.6	5.3	64.4	125.0	181.5
30°	55.0	3.2	5.2	6.1	76.2	154.6	230
40°	43.7	3.5	5.7	6.7	87.2	186.4	278
50°	32.7	3.6	6.0	6.9	92.4	210.7	303
60°	22.0	3.8	6.8	7.6	106.4	278.6	381

(1) For satellite located due south/north.

(2) Climatic Zone K for 1% of Worst Month.

(3) For 1° x 1° Beam/System 1 [Table VII-III of JIWP Report].

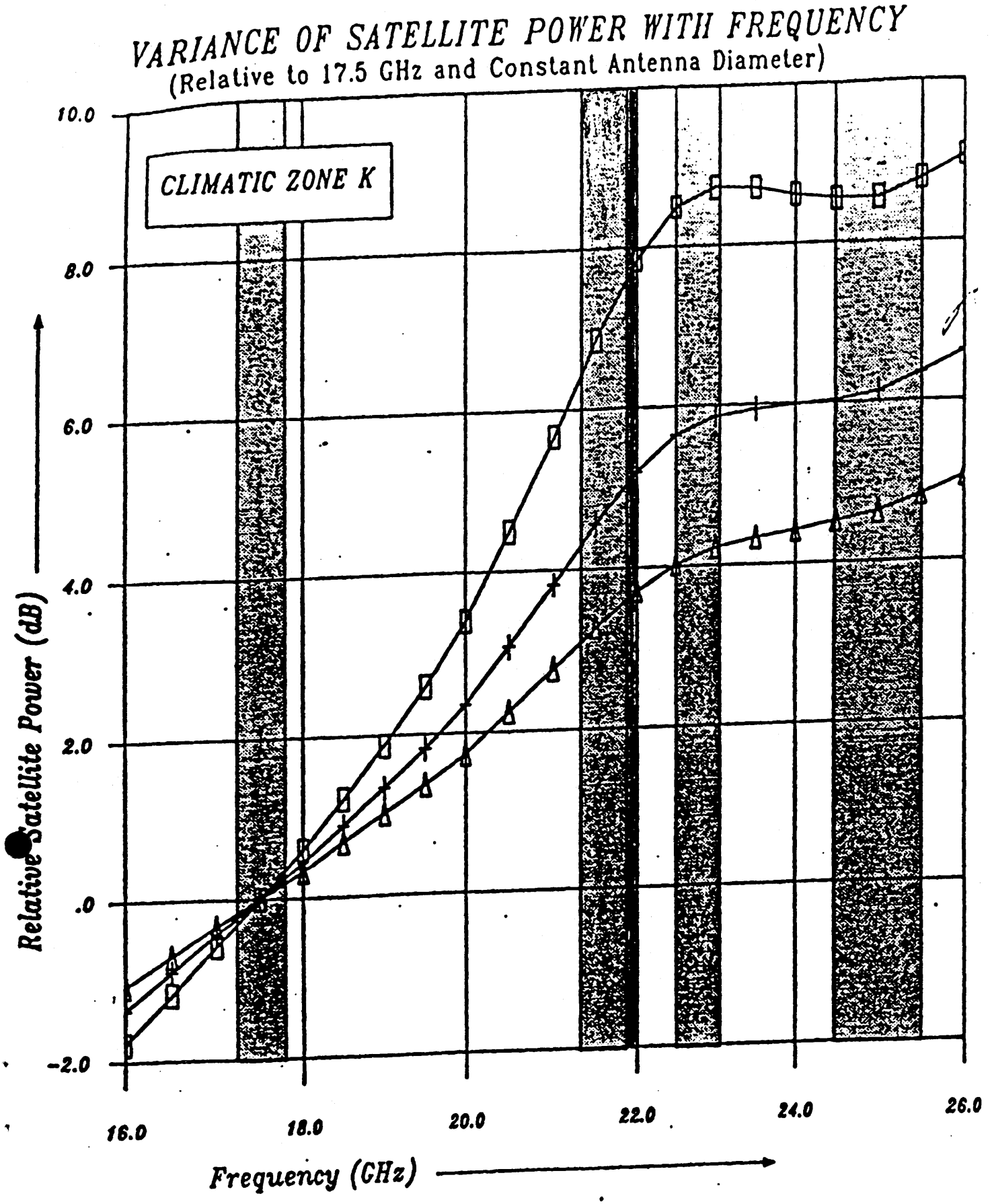
Zone N (Tropical)

Latitude	Elev. Angle (1)	TOTAL ATTENTUATION (2)			TWT POWER (WATTS) (3)		
		17.5	21.7	25.0	17.5	21.7	25.0
0°	90°	5.7	8.2	9.9	151.2	326.8	574
10°	78.2	5.8	8.4	10.3	160.3	351.4	625
20°	66.6	6.2	8.9	10.8	179.4	405.8	737
30°	55.0	6.7	9.7	11.8	213.0	507.0	950
40°	43.7	7.0	10.2	12.3	237.0	591.0	1108

(1) Assuming satellite located due south/north.

(2) Climatic Zone N for 1% of Worst Month.

(3) For 1° x 1° Beam/System 1 [Table VII-III of JIWP Report].


VARIANCE OF SATELLITE POWER WITH FREQUENCY
(Relative to 17.5 GHz and Constant Antenna Diameter)
CLIMATIC ZONE K
10.0
8.0
6.0
4.0
2.0
.0
-2.0
Relative Satellite Power (dB)
16.0
18.0
20.0
22.0
24.0
26.0
Frequency (GHz)
Elev Ang 10 Deg
Elev Ang 20 Deg
Elev Ang 40 Deg

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/42(Rev.1)-E
14 February 1992
Original: English

WORKING GROUP 4C

Draft

REPORT OF THE CHAIRMAN OF SUB-WORKING GROUP 4C1 TO WORKING GROUP 4C

1. Sub-Working Group 4C1 agreed to the main principles in its initial deliberations on proposals on agenda item 2.2.3b regarding BSS-HDTV. These are:

- to concentrate on a possible new allocation;
- to seek, as far as possible, a worldwide allocation;
- to concentrate on the down-link frequency band before detailed consideration on a feeder-link band.

2. The proposals dealing with agenda item 2.2.3b have been summarized in DT/19(Rev.3) which is annexed to this report. Table A deals with the down link and Table B with the feeder link.

3. In order to work towards consensus on a new down-link frequency band, an ad hoc Working Group was established which was chaired by Mr. Barton of Australia. The ad hoc Group had to address the specified main issues which should be taken into account in reaching a decision on this aspect of agenda item 2.2.3b.

4. As can be seen from DT/19(Rev.3), three new frequency band options remain with continuing support, namely,

- 17 GHz (7 administrations)
- 21 GHz (47 administrations)
- 25 GHz (4 administrations).

Some administrations have also expressed support for accommodating BSS-HDTV into the existing 12 GHz bands. There is also support for further CCIR studies into how BSS-HDTV can be provided in the 12 GHz bands, with special emphasis on those countries which experience high rainfall rates.

5. Further deliberation will be necessary to further reduce the options for a worldwide frequency band. Consideration is being given as to how this can be progressed, but more time is required.

6. Initial introduction of feeder-link proposals will continue, however, further detailed discussions await deliberation on the down-link frequency band.

7. Deliberation on the associated footnote proposals has yet to start, as it is not clear whether such discussions are proper for Sub-Working Group 4C1 and Working Group 4C, or are a more regulatory matter for Committee 5. Clarification on this matter of principle is required from the Chairmen of Committee 4 and Committee 5.

8. The footnotes concerned are given below for information:

838A - 12 GHz

868A, 869A, 869B - 17 GHz

873A, 875A - 21 GHz

877 - 23 GHz

881A - 25 GHz

881A, 881B - 28 GHz

K. WHITTINGHAM
Chairman of Sub-Working Group 4C1

V. STEPANIAN
Vice-Chairman of Sub-Working Group 4C1

Annex: DT/19(Rev.3)

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/42-E
12 February 1992
Original: English

WORKING GROUP 4C

DRAFT REPORT OF THE CHAIRMAN OF SUB-WORKING GROUP 4C-1 TO WORKING GROUP 4C

1. Sub-Working Group 4C-1 agreed to the main principles in its initial deliberations on proposals on agenda item 2.2.3b regarding BSS-HDTV. These are:

- to concentrate on a possible new allocation;
- to seek, as far as possible, a worldwide allocation;
- to concentrate on the down-link frequency band before detailed consideration on a feeder-link band.

2. The proposals dealing with agenda item 2.2.3b have been summarized in DT/19(Rev.2) which is annexed to this report. Table A deals with the down link and Table B with the feeder link.

3. In order to work towards consensus on a new down-link frequency band, an ad hoc Working Group was established which was chaired by Mr. Barton of Australia. The ad hoc Group had to address the specified main issues which should be taken into account in reaching a decision on this aspect of agenda item 2.2.3b.

4. As can be seen from DT/19(Rev.2), three new frequency band options remain with continuing support, namely,

- 17 GHz (7 administrations)
- 21 GHz (47 administrations)
- 25 GHz (4 administrations).

Some administrations have also expressed support for accommodating BSS-HDTV into the existing 12 GHz bands. There is also support for further CCIR studies into how BSS-HDTV can be provided in the 12 GHz bands, with special emphasis on those countries which experience high rainfall rates.

5. Further deliberation will be necessary to further reduce the options for a worldwide frequency band. Consideration is being given as to how this can be progressed, but more time is required.

6. Initial introduction of feeder-link proposals will continue, however, further detailed discussions await deliberation on the down-link frequency band.

7. Deliberation on the associated footnote proposals has yet to start, as it is not clear whether such discussions are proper for Sub-Working Group 4C-1 and Working Group 4C, or are a more regulatory matter for Committee 5. Clarification on this matter of principle is required from the Chairmen of Committee 4 and Committee 5.

8. The footnotes concerned are given below for information:

838A - 12 GHz

868A, 869A, 869B - 17 GHz

873A, 875A - 21 GHz

877 - 23 GHz

881A - 25 GHz

881A, 881B - 28 GHz

K. WHITTINGHAM
Chairman of Sub-Working Group 4C-1

V. STEPANIAN
Vice-Chairman of Sub-Working Group 4C-1

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/43-E
12 February 1992
Original: English

SUB-WORKING GROUP 5B-2

Source: Document 5 (Annex 4)

Draft

SECOND REPORT OF SUB-WORKING GROUP 5B-2 TO WORKING GROUP 5B

1. Further to Document [DT/30], Sub-Working Group 5B-2 examined the text of Annex 4 to Document 5. The text as approved by the Sub-Working Group is enclosed.

2. The Delegation of the Kingdom of Morocco reserved its position with respect to the enclosed text.

W. PAPPAS
Chairman of Sub-Working Group 5B-2

Annex: 1

ANNEX

DRAFT NEW RESOLUTION No. AER-2

Transfer of Frequency Assignments of Aeronautical Stations Operating in the Frequency Bands Allocated Exclusively to the Aeronautical Mobile (OR) Service Between 3 025 kHz and 18 030 kHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the conditions for use of each of the frequency bands between 3 025 kHz and 18 030 kHz allocated exclusively to the aeronautical mobile (OR) service were modified by this Conference so as to enable a more efficient usage of the frequency spectrum available;

b) that the Administrations will need to change the frequencies of their aeronautical and aircraft stations to bring them into conformity with the new Frequency Allotment Plan, as contained in Appendix 26(Rev.), and to notify such transfers, where appropriate, to the IFRB,

resolves

1. that, within 90 days from the date on which this Conference ends, the Board shall send to each Administration a list of assignments to stations of the aeronautical mobile (OR) service entered on its behalf in the Master Register in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz;

2. that, in the above list, the Board shall indicate, for each frequency assignment, a replacement frequency(-ies) which fulfils the conditions of Appendix 26(Rev.) and which is intended to replace the frequency of the assignment concerned;

3. that, after the receipt of the above list, the Administrations shall take all the necessary measures to modify the characteristics of their assignments, so as to bring them in conformity with the provisions of Appendix 26(Rev.), as early as possible and in any event, by 15 December 1997 at the latest; any modification which has been implemented shall be notified to the Board in accordance with RR 1214;

4. that the frequency assignments notified by Administrations under paragraph 3 above shall be examined by the Board under the relevant provisions of Sub-Section IIC and Section III of Article 12 of the Radio Regulations, as modified by this Conference;

5. that the assignments existing in the Master Register on 15 December 1997 which are not in conformity with the conditions of Appendix 26(Rev.) shall be treated as follows:

5.1 within 60 days from 15 December 1997, the Board shall send relevant extracts of the Master Register to the Administrations concerned advising them that, in accordance with the terms of the present Resolution, the assignments in question are to be modified, within a period of 90 days, so as to conform with the conditions of Appendix 26(Rev.);

5.2 if an Administration fails to notify the Board of the modifications within the prescribed period, the original entry will be retained in the Master Register for information only, without a date in Column 2, without a finding in Column 13A and with a suitable remark in the Remarks column. The Administration will be advised of this action.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/44-E
12 February 1992
Original: English

WORKING GROUP 5B

Source: Document DT/30

FIRST REPORT OF SUB-WORKING GROUP 5B-2 TO WORKING GROUP 5B

1. As instructed by the Working Group 5B, and taking account of the discussions conducted in Committee 5, the Sub-Working Group examined the texts related to Agenda item 2.4 (in conjunction with Agenda item 2.6) and approved the following texts:

   1) the draft modifications to Article 12 of the Radio Regulations (Annex 1 to this report);
   2) the draft revision of Appendix 26 to the Radio Regulations, without Part III (Annex 2 to this report);
   3) the draft new Resolution No. AER-1 on the implementation of the new provisions applicable in the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz (Annex 3 to this report).

2. The Delegation of the Kingdom of Morocco reserved its position with respect to these texts.

W. PAPPAS
Chairman of Sub-Working Group 5B-2

Annexes: 3

ANNEX 1

DRAFT MODIFICATIONS TO ARTICLE 12 OF THE RADIO REGULATIONS AS A RESULT OF ACTIONS TAKEN WITH REGARD TO APPENDIX 26, AS INDICATED IN RESOLUTION No. 9 OF THE PLENIPOTENTIARY CONFERENCE (NICE, 1989) (FORMERLY RESOLUTION NO. PL-B/2)

1. Draft modifications to Sub-Section IIC (paragraph 27)

NOC 1343 §27. (1) *Examination of Notices Concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (OR) Service in the Bands Allocated Exclusively to that Service Between 3 025 kHz and 18 030 kHz (see No. 1239)*

NOC 1344 (2) The Board shall examine each notice covered by No. 1343 to determine whether:

MOD 1344A (a) the notice is in conformity with the provisions of No. 1240 and those contained in Part II of Appendix 26 (Rev.);

MOD 1345 (b) the assignment is in conformity with ~~the primary~~ an allotments in the Allotment Plan for the aeronautical mobile (OR) service ~~and the conditions specified in Appendix 26 (Parts III and IV)~~ contained in Part III of Appendix 26 (Rev.)

SUP 1346

SUP 1347

SUP 1348

(MOD) 1348A (3A) A notice which is not in conformity with the provisions of No. 1344A shall be examined with respect to Nos. 1267 and 1268. The date to be entered in Column 2b shall be determined in accordance with the relevant provisions of Section III of this Article.

Annex 1 (cont.)

ADD 1348B (4) Any frequency assignment for which the finding is favourable with respect to Nos. 1344A and 1345 shall be recorded in the Master Register. The date to be entered in Column 2a shall be that determined in accordance with the relevant provisions of Section III of this Article.

ADD 1348C (5) A notice which is in conformity with the provisions of No. 1344A, but not with those of No. 1345, shall be examined with respect to the allotments in the Plan and to assignments already recorded with a favourable finding with respect to this present provision. In so doing, the Board shall apply the technical criteria specified in Part IV of Appendix 26 (Rev.). The date to be entered in Column 2a or 2b shall be that determined in accordance with the relevant provisions of Section III of this Article.

SUP 1349

2. Draft modifications to Section III

NOC 1406 §45. (1) *Frequency Bands Allocated Exclusively to the Aeronautical Mobile (OR) Service Between 3 025 kHz and 18 030 kHz*

MOD 1407 (2) If the finding is favourable with respect to Nos. 1344A and 1345, the date of 15 December 1992 shall be entered in Column 2a.

MOD 1408 (3) If the finding is favourable with respect to No. ~~1346~~ 1348C, the date of 15 December 1992 shall be entered in Column ~~2b~~ 2a.

SUP 1409

MOD 1410 (4) In all other cases covered by No. 1343, the date of ~~receipt of the notice by the Board~~ 16 December 1992 shall be entered in Column 2b.

(MOD) 1411 (5) For assignments to stations other than aeronautical stations in the aeronautical mobile (OR) service, the relevant date shall be entered in Column 2b (see Nos. 1271 and 1272).

ANNEX 2

DRAFT APPENDIX 26(Rev.)
to the Radio Regulations

**Provisions and Associated Frequency Allotment Plan
for the Aeronautical Mobile (OR) Service
in the Bands Allocated Exclusively to that Service
Between 3 025 kHz and 18 030 kHz**

(see Article 50 of the Radio Regulations)

PART I: General Provisions, Definitions

26/1 The provisions of this Appendix shall apply to the aeronautical mobile (OR) service in the following frequency bands:

3 025 - 3 155 kHz
3 900 - 3 950 kHz (Region 1 only),
4 700 - 4 750 kHz
5 680 - 5 730 kHz
6 685 - 6 765 kHz
8 965 - 9 040 kHz
11 175 -11 275 kHz
13 200 -13 260 kHz
15 010 -15 100 kHz
17 970 -18 030 kHz.

26/2 For the purpose of this Appendix, the terms used comprise the following:

26/2.1 Frequency Allotment Plan : The Plan for the aeronautical mobile (OR) service, contained in Part III of this Appendix.

26/2.2 Allotment in the aeronautical mobile (OR) service: A frequency allotment in the aeronautical mobile (OR) service which comprises:

- a frequency channel from the channels appearing in the channelling arrangement in No. 26/3;
- a bandwidth of up to 2.8 kHz, situated wholly within the frequency channel concerned;
- a power within the limits laid down in No. 26/4.4 and/or against the allotted frequency channel;
- an allotment area which is the area in which the aeronautical station can be situated and which coincides with the territory of the country, or the geographical area, or with a part of the territory, as indicated against the frequency channel concerned in the Frequency Allotment Plan.

Annex 2 (cont.)

PART II: Technical Bases Used for the Establishment of the Frequency Allotment Plan for the Aeronautical Mobile (OR) Service in the Exclusive Bands Between 3 025 kHz and 18 030 kHz

26/3 Channelling arrangement

26/3.1 The channelling arrangement for the frequencies to be used by aeronautical stations in the aeronautical mobile (OR) service in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz is indicated in Table 1 below:

TABLE 1

Frequency band 3 025 - 3 155 kHz: 43 + 1 channel

3 023[1)]	3 026	3 029	3 032	3 035	3 038	3 041	3 044	3 047	3 050
3 053	3 056	3 059	3 062	3 065	3 068	3 071	3 074	3 077	3 080
3 083	3 086	3 089	3 092	3 095	3 098	3 101	3 104	3 107	3 110
3 113	3 116	3 119	3 122	3 125	3 128	3 131	3 134	3 137	3 140
3 143	3 146	3 149	3 152						

Frequency band 3 900 - 3 950 kHz (Region 1 only): 16 channels

3 900	3 903	3 906	3 909	3 912	3 915	3 918	3 921	3 924	3 927
3 930	3 933	3 936	3 939	3 942	3 945				

Frequency band 4 700 - 4 750 kHz: 16 channels

4 700	4 703	4 706	4 709	4 712	4 715	4 718	4 721	4 724	4 727
4 730	4 733	4 736	4 739	4 742	4 745				

Frequency band 5 680 - 5 730 kHz: 15 + 1 channels

5 680[1)]	5 684	5687	5 690	5 693	5 696	5 699	5 702	5 705	5 708
5 711	5 714	5717	5 720	5 723	5 726				

Frequency band 6 685 - 6 765 kHz: 26 channels

6 685	6 688	6 691	6 694	6 697	6 700	6 703	6 706	6 709	6 712
6 715	6 718	6 721	6 724	6 727	6 730	6 733	6 736	6 739	6 742
6 745	6 748	6 751	6 754	6 757	6 760				

Frequency band 8 965 - 9 040 kHz: 25 channels

8 965	8 968	8 971	8 974	8 977	8 980	8 983	8 986	8 989	8 992
8 995	8 998	9 001	9 004	9 007	9 010	9 013	9 016	9 019	9 022
9 025	9 028	9 031	9 034	9 037					

Frequency band 11 175 - 11 275 kHz: 33 channels

11 175	11 178	11 181	11 184	11 187	11 190	11 193	11 196	11 199	11 202
11 205	11 208	11 211	11 214	11 217	11 220	11 223	11 226	11 229	11 232
11 235	11 238	11 241	11 244	11 247	11 250	11 253	11 256	11 259	11 262
11 265	11 268	11 271							

1) For use of the carrier (reference) frequencies 3 023 kHz and 5 680 kHz see No. 26/3.4

Annex 2 (cont.)

Frequency band 13 200 - 13 260 kHz: 20 channels

13 200	13 203	13 206	13 209	13 212	13 215	13 218	13 221	13 224	13 227
13 230	13 233	13 236	13 239	13 242	13 245	13 248	13 251	13 254	13 257

Frequency band 15 010 - 15 100 kHz: 30 channels

15 010	15 013	15 016	15 019	15 022	15 025	15 028	15 031	15 034	15 037
15 040	15 043	15 046	15 049	15 052	15 055	15 058	15 061	15 064	15 067
15 070	15 073	15 076	15 079	15 082	15 085	15 088	15 091	15 094	15 097

Frequency band 17 970 - 18 030 kHz: 20 channels

17 970	17 973	17 976	17 979	17 982	17 985	17 988	17 991	17 994	17 997
18 000	18 003	18 006	18 009	18 012	18 015	18 018	18 021	18 024	18 027

26/3.2 The frequencies indicated in No. 26/3.1 are the carrier (reference) frequencies.

26/3.3 With the exception of the carrier (reference) frequencies 3 023 kHz and 5 680 kHz (see 26/3.4 below), one or more frequencies from Table 1 may be assigned to any aeronautical station and/or aircraft station, in accordance with the Frequency Allotment Plan, as contained in Part III of this Appendix.

26/3.4 The carrier (reference) frequencies 3 023 kHz and 5 680 kHz are provided for worldwide common use (see also Nos. 27/208 to 27/214).

26/3.5 The aeronautical radiotelephone stations shall use only single-sideband emissions (J3E). The upper sideband mode shall be employed, and the assigned frequency (see No. RR142) shall be 1 400 Hz higher than the carrier (reference) frequency.

26/3.6 The channelling arrangement established in No. 26/3.1 does not prejudice the rights of administrations to establish, and to notify assignments to stations in the aeronautical mobile (OR) service other than those using radiotelephony, provided that

- the occupied bandwidth does not exceed 2 800 Hz and is situated wholly within one frequency channel (see also Resolution No. AER-1);
- the limits of unwanted emission are met (see No. 27/66C).

26/4 **Classes of emission and power**

26/4.1 In the aeronautical mobile (OR) service, in the bands governed by this Appendix, the use of the emissions listed below is permissible; additionally the use of other emissions is also permissible, subject to compliance with No. 26/3.6

26/4.2 Telephony :

- J3E (single-sideband, suppressed carrier).

26/4.3 Telegraphy (including automatic data transmission):

- A1A, A1B, F1B;
- (A,H)2(A,B);
- (R,J)2(A,B,D);
- J(7,9)(B,D,X).

Annex 2 (cont.)

26/4.4 Unless otherwise specified in Part III of this Appendix, the following transmitter power limits (i.e. power supplied to the antenna), shall be respected:

Class of emission	Power limit values (Peak envelope power supplied to the antenna)	
	Aeronautical station	Aircraft station
J3E	36 dBW (PX)	23 dBW (PX)
A1A, A1B	30 dBW (PX)	17 dBW (PX)
F1B	30 dBW (PX)	17 dBW (PX)
A2A, A2B	32 dBW (PX)	19 dBW (PX)
H2A, H2B	33 dBW (PX)	20 dBW (PX)
(R,J)2(A,B,D)	36 dBW (PX)	23 dBW (PX)
J(7,9)(B,D,X)	36 dBW (PX)	23 dBW (PX)

26/4.5 On the assumption that no antenna gain is involved, the transmitter powers, specified in No. 26/4.4 above, will result in a mean effective radiated power of 1 kW (for the aeronautical stations) and 50 W (for the aircraft stations) used as the basis for the establishment of the Plan contained in Part III of this Appendix.

Annex 2 (cont.)

PART III: Plan for the Allotment of Frequencies for the Aeronautical Mobile (OR) Service in the Exclusive Bands Between 3 025 kHz and 18 030 kHz

(see Document DT/40)

Annex 2 (cont.)

PART IV: Criteria for Compatibility Assessment

26/6 For assessment of the sharing possibilities between the allotments contained in Part III of this Appendix, and any new assignment which is not covered by an appropriate allotment, the following criteria shall be used:

26/6.1 A new station, not covered by an allotment, which uses the standardized transmission characteristics (J3E, 36 dBW PX), shall be considered compatible with the Plan, if it fulfils the criterion of being separated from any point of any allotment area, indicated in the Plan on the given channel, by the half-repetition distance, determined for the given conditions of operation (frequency band used, geographical position of the station, direction of propagation), which are given below:

Frequency band (kHz)	Half-repetition distances (in km)			
	Northern hemisphere		Southern hemisphere	
	North-South	East-West	North-South	East-West
3 025 - 3 155	550	600	550	600
3 900 - 3 950	650	650	650	650
4 700 - 4 750	725	775	725	775
5 680 - 5 730	1 175	1 325	1 150	1 300
6 685 - 6 765	1 350	1 600	1 225	1 425
8 965 - 9 040	2 525	3 525	2 225	3 075
11 175 - 11 275	3 375	5 575	2 675	3 925
13 200 - 13 260	4 550	6 650	3 475	5 625
15 010 - 15 100	5 050	7 450	4 800	7 100
17 970 - 18 030	5 750	8 250	5 675	7 475

26/6.2 The relevant value of the half-repetition distance, for paths which are situated partially in the northern hemisphere and partially in the southern hemisphere, shall be corrected using the linear interpolation procedure. The linear interpolation procedure shall be used for calculation of the correction due to the azimuth of the propagation path with respect to the true North.

26/6.3 The relevant value of the half-repetition distance, obtained in accordance with No. 26/6.2, shall be corrected, where necessary, to take into account the difference in the radiated power of the assignment with respect to the reference radiated power (30 dBW, mean radiated power), on the basis that a variation of 1 dB in the radiated power corresponds to a variation of 4% in the repetition distance.

PART V: Procedure for Modification and for Maintenance of the Plan

26/7 The Plan will be updated, by the Board, in accordance with the following procedure:

26/7.1 a) when a country, which has no allotment in the Plan, requests an allotment, the Board shall select an appropriate allotment on a priority basis and shall enter it in the Plan;

26/7.2 b) when a notice, which is submitted under Article 12 of the Radio Regulations and which is not covered by appropriate allotment, receives a favourable finding with respect to the provisions of No. 1348C, the corresponding allotment shall be entered in the Plan;

26/7.3 c) when a country informs the Board that it renounces the use of an allotment, the Board shall cancel the allotment concerned from the Plan;

26/7.4 d) when no notification, under Article 12 of the Radio Regulation, is received within a period of 2 years following the entry of the allotment in the Plan, the Board shall consult the administration concerned within the next six months about the deletion of that allotment from the Plan: if the administration so wishes an extension of a period not exceeding twelve months may be granted: if, thereafter no notification is received the allotment shall be deleted.

26/8 The Board shall maintain an up-to-date master copy of the Plan, taking account of the application of the procedure specified in this Appendix; and shall periodically, but no less frequently than once a year, prepare recapitulative documents listing all amendments made to the Plan since its last publication.

26/9 The Secretary-General shall publish an up-to-date version of the Plan in an appropriate form no later than once every four years.

ANNEX 3

DRAFT NEW RESOLUTION No. AER-1

RELATING TO THE IMPLEMENTATION OF THE NEW PROVISIONS APPLICABLE IN THE FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (OR) SERVICE BETWEEN 3 025 KHZ AND 18 030 KHZ

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, Malaga - Torremolinos, 1992,

considering

a) that the conditions for use of each of the frequency bands between 3 025 kHz and 18 030 kHz allocated exclusively to the aeronautical mobile (OR) service were modified by this Conference so as to enable a more efficient usage of the frequency spectrum available;

b) that the implementation of the modified conditions of use will require a considerable workload for the administrations since a large number of frequency assignments to both aircraft and aeronautical stations will have to be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;

c) that the full implementation of the modified provisions for the frequency usage may require considerable investments in replacement of the existing equipment;

d) that, nevertheless, the full implementation of the modified provisions for the frequency usage should be made as soon as possible so that the advantages of the new arrangement may be realized at the earliest opportunity;

e) that the changeover to the new conditions of operation should be made with the least possible disruption to the service rendered by each station,

recognizing

a) that the implementation of the decisions made by the present Conference relating to the new arrangement of the frequency bands allocated exclusively to the aeronautical mobile (OR) service between 3 025 kHz and 18 030 kHz should follow an orderly procedure for the transfer of existing services from the old to the new conditions of operation;

b) that the transfer procedures of the existing frequency assignments in the aeronautical mobile (OR) service, in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz, are dealt with in Resolution No. AER-1 adoped by the present Conference,

resolves

1. that the provisions of Appendix 26 (Rev.), as well as the relevant provisions of Article 12 of the Radio Regulations, as modified by the present Conference, shall apply to any new frequency assignment, as from 0001 UTC on 15 December 1992;

Annex 3 (cont.)

2. that administrations shall take all the necessary measures to conform with the new conditions of use of the bands governed by Appendix 26 (Rev.) by not permitting the installations of new equipment whose emissions require a necessary bandwidth exceeding 2 800 Hz as from 15 December 1992;

3. that, until 15 December 1995, the administrations may continue to use their existing assignments in accordance with the characteristics recorded in the Master International Frequency Register; after that date the administrations shall take all necessary measures to modify the characteristics of their assignments so as to bring them in conformity with the provisions of Appendix 26 (Rev.);

4. that, not later than 15 December 1997, the administrations shall discontinue all emissions whose bandwidth exceeds 2 800 Hz,

invites administrations

to make every effort to eliminate mutual incompatibilities which may occur in the transition period.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/45-E
12 February 1992
Original: English

WORKING GROUP 4A

Note by the Chairman of Working Group 4A

Draft first report to Committee 4

1. Working Group 4A, after in-depth discussions of the subjects related to the extensions of the spectrum to the HF broadcasting service, came to the conclusion that several subjects are closely interrelated and that they cannot be considered in isolation, nor a separate decision can be adopted for any separate item. All subjects represent elements of a package, and the final decision will depend on the compromise solution for each element of the package. The elements of the package are contained in Document DT/6.

2. For the examination of the issue of extension of the spectrum to the HF broadcasting, the Working Group adopted a set of guidelines which are to be found in Document DT/16.

3. As an element of the package, the Working Group considered the issue of the allocations to the HF broadcasting in the bands currently regulated by RR 503. The Working Group decided to leave aside, provisionally, these bands, pending consideration of the other bands.

4. The Working Group examined the proposals concerning the possible extensions in the bands above 10 MHz and identified the options which obtained greater support. As elements of the package they will be reconsidered in the light of the other deliberations.

5. Particularly important was the issue of safeguarding the interests of the existing services, the Working Group agreed that this issue represents a substantial element of the package and therefore Committee 5 was urged, by bias of the Chairman of Committee 4, to give priority to this issue (see Document 116).

S. HESS
Chairman of Working Group 4A

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Corrigendum 2 to
Document DT/46-E
20 February 1992
Original: english

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of the Working Group to the Plenary

RESOLUTION 703

Please replace the text in square brackets of the "resolves" in Document DT/46 by the following:

MOD

3. should an Administration, in its reply to the ~~Secretary-General~~ IFRB's consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, ~~or should an Administration not reply to the Secretary-General's consultation as in paragraph 3 above,~~ the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that Administration;

MOD

4. the ~~Secretary-General~~ IFRB shall publish, for the information of all Administrations, a list, ~~prepared by the IFRB~~ on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the Administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not and the Administrations which did not reply;

MOD

5. The Administrations which do not reply to the ~~Secretary-General~~ IFRB's consultation within four months should inform the IFRB of their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations at a later stage.

NOC

6. the IFRB shall take into account:

a) the applicability of the CCIR calculation methods and the interference criteria when making technical examinations with respect to cases involving only Administrations to which such methods and criteria are acceptable;

b) the applicability of the calculation methods and the interference criteria defined in the Radio Regulations in accordance with the list referred to in paragraph 4 above, when making technical examinations with respect to cases involving the Administrations which did not accept or did not reply.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Corrigendum 1 to
Document DT/46-E
19 February 1992
Original: english

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of the Working Group to the Plenary

RESOLUTION 703

Please replace the text in square brackets of the "resolves" in Document DT/46 by the following:

MOD

3. should an Administration, in its reply to the ~~Secretary-General~~ IFRB's consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, ~~or should an Administration not reply to the Secretary-General's consultation as in paragraph 3 above,~~ the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that Administration;

MOD

4. the ~~Secretary-General~~ IFRB shall publish, for the information of all Administrations, a list~~, prepared by the IFRB~~ on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the Administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not and the Administrations which did not reply;

MOD

5. The Administrations which do not reply to the ~~Secretary-General~~ IFRB's consultation within four months should inform the IFRB of their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations at a later stage.

NOC

6. the IFRB shall take into account:

a) the applicability of the CCIR calculation methods and the interference criteria when making technical examinations with respect to cases involving only Administrations to which such methods and criteria are acceptable;

b) the applicability of the calculation methods and the interference criteria defined in the Radio Regulations in accordance with the consolidated list referred to in paragraph 5 above, when making technical examinations with respect to cases involving the other Administrations;

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/46-E
17 February 1992
Original: Spanish

WORKING GROUP OF THE PLENARY

REPORT OF DRAFTING GROUP 4 OF THE WORKING GROUP OF THE PLENARY

Agenda item 2.9.2

1. The Working Group of the Plenary set up Drafting Group 4 to review Resolution No. 703 in accordance with agenda item 2.9.2. The material used as a basis for the Drafting Group's work may be found in Document DT/14, which contains proposals by the United States, Spain, Mali, Ecuador and Mexico.

2. The Administrations of the United States, Canada, France, Morocco, the Russian Federation, India, Italy, Brazil, Ecuador, Algeria, Pakistan and Spain participated in Drafting Group 4, along with the CCIR and the IFRB.

3. Drafting Group 4 held two meetings and prepared a draft revised version of Resolution No. 703. The parts of the text on which no agreement was reached have been left in square brackets, and the different options indicated. It was also decided to submit the draft direct to the Working Group of the Plenary, since the procedure to be adopted will require a broad consensus among the Administrations.

4. The text in question is set out in annex hereto.

M.A. PANDURO PANADERO
Chairman of Drafting Group 4
of WG/PL

EQA/45/33
MOD

USA/12/178-179
MEX/63/111-112

RESOLUTION No. 703 (Rev. WARC-92)

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services[1]

EQA/45/34
SUP

~~1 Replaces Resolution No. Spa2-6 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971:~~

EQA/45/35
MOD

The World Administrative Radio Conference ~~(Geneva, 1979)~~ for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

NOC *a)* that, in frequency bands shared with equal rights by space radiocommunication and terrestrial radiocommunication services, it is necessary to impose certain technical limitations and coordination procedures on each of the sharing services for the purpose of limiting mutual interference;

NOC *b)* that, in frequency bands shared by space stations located on geostationary satellites, it is necessary to impose coordination procedures for the purpose of limiting mutual interference;

NOC *c)* that the calculation methods and interference criteria relating to coordination procedures referred to in paragraphs *a)* and *b)* above are based upon CCIR Recommendations;

E/35/3
MOD

d) that, in recognition of the successful sharing of the frequency bands by space radiocommunication and terrestrial radiocommunication services, and the continuing improvements in space technology and that of the earth segment, each CCIR Plenary Assembly subsequent to the Xth Plenary Assembly (Geneva, 1963) has improved upon some of the technical criteria recommended by the preceding Plenary Assembly;

EQA/45/36
MOD

e) that CCIR Plenary Assemblies are held ~~triennially, whereas~~ more frequently and with greater regularity than Administrative Radio Conferences which are competent to modify the Radio Regulations making substantial use of CCIR Recommendations~~, are in practice held less frequently and with much less regularity~~;

MEX/63/115
ADD

f) that the CCIR has adopted a procedure for approving Recommendations between Plenary Assemblies;

USA/12/183
MOD

~~f)~~ g) that the International Telecommunication Convention ~~(Malaga-Torremolinos, 1973)~~ recognizes the right of Members of the Union to make special agreements on telecommunication matters; however, such agreements shall not be in conflict with the terms of the Convention or of the Regulations annexed thereto as far as harmful interference to the radio services of other countries is concerned,

NOC

is of the opinion

MEX/63/117
MOD

a) that subsequent ~~Plenary Assemblies~~ decisions of the CCIR are likely to make further changes in the recommended calculation methods and interference criteria;

NOC

b) that administrations should receive advance information of the drafts of the relevant CCIR Recommendations;

NOC

c) that the administrations should whenever possible apply the current CCIR Recommendations on sharing criteria when planning systems for use in frequency bands shared with equal rights between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services;

invites

E/35/5
ADD

a) the Administrations to submit contributions to the CCIR Study Groups, providing information on practical results and experience of sharing between terrestrial and space radiocommunication services or between space services, which help to bring about significant improvements in coordination procedures, calculation methods and harmful interference thresholds, and thereby to optimize the available orbit/spectrum resources;

NOC

resolves that

ADD

1. the Director of the CCIR, in consultation with Study Group Chairmen, should prepare a list identifying the relevant parts of new of revised Recommendations approved by the CCIR affecting the calculation methods and the interference criteria and also those specific sections of the Radio Regulations to which they are applicable, relating to sharing between space radiocommunication and terrestrial radiocommunication services, or between space radiocommunication services. The Director of the CCIR should forward this list to the IFRB within thirty days following the approval of these Recommendations;

MOD

2. the ~~Secretary-General~~ IFRB shall forward this list and the appropriate texts to all Administrations within thirty days, asking them to indicate within four months those CCIR Recommendations or specific technical criteria defined in the Recommendations referred to in paragraph 2.a) above to which they agree for use in the application of the pertinent provisions of the Radio Regulations;

EUR/35/9
MOD

3. The Administrations which do not reply to the ~~Secretary-General~~ IFRB's consultation within four months shall be sent a telegram asking for their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations. If no reply is received within thirty days from the date of dispatch of the telegram, it shall be concluded that the Administration ~~does not wish to express an opinion at that time~~agrees to those CCIR Recommendations or specific technical criteria defined in the Recommendations referred to in paragraph 2a) above for use in the application of the pertinent provisions of the Radio Regulations;

4. should an Administration, in its reply to the ~~Secretary-General~~ IFRB's consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, ~~or should an Administration not reply to the Secretary-General's consultation as in paragraph 3 above,~~ the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that Administration;

5. the ~~Secretary-General~~ IFRB shall publish, for the information of all Administrations, a list~~, prepared by the IFRB~~ on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the Administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not~~. This consolidated list shall also include the Administrations mentioned in paragraph 3 above~~;

NOC

6. the IFRB shall take into account:

a) the applicability of the CCIR calculation methods and the interference criteria when making technical examinations with respect to cases involving only Administrations to which such methods and criteria are acceptable;

b) the applicability of the calculation methods and the interference criteria defined in the Radio Regulations in accordance with the consolidated list referred to in paragraph 5 above, when making technical examinations with respect to cases involving the other Administrations;

MOD 3. the administrations which do not reply to the ~~Secretary-General's~~ IFRB'S consultation within four months shall be sent a telegram asking for their decision on the application of these Recommendations under the relevant provisions of the Radio Regulations. If no reply is received within thirty days from the date of dispatch of the telegram, it shall be concluded that the administration does not wish to express an opinion at that time;

MOD 4. should an administration, in its reply to the ~~Secretary-General's~~ IFRB'S consultation, indicate that a given CCIR Recommendation or technical criterion defined in those Recommendations is unacceptable, or should an administration not reply to the Secretary-General's consultation as in paragraph 3 above, the relevant calculation methods and the interference criteria defined in the Radio Regulations shall continue to apply with respect to cases involving that administration;

MOD 5. the ~~Secretary-General~~ IFRB shall publish, for the information of all administrations, a list, ~~prepared by the IFRB~~ on the basis of the replies to the enquiry, of the CCIR Recommendations or of the relevant calculation methods and the interference criteria defined in those Recommendations, indicating the administrations to which each of those Recommendations or relevant technical criteria are acceptable or are not. This consolidated list shall also include the administrations mentioned in paragraph 3 above;

NOC 6. the IFRB shall take into account:

a) the applicability of the CCIR calculation methods and the interference criteria when making technical examinations with respect to cases involving only administrations to which such methods and criteria are acceptable;

b) the applicability of the calculation methods and the interference criteria defined in the Radio Regulations in accordance with the consolidated list referred to in paragraph 5 above, when making technical examinations with respect to cases involving the other administrations;

MOD 7. the ~~Secretary-General of the ITU~~ IFRB shall annually remind administrations which have not previously replied to communicate their decision in pursuance of paragraph 3 above;

NOC 8. if, at a later date, questions arise concerning the application of the relevant calculation methods and interference criteria to a case involving the administrations mentioned in paragraph 3 above, the IFRB shall enquire of the administrations concerned whether or not they would agree to the application of the methods and criteria defined in the relevant CCIR Recommendations referred to in paragraph 2 above;

NOC 9. the consolidated list published pursuant to paragraph 5 above shall be updated on the basis of the replies received in accordance with paragraphs 7 and 8 above.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/47-E
13 February 1992
Original: English

WORKING GROUP 5B

Source: Document DT/43

SECOND REPORT OF SUB-WORKING GROUP 5B-2 TO WORKING GROUP 5B

1. Further to Document DT/30, Sub-Working Group 5B-2 examined the text of Annex 4 to Document 5. The text as approved by the Sub-Working Group is enclosed.

2. The Delegation of the Kingdom of Morocco reserved its position with respect to the enclosed text.

W. PAPPAS

Chairman of Sub-Working Group 5B-2

Annex: 1

ANNEX

DRAFT NEW RESOLUTION No. COM5/[2]

Transfer of Frequency Assignments of Aeronautical Stations Operating in the Frequency Bands Allocated Exclusively to the Aeronautical Mobile (OR) Service Between 3 025 kHz and 18 030 kHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the conditions for use of each of the frequency bands between 3 025 kHz and 18 030 kHz allocated exclusively to the aeronautical mobile (OR) service were modified by this Conference so as to enable a more efficient usage of the frequency spectrum available;

b) that the Administrations will need to change the frequencies of their aeronautical and aircraft stations to bring them into conformity with the new Frequency Allotment Plan, as contained in Appendix 26(Rev.), and to notify such transfers, where appropriate, to the Board,

resolves

1. that, within 90 days from the date on which this Conference ends, the Board shall send to each Administration a list of assignments to stations of the aeronautical mobile (OR) service entered on its behalf in the Master Register in the bands allocated exclusively to that service between 3 025 kHz and 18 030 kHz;

2. that, in the above list, the Board shall indicate, for each frequency assignment, a replacement frequency(-ies) which fulfils the conditions of Appendix 26(Rev.) and which is intended to replace the frequency of the assignment concerned;

3. that, after the receipt of the above list, the Administrations shall take all the necessary measures to modify the characteristics of their assignments, so as to bring them in conformity with the provisions of Appendix 26(Rev.), as early as possible and in any event, by 15 December 1997 at the latest; any modification which has been implemented shall be notified to the Board in accordance with RR 1214;

4. that the frequency assignments notified by Administrations under paragraph 3 above shall be examined by the Board under the relevant provisions of Sub-Section IIC and Section III of Article 12 of the Radio Regulations, as modified by this Conference;

5. that the assignments existing in the Master Register on 15 December 1997 which are not in conformity with the conditions of Appendix 26(Rev.) shall be treated as follows:

5.1 within 60 days from 15 December 1997, the Board shall send relevant extracts of the Master Register to the Administrations concerned advising them that, in accordance with the terms of the present Resolution, the assignments in question are to be modified, within a period of 90 days, so as to conform with the conditions of Appendix 26(Rev.);

5.2 if an Administration fails to notify the Board of the modifications within the prescribed period, the original entry will be retained in the Master Register for information only, without a date in Column 2, without a finding in Column 13A and with a suitable remark in the Remarks column. The Administration will be advised of this action.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/48-E
13 February 1992
Original: English

WORKING GROUP 4A

Note by the Chairman of Working Group 4A

The following text of the new Footnote 530A is submitted for consideration by the Working Group 4A:

ADD **530A** On condition that no harmful interference is caused to the broadcasting service, frequencies in the bands [...] may be used by stations in the fixed [and] [land] [mobile] service[s] communicating only within the boundary of the country in which they are located. In making frequency assignments to stations in the fixed and mobile services in these bands, the Administrations are urged to use the minimum power required and to take account of the High Frequency Broadcasting Plans published in accordance with the Radio Regulations.

S. HESS
Chairman of Working Group 4A

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Revision 1 to
Document DT/49-E
18 February 1992
Original: English

WORKING GROUP 4A

Note by the Chairman of Working Group 4A

The attached text of the draft new Recommendation is submitted for consideration by the Working Group 4A.

S. HESS
Chairman of Working Group 4A

DRAFT RECOMMENDATION [WG 4A-1]

Relating to the Introduction of Single-Sideband Emissions and Possible Advancement of the Date for Cessation of the Use of Double-Sideband Emissions in the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the WARC HFBC-87 in Resolution No. 517 called for the introduction of SSB transmissions in the HF bands allocated exclusively to the broadcasting service with the characteristics specified in Appendix 45 to the Radio Regulations;

b) the difficulties expressed by administrations to allocate frequency bands for HF broadcasting;

c) that the use of single-sideband (SSB) instead of double-sideband (DSB) modulation techniques would lead to improved spectrum utilization;

d) that in accordance with Recommendation No. 515 (HFBC-87) new HF broadcasting transmitters installed after 31 December 1990 should as far as possible be capable of operating either in both modes, SSB and DSB, or in the SSB mode alone;

e) that the new extension bands allocated by WARC-92 for HF broadcasting should be reserved only for SSB emissions;

f) that Resolution No. 517 (HFBC-87) specifies the date of 31 December 2015 for the cessation of DSB emissions;

g) that some administrations have recommended advancing the date for cessation of DSB emissions by up to ten years before the date given above;

h) that in accordance with Resolution No. 517 (HFBC-87) there is a need, prior to the final confirmation of the date for the cessation of DSB transmissions in the HF broadcasting service, for a competent WARC to consider the worldwide distribution of SSB transmitters and synchronous demodulator receivers,

recommends

1. that the next competent WARC should consider the possibility of advancing by as much as possible the date given in **considering** e) for the cessation of DSB emissions;

2. that the Administrative Council should be invited to place this Recommendation on the agenda for the next competent WARC.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/49-E
13 February 1992
Original: English

WORKING GROUP 4A

Note by the Chairman of Working Group 4A

The attached text of the draft new Recommendation is submitted for consideration by the Working Group 4A.

S. HESS
Chairman of Working Group 4A

DRAFT RECOMMENDATION [WG 4A-1]

Relating to the Introduction of Single-Sideband Emissions and Possible Advancement of the Date for Cessation of the Use of Double-Sideband Emissions in the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the WARC HFBC-87 in Resolution No. 517 called for the introduction of SSB transmissions in the HF bands allocated exclusively to the broadcasting service with the characteristics specified in Appendix 45 to the Radio Regulations;

b) that the use of single-sideband (SSB) instead of double-sideband (DSB) modulation techniques would lead to improved spectrum utilization;

c) that in accordance with Recommendation No. 515 (HFBC-87) new HF broadcasting transmitters installed after 31 December 1990 should as far as possible be capable of operating either in both modes, SSB and DSB, or in the SSB mode alone;

d) that the new extension bands allocated by WARC-92 for HF broadcasting should be reserved only for SSB emissions;

e) that Recommendation No. 517 (HFBC-87) specifies the date of 31 December 2015 for the cessation of DSB emissions;

f) that in accordance with Recommendation No. 517 (HFBC-87) there is a need, prior to the final confirmation of the date for the cessation of DSB transmissions in the HF broadcasting service, for a competent WARC to consider the worldwide distribution of SSB transmitters and synchronous demodulator receivers,

recommends

1. that the next competent WARC should consider the possibility of advancing by up to 10 years the date given in **considering** e) for the cessation of DSB emissions;

2. that the Administrative Council should be invited to place this Recommendation on the agenda for the next competent WARC.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/50-E
14 February 1992
Original: English

WORKING GROUP 5B

NOTE FROM THE CHAIRMAN OF WORKING GROUP 5

INTERIM REGULATORY PROCEDURES FOR THE COORDINATION AND NOTIFICATION OF FREQUENCY ASSIGNMENTS OF NON-GEOSTATIONARY SATELLITE NETWORKS IN CERTAIN SPACE SYSTEMS AND THE OTHER SERVICES TO WHICH THE BANDS ARE ALLOCATED

As indicated in Document DT/15, one of the tasks of WG5B is to consider and develop the procedures concerning coordination of geostationary and non-geostationary satellite networks. Three detailed proposals (CAN/23, EUR/46 and Addendum 3 to USA/12) as well as a proposal concerning principles (MRC/93) are before WG5B for consideration.

In order to facilitate the discussion and detailed consideration on this issue I have had prepared the attached text which has been developed by combining and aligning material from the three detailed proposals listed above. It consists of a proposed Resolution which includes an annex containing the detailed procedure.

In preparing the text the recommendations of the Voluntary Group of Experts considering the simplification of the Radio Regulations have been followed. Existing regulatory texts (that of Article 11), suitably modified and simplified, have been used as the basis of the procedure.

J.P. LUCIANI
Chairman

Annex

RESOLUTION No. COM 5/[ ]

Relating to interim procedures for the coordination and notification of the Frequency Assignments of Non-Geostationary Satellite Networks in Certain Space Systems and the other services to which the bands are allocated[1]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that in several different space radiocommunication services there is increasing interest in the use of the space systems using non-geostationary-satellite orbits (non-GSO);

b) that, in order to ensure the interference-free operation of such systems and of other radio services and systems sharing the same frequency bands on the basis of equality of the relevant allocations, there is a need for procedures to regulate the frequency assignments of satellite networks in non-GSO systems;

c) that the coordination concepts and the sharing criteria required for the adoption of a fully developed coordination procedure relating to non-GSO systems are not yet available;

d) that, consequently, there is a need for interim procedures to be applied until such time as a future conference, with the benefit of further studies by the CCIR and taking account of the experience gained in practice, will be able to adopt a more permanent procedure,

considering also

e) that the Plenipotentiary Conference, Nice, 1989, initiated the formation of a Voluntary Group of Experts, one of whose tasks is to simplify the procedures of the Radio Regulations;

f) that any new procedures adopted by this present Conference must therefore be as simple as possible and should where appropriate make use of the existing procedures of the Radio Regulations;

g) that any interim procedures must take full account of the status of the allocations to services, both terrestrial and space, in any frequency bands which may be used by non-GSO systems;

h) that any interim procedures must also take full account of the interests of all countries regardless of the state of development of their terrestrial and space radiocommunication services,

considering further

j) that the provisions of No. 2613 of the Radio Regulations, while necessary to safeguard GSO systems in the fixed-satellite service from interference which might be caused by non-GSO systems, would if more widely applied prejudice the development of non-GSO systems in other space radiocommunication services,

resolves

1. that pending the adoption of a more permanent procedure by a future competent conference, the use of frequency assignments by a) non-GSO systems in the space services in relation to other non-GSO systems, GSO systems and terrestrial systems, b) GSO systems in relation to non-GSO systems and c) terrestrial systems in relation to non-GSO systems, to which this Resolution applies shall be regulated in accordance with the interim procedures and the associated provisions in the Annex hereto;

2. to invite all administrations concerned in or by the introduction and operation of non-GSO systems in the relevant space services to cooperate in the application of these interim procedures;

3. to invite the IFRB to cooperate in the application of these procedures;

---

[1] This Resolution shall be applied only to the frequency bands [MHz]

4. to invite the IFRB to provide the necessary assistance to administrations in the application of the provisions of the Annex to this Resolution:

5. to invite all those administrations which acquire experience in the operation of the annexed interim procedures to contribute to the studies of the CCIR;

6. to invite the CCIR to study and develop Recommendations on the coordination concepts, the necessary orbital data relating to non-GEO systems, and the sharing criteria required for more permanent procedures to regulate mutual interference between non-GSO systems, between non-GSO and GSO systems, and between non-GSO systems and terrestrial services sharing frequency bands in which the allocations to space services and terrestrial services have the same status;

7. to invite the Secretary-General to bring this Resolution, at an appropriate stage, to the attention of the Administrative Council with a view to inclusion of this subject in the agenda of a future conference.

NOTE To give this resolution status, a reference to this resolution should be added to the footnotes to the titles of Art. 11, and 13.

Annex to Resolution Com. 5/[ ]

Coordination and Notification of Frequency assignments to Stations in the Bands [ ], [ ], Mhz and to Appropriate Terrestrial Stations [1,2,3]

Section I. Procedures for the Advance Publication of Information on Planned Satellite Networks

Publication of Information

1.1 An administration (or one acting on behalf of a group of named administrations) which intends to bring into use a satellite network within a satellite system shall, prior to the coordination procedure described in paragraphs **2.1** and **2.2**, send to the International Frequency Registration Board, not earlier than six years[4] and preferably not later than two years before the date of bringing into service of each satellite network, the information listed in Appendix **4**.

1.2 Amendments to the information sent in accordance with the provisions of paragraph **1.1** shall also be sent to the Board as soon as they become available. Modifications which are of such a nature as to significantly change the character of the network may require recommencing the advance publication procedure.

1.3 On receipt of the complete information sent under paragraphs **1.1** and **1.2**, the Board shall publish it in a special section of its weekly circular within three months. When the Board is not in a position to comply with the time limit referred to above, it shall periodically so inform the administrations, giving the reasons therefor.

Comments on Published Information

1.4 If, after studying the information published under paragraph **1.3**, any administration is of the opinion that interference which may be unacceptable may be caused to assignments of its existing or planned satellite networks or to assignments to its existing or planned terrestrial radiocommunication stations, it shall, within four months after the date of the weekly circular containing the complete information listed in Appendix **4**, send the administration concerned its comments on the particulars of the interference to its existing or planned satellite systems or to its existing or planned terrestrial stations. A copy of these comments shall also be sent to the Board. If no such comments are received from an administration within the period mentioned above, it may be assumed that the administration has no basic objections to the planned satellite network(s) of that system on which details have been published.

Resolution of Difficulties

1.5 An administration receiving comments sent in accordance with paragraph **1.4** and administrations sending such comments shall endeavour to resolve any difficulties that may arise and shall provide any additional information that may be available.

Results of Advance Publication

1.6 An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of paragraphs **1.1** to **1.3** shall, after the period of four months specified in paragraph **1.4**, inform the Board whether or not comments provided for in paragraph **1.4** have been received and of the progress made in resolving any difficulties. Additional information on the progress made in resolving any remaining difficulties shall be sent to the Board at intervals not exceeding six months prior to the commencement of coordination or the sending of the notices to the Board. The Board shall publish this information in the special section of its weekly circular.

1.7 When, upon expiry of a period of six years plus the extension provided for in No. **1550** after the date of the publication of the special section referred to in paragraph **1.3**, the administration responsible for the network has not submitted the Appendix **3** information for coordination under paragraph **2.1** or paragraph **2.2** the information published under paragraph **1.3** shall be cancelled after the administration concerned had been informed.

Commencement of Coordination or Notification Procedures

1.8 When communicating to the Board the information referred to in paragraph **1.1**, an administration may, at the same time or at a later time, communicate the information required for the network coordination of a frequency assignment to a station pertaining to a satellite network in accordance with the provisions of paragraph **2.6**. Such coordination information shall be considered as having been received by the Board not earlier than six months after the date of receipt of the information referred to in paragraph **1.1**.

Section II. Coordination of Frequency Assignments to a Station in a Satellite Network

Requirement for Coordination

2.1 Before an administration (or one acting on behalf of one or more named administrations) notifies to the Board or brings into use any frequency assignment to a station in a non-geostationary satellite network, it shall effect coordination of the assignment with any other administration whose assignment, for a station in a geostationary satellite network, or whose assignment, for a station in a non-geostationary satellite network, or whose assignment to a terrestrial station, might be affected.

2.2 Before an administration (or one acting on behalf of one or more named administrations) notifies to the Board or brings into use any frequency assignment to a station in a geostationary satellite network, it shall effect coordination of the assignment with any other administration whose assignment, for a station in a non-geostationary satellite network, might be affected.

2.3 Coordination under paragraphs **2.1** and **2.2** may be effected for a satellite network using the information relating to the space station, including its service area, and the parameters of one or more typical earth stations which may be located in all or part of the space station service area.

2.4 If a frequency assignment is brought into use before the commencement of the coordination procedure of paragraphs **2.1** or **2.2**, when this coordination is required, the operation in advance of the receipt by the Board of the Appendix **3** information shall in no way afford any priority of the date.

2.5 Frequency assignments to be taken into account in the application of paragraphs **2.1** and **2.2** are those with a frequency overlap with the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights, and which:

for space services, are:

2.5.1 in conformity with No. **1503**, *and*

2.5.2 either recorded in the Master Register, or coordinated under the provisions of this Section; *or*

2.5.3 included in the coordination procedure with effect from the date of receipt by the Board, in accordance with paragraph **2.6**, of the relevant information as specified in Appendix **3**;

or, for terrestrial services, are:

2.5.4 in conformity with No. **1240**, and

2.5.5 either recorded in the Master register, *or*

2.5.6 not notified but in use or planned to be brought into use within the next [three years]

Coordination Data

2.6 The administration seeking coordination shall send to the Board the information listed in Appendix **3**.

2.7 On the receipt of the complete information referred to in paragraph **2.6**, the Board shall:

2.7.1 examine this information with respect to its conformity with No. **1503**; the date of receipt of the information shall be considered as the date from which the assignment will be taken into account for coordination;

2.7.2 publish in the special section of its weekly circular, within three months, the information received under paragraph **2.6** and the result of the examination under paragraph **2.7.1** as well as a list of administrations whose assignments comply with paragraphs **2.5.1** to **2.5.3** or paragraphs **2.5.4** and **2.5.5**. When the Board is not in a position to comply with the time limit referred to above, it shall periodically so inform the administrations giving the reasons therefor.

Examination of Coordination Data and Agreement Between Administrations

2.8 On receipt of the special section referred to in paragraph **2.7.2** , an administration shall promptly examine the matter with regard to interference which would be caused to the frequency assignments of its network or terrestrial stations, or caused by these assignments. In so doing, it shall have regard to the proposed date of bringing into use of the assignment for which coordination was sought. It shall then, within four months from the date of the relevant weekly circular, notify the administration seeking coordination of its agreement. If, however, the administration with which coordination is sought does not agree, it shall, within the same period, send to the administration seeking coordination the technical details of the networks or stations concerned upon which its disagreement is based, including those characteristics contained in Appendix **1** or Appendix **3** which have not previously been notified to the Board, and make such suggestions as it is able to offer with a view to a satisfactory solution of the problem. A copy of these comments shall also be sent to the Board. Any administration not providing full technical details of the basis of its disagreement within the four month period shall be considered as not being affected by the proposed network.

Results of Coordination

2.9 An administration which has initiated a coordination procedure under the provisions of paragraphs **2.1** to **2.6** shall communicate to the Board the names of the administrations with which an agreement has been reached. The Board shall publish this information in the special section of its weekly circular.

2.10 An administration which sought the coordination, as well as any administration which responded in accordance with paragraph **2.8**, shall communicate to the Board any modifications to the published characteristics of their respective networks or stations that were required to reach agreement on the coordination. The Board shall publish this information in accordance with paragraph **2.7.2**, indicating that these modifications resulted from the joint effort of the administrations concerned to reach agreement on coordination and for this reason they should be given special consideration.

Notification of Frequency Assignments in the Event of Continuing Disagreement

2.11 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of publication of the special section referred to in paragraph **2.7.2**, taking into account the provisions of No. **1496**. When the assistance of the Board has been requested the submission of the notice is to be deferred for a further three months.

Section III. Coordination of Frequency Assignments to Typical Earth Stations in a Non-Geostationary Satellite Network in Relation to Terrestrial Stations

Requirement for Coordination

3.1 Before an administration notifies to the Board or brings into use any frequency assignment to typical earth stations in a particular band allocated with equal rights to space and terrestrial radiocommunication services, it shall effect coordination of the assignment with each administration whose territory lies wholly or partly within the coordination area.[5] The request for coordination concerning typical earth stations may specify all or some of the frequency assignments of the associated space station, but thereafter each assignment shall be dealt with individually.

Coordination Data

3.2 For the purpose of effecting coordination, the administration requesting coordination shall send to each administration concerned under paragraph **3.1** a copy of the diagram drawn to an appropriate scale indicating the service area in which it is intended to operate the typical earth stations, including all pertinent information concerning the proposed frequency assignment as listed in Appendix **3**, and an indication of the approximate date on which it is planned to begin operations. A copy of this information with the date of dispatch of the request for coordination shall also be sent for the information of the Board.

Acknowledgement of Receipt of Coordination Data

3.3 An administration with which coordination is sought under paragraph **3.1** shall immediately acknowledge receipt of the coordination data.

Examination of Coordination Data and Agreement Between Administrations

3.4 On receipt of the coordination data an administration shall, having regard to the proposed date of bringing into use of the assignment for which coordination was requested, promptly examine the matter with regard to both:

3.4.1 interference which would affect the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer; *and*

3.4.2 interference which would be caused to reception at the earth station by the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer.

3.5 The administration with which coordination is sought shall, within four months from dispatch of the coordination data:

3.5.1 notify the administration requesting coordination of its agreement with a copy to the Board, indicating, where appropriate, the part of the allocated frequency band containing the coordinated frequency assignments; *or*

3.5.2 send to that administration a request for inclusion in coordination of the terrestrial radiocommunication stations mentioned in paragraphs **3.4.1** and **3.4.2**; *or*

3.5.3 notify that administration of its disagreement.

3.6 In the cases mentioned in paragraphs **3.5.2** and **3.5.3**, the administration with which coordination is sought shall send to the administration requesting coordination a copy of a diagram drawn to an appropriate scale indicating the location of those terrestrial radiocommunication stations which are or will be within the coordination area together with all other relevant basic characteristics using Appendix **1** and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

3.7 When the administration with which coordination is sought sends to the administration seeking coordination the information required in the case of paragraph **3.5.3**, a copy thereof shall also be sent to the Board. The Board shall consider as notifications in accordance with Section I of Article **12** only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three months.

3.8 When an agreement on coordination is reached, as a consequence of paragraph **3.5** to **3.6**, the administration responsible for the terrestrial stations may send to the Board the information concerning those terrestrial stations covered by the agreement which are intended to be notified in accordance with Section I of Article **12**. The Board shall consider as notifications in accordance with that Section only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three years.

Notification of Frequency Assignments in the Event of Continuing Disagreement

3.9 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of the request for coordination, taking into account the provisions of No. **1496**. When the assistance of the Board has been requested the submission of the notice is to be deferred for a further three months.

Section IV. Coordination of Frequency Assignments to Terrestrial Stations for Transmission in Relation to Typical Earth Stations in a Non-Geostationary-Satellite Network

Requirement for Coordination

4.1 Before an administration notifies to the Board, or brings into use any frequency assignment to a terrestrial station within the coordination area[5] of a non-geostationary-satellite network, in a band allocated with equal rights to terrestrial radiocommunication services and space radiocommunication services (space-to-Earth), it shall effect coordination of the proposed assignment with the administration responsible for the earth stations with respect of the frequency assignments which are:

4.1.1 in conformity with No. **1503**; *and*

4.1.2 either in conformity with paragraph **2.5.2**; *or*

4.1.3 in conformity with paragraph **2.5.3.**

Coordination Data

4.2 For the purpose of effecting coordination, the administration requesting coordination shall send to any other administration concerned under paragraphs **4.1** to **4.1.3**, by the fastest possible means, a copy of a diagram drawn to an appropriate scale indicating the location of the terrestrial station and all other pertinent details of the proposed frequency assignment, and the approximate date on which it is planned to bring the station into use. The request for coordination may specify all or some of the frequency assignments expected to be used within the next three years by stations of a terrestrial network wholly or partly within the coordination area of the earth stations. Thereafter each assignment shall be dealt with individually.

Acknowledgement of Receipt of Coordination Data

4.3 An administration with which coordination is sought under paragraphs **4.1** to **4.1.3** shall immediately acknowledge receipt of the coordination data.

Examination of Coordination Data and Agreement Between Administrations

4.4 On receipt of the coordination data, the administration with which coordination is sought shall promptly examine the matter with regard to interference which would affect the services rendered by its earth stations covered by paragraphs **4.1** to **4.1.3**, which are operating, or are to be operated, within the next three years.

4.5 In so doing, the administration may take into account any frequency assignment communicated to it for use more than three years in advance.

4.6 The administration with which coordination is sought shall, within an overall period of four months from dispatch of the coordination data, either notify the administration requesting coordination of its agreement to the proposed assignment or, if this is not possible, indicate the reasons for its objection and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

Notification of Frequency Assignments in the Event of Continuing Disagreement

4.7 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of the request for coordination, taking into account the provisions of Nos. **1230** and **1496**. When the assistance of the Board has been requested the submission of the notice is to be deferred for a further three months.

Section V. Notification of Frequency Assignments

Notification of Assignments to Terrestrial Stations

5.1 When applying the provisions of Article **12** the Board shall, in application of No. **1353**, examine frequency assignment notices to terrestrial stations covered by this Resolution with respect to their conformity with the provisions of paragraphs **4.1** to **4.1.3** relating to coordination of the use of the frequency assignment with the other administrations concerned.

Notification of Assignments to Satellite Networks and earth stations

5.2 When applying the provisions of Article **13** to frequency assignment notices to satellite networks and earth stations covered by this Resolution the Board shall:

5.2.1 in application of No. **1504**, examine the notice with respect to its conformity with the provisions of paragraphs **2.1** or **2.2** relating to coordination of the use of the frequency assignment with the other administrations concerned.

5.2.2 in application of No. **1505**, examine the notice with respect to its conformity with the provisions of paragraph **3.1** relating to coordination of the use of the frequency assignment with the other administrations concerned.

5.2.3 in application of No. **1506**, examine the notice with respect to the probability of harmful interference when the coordination under paragraph **2.1** or **2.2** has not been successfully affected; this examination shall take into account the frequency assignments for transmission or reception already recorded in the Master Register.

5.2.4 in application of No. **1509**, examine the notice with respect to the probability of harmful interference when the coordination under paragraph **3.1** has not been successfully affected; this examination shall take into account the frequency assignments for transmission or reception already recorded in the Master Register.

1
2
3
4
5

1 The assistance of the IFRB can be requested in the application of the provisions of this Annex.

2 In the absence of specific provisions relating to the evaluation of the interference, the calculation methods and the criteria should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution 703 or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

3 When applying the provisions of this Resolution for non-geostationary-satellite networks, administrations should provide the following information, in addition to that of Appendix 3 or Appendix 4: **[list of data items]**.

4 See also No. **1550**.

5, 6 The coordination area is defined as the service area of the associated non-geostationary space station extended in all direction by a coordination distance of [500] km.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/51(Rev.2)-E
19 February 1992
Original: English

WORKING GROUP 4B

Report of the Chairman of Drafting Group 4B3
to the Chairman of Working Group 4B

SUMMARY OF PROPOSALS ON AGENDA ITEM 2.2.3a

This report contains a summary of proposals dealing with BSS (S) and complementary terrestrial broadcasting service. The proposals listed below are summarized in the attached Table I and arranged in frequency band order.

During the 4B meetings, some administrations have verbally either announced or modified their positions. Table II summarizes such positions.

Administration	Document	Proposal
URS	7 + Corr.1	39, 40, 41, 42, 43
USA	12(Add.1), 10	194, 196 to 199
KEN	13	7
PNG	16	-
EUR	20 + Corr.1	39 to 49
CAN	23	10 to 21
NZL	26	3 to 7
J	27 + Corr.1 + Add.1	44, 49 to 56, 85 to 87
FNL	28	1 to 5
B	30	21 to 24
AUS	31	2 to 4
IND	34 + Corr.1	10, 10A, 31 to 33
PRG	37	12
MLI	39(Rev.1)	8
ALG	40	-
PAK	44	14 to 17

Administration	Document	Proposals
EQA	45	-
VUT	48	10
ISR	51 + Add.3	14
INS	52	3
THA	56	4
MEX	63	-
LUX	64	1
CUB	65	3
TZA	74	6
SEN	75	-
ZMB	91	2
IRN	98 + Add.1	-
TUN	99	-
TUR	101	6
BEN	111	4
ARB	119	-
BGD	126	47
LBY	131 + Add.1	1
CVA	135	1
YUG	143	1
GUI	160	-

TABLE I

Summary of Written Proposals for Preferred Band for BSS(S) Allocation

1.5 GHz (1 427 - 1 525 MHz)	AMOUNT OF SPECTRUM (MHz)	2.5 GHz (2 500 - 2 690 MHz)	AMOUNT OF SPECTRUM (MHz)	OTHER BANDS	AMOUNT OF SPECTRUM (MHz)	OTHER POSITIONS
PNG(3)/16	about 30	URS/7 (within 2 500 - 2 655 MHz)	60	USA/12 (2 310 - 2 360 MHz)(4)	50	IND/34 a) (1 456 - 1 515 MHz) b) (2 500 - 2 690 MHz)
CAN(3)/23 (1 441 - 1 515 MHz)	74	KEN/13	-	NZL/26 (742 - 806 MHz)	64	EQA(1)/45
FNL(2)/28 (1 475 - 1 525 MHz)	50	*EUR(2)/20 (2 570 - 2 620 MHz)	50			VUT(1)/48
B(3)/30 (1 427 - 1 475 MHz)	48	J(2)/27(4) (2 565 - 2 625 MHz)	60			MEX(1)/63 (within 1.4 - 3 GHz)
AUS(3)/31 (1 456.5 - 1 490 MHz)	33.5	PAK/44 (2 570 - 2 620 MHz)	50			CUB(1)/65
PRG(3)/37 (1 427 - 1 475 MHz)	48	INS/52 (except 2 530 - 2 642 MHz)	-			**ARB(1)/119
MLI(1)/39	-	THA/56 (2 500 - 2 530 MHz)	30			
ALG(2)/40	50	TZA/74 (2 570 - 2 620 MHz)	50			
LUX(2)/64 (1 441 - 1 515 MHz)	74	ISR/51	-			
SEN(2)/75 (1 460 - 1 525 MHz)	65	ZMB/91 (around 2 500 - 2 600 MHz)	-			
IRN/98 (1 429 - 1 525 MHz)	-	GUI/160	50			

TABLE I (continued)

1.5 GHz (1 427 - 1 525 MHz)	AMOUNT OF SPECTRUM (MHz)	2.5 GHz (2 500 - 2 690 MHz)	AMOUNT OF SPECTRUM (MHz)	OTHER BANDS	AMOUNT OF SPECTRUM (MHz)	OTHER POSITIONS
TUN(2)/99	50					
TUR(2)/101	-					
BEN(3)/111	-					
	-					
LBY/131	60					
CVA/135	50					
YUG/143 (1 429 - 1 515 MHz)	-					

* 19 Administrations ** 15 Administrations

(a) Footnote to the allocation: subject to coordination.

(b) Use of existing BSS allocation for certain application of BSS (S).

(1) Protection to existing services.

(2) Primary status foreseen.

(3) Co-primary status foreseen.

(4) Noc 1 429 - 1 525 MHz.

(5) See also attached note.

TABLE II

Summary of verbal proposals for preferred band for BSS (S) allocation

1.5 GHz (1 427 - 1 525 MHz)	AMOUNT OF SPECTRUM (MHz)	2.5 GHz (2 500 - 2 690 MHz)	AMOUNT OF SPECTRUM (MHz)	OTHER BANDS	AMOUNT OF SPECTRUM (MHz)	OTHER POSITIONS
ETH (1 427 - 1 487 MHz)	60	PHL (within 2 500 - 2 600 MHz)	50	ARG (2 310 - 2 360 MHz)	50	GHA (1 500 or 2 500 MHz)
MCO (around 1 500 MHz)	50	UAE (around 2 500 MHz)	50	BFA(1) (1 500 - 2 000 MHz)		
CTI (1 456.5 - 1 490 MHz)	33.5			CTI (2 310 - 2 410 MHz)	100	
F (1 475 - 1 525 MHz)	50			SUR (2 310 - 2 360 MHz)	50	
AUS(2) (1 456.5 - 1 490 MHz)	33.5					
GHA(3) (around 1 500 MHz)						

(1) Protection to existing services.

(2) Objection to band 2.3 - 2.5 GHz due to difficulties of sharing with other services.

(3) Second option around 2 500 MHz.

CME (1 400 - 1 500)

CTI

INS

JOR

ARS

SNG

During the 4B meeting of 14 February 1992, some administrations have either verbally announced or modified their positions without submitting a written proposal to Mr. Serafini (Box 287).

Such administrations are not included in Table II:

MEX	1.5 GHz	BGD	2.5 GHz
CLM	1.5 GHz	SNG	2.5 GHz
SYR	1.5 GHz	GUI	2.5 GHz
CHL	1.5 GHz	KOR	2.5 GHz

Position of Venezuela: (2 300 - 2 500 MHz)

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Revision 1 to
Document DT/51-E
17 February 1992
Original: English

WORKING GROUP 4B

Report of the Chairman of Drafting Group 4B-3
to the Chairman of Working Group 4B

SUMMARY OF PROPOSALS ON AGENDA ITEM 2.2.3a

This report contains a summary of proposals dealing with BSS (S) and complementary terrestrial broadcasting service. The proposals listed below are summarized in the attached Table I and arranged in frequency band order.

During the 4B meetings, some administrations have verbally either announced or modified their positions. Table II summarizes such positions.

Administration	Document	Proposal
URS	7 + Corr.1	39, 40, 41, 42, 43
USA	12(Add.1), 10	194, 196 to 199
KEN	13	7
PNG	16	-
EUR	20 + Corr.1	39 to 49
CAN	23	10 to 21
NZL	26	3 to 7
J	27 + Corr.1 + Add.1	44, 49 to 56, 85 to 87
FNL	28	1 to 5
B	30	21 to 24
AUS	31	2 to 4
IND	34 + Corr.1	10, 10A, 31 to 33
PRG	37	12
MLI	39(Rev.1)	8
ALG	40	-
PAK	44	14 to 17

Administration	Document	Proposals
EQA	45	-
VUT	48	10
ISR	51 + Add.3	14
INS	52	3
THA	56	4
MEX	63	-
LUX	64	1
CUB	65	3
TZA	74	6
SEN	75	-
ZMB	91	2
IRN	98 + Add.1	-
TUN	99	-
TUR	101	6
BEN	111	4
ARB	119	-
BGD	126	45, 46
LBY	131 + Add.1	1
CVA	135	1
YUG	143	1

TABLE I

Summary of Written Proposals for Preferred Band for BSS(S) Allocation

1.5 GHz (1 427 - 1 525 MHz)	AMOUNT OF SPECTRUM (MHz)	2.5 GHz (2 500 - 2 690 MHz)	AMOUNT OF SPECTRUM (MHz)	OTHER BANDS	AMOUNT OF SPECTRUM (MHz)	OTHER POSITIONS
PNG(3)/16	-	URS/7 (within 2 500 - 2 655 MHz)	60	USA/12 (2 310 - 2 360 MHz)	50	IND/34 a) (1 456 - 1 515 MHz) b) (2 500 - 2 690 MHz)
CAN(3)/23 (1 441 - 1 515 MHz)	74	KEN/13	-	NZL/26 (742 - 806 MHz)	64	EQA(1)/45
FNL(2)/28 (1 475 - 1 525 MHz)	50	*EUR(2)/20 (2 570 - 2 620 MHz)	50			VUT(1)/48
B(3)/30 (1 427 - 1 475 MHz)	48	J(2)/27(4) (2 565 - 2 625 MHz)	60			MEX(1)/63 (within 1.4 - 3 GHz)
AUS(3)/31 (1 456.5 - 1 490 MHz)	33.5	PAK/44 (2 570 - 2 620 MHz)	50			CUB(1)/65
PRG(3)/37 (1 427 - 1 475 MHz)	48	INS/52 (except 2 530 - 2 642 MHz)	-			**ARB(1)/119
MLI(1)/39	-	THA/56 (2 500 - 2 530 MHz)	30			
ALG(2)/40	50	TZA/74 (2 570 - 2 620 MHz)	50			
LUX(2)/64 (1 441 - 1 515 MHz)	74	ISR/51	-			
SEN(2)/75 (1 460 - 1 525 MHz)	65	ZMB/91 (around 2 500 - 2 600 MHz)	-			
IRN/98 (1 429 - 1 525 MHz)	-					

TABLE I (continued)

1.5 GHz (1 427 - 1 525 MHz)	AMOUNT OF SPECTRUM (MHz)	2.5 GHz (2 500 - 2 690 MHz)	AMOUNT OF SPECTRUM (MHz)	OTHER BANDS	AMOUNT OF SPECTRUM (MHz)	OTHER POSITIONS
TUN(2)/99	50					
TUR(2)/101	-					
BEN(3)/111	-					
BGD(5)/126 (1 441 - 1 525 MHz)	-					
LBY/131	60					
CVA/135	50					
YUG/143 (1 429 - 1 515 MHz)	-					

* 19 Administrations ** 15 Administrations

(a) Footnote to the allocation: subject to coordination.

(b) Use of existing BSS allocation for certain application of BSS (S).

(1) Protection to existing services.

(2) Primary status foreseen.

(3) Co-primary status foreseen.

(4) Noc 1 429 - 1 525 MHz.

(5) See also attached note.

TABLE II

Summary of verbal proposals for preferred band for BSS (S) allocation

1.5 GHz (1 427 - 1 525 MHz)	AMOUNT OF SPECTRUM (MHz)	2.5 GHz (2 500 - 2 690 MHz)	AMOUNT OF SPECTRUM (MHz)	OTHER BANDS	AMOUNT OF SPECTRUM (MHz)	OTHER POSITIONS
ETH (1 427 - 1 487 MHz)	60	PHL (within 2 500 - 2 600 MHz)	50	ARG (2 310 - 2 360 MHz)	50	GHA (1 500 or 2 500 MHz)
MCO (around 1 500 MHz)	50	UAE (around 2 500 MHz)	50	BFA(1) (1 500 - 2 000 MHz)		
CTI (1 456.5 - 1 490 MHz)	33.5			CTI (2 310 - 2 410 MHz)	100	
F (1 475 - 1 525 MHz)	50			SUR (2 310 - 2 360 MHz)	50	
AUS(2) (1 456.5 - 1 490 MHz)	33.5					
GHA(3) (around 1 500 MHz)						

(1) Protection to existing services.

(2) Objection to band 2.3 - 2.5 GHz due to difficulties of sharing with other services.

(3) Second option around 2 500 MHz.

During the 4B meeting of 14 February 1992, some administrations have either verbally announced or modified their positions without submitting a written proposal to Mr. Serafini (Box 287).

Such administrations are not included in Table II:

MEX	1.5 GHz	BGD	2.5 GHz
CLM	1.5 GHz	SNG	2.5 GHz
SYR	1.5 GHz	GUI	2.5 GHz
CHL	1.5 GHz	KOR	2.5 GHz

Position of Venezuela: (2 300 - 2 500 MHz)

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/51-E
13 February 1992
Original: English

DRAFTING GROUP 4B3

Report of the Chairman of Drafting Group 4B3
to the Chairman of Working Group 4B

SUMMARY OF WRITTEN PROPOSALS ON AGENDA ITEM 2.2.3a

This report contains a summary of written proposals only. It should be considered also that some Administrations have verbally, during the 4B meetings, either announced or modified their positions, and it is suggested that these additions would be made in the Working Group 4B meeting.

The proposals listed below on BSS (Sound) and associated terrestrial complementary service have been summarized in the attached table and arranged in frequency band order.

Administration	Document	Proposal
URS	7 + Corr.1	39, 40, 41, 42, 43
USA	12(Add.1), 10	194, 196, 197, 198, 199
KEN	13	7
PNG	16	-
EUR	20 + Corr.1	39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49
CAN	23	10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21
NZL	26	3, 4, 5, 6, 7
J	27 + Corr.1	44, 49, 50, 51, 52, 53, 54, 55, 56
FNL	28	1, 2, 3, 4, 5
B	30	21, 22, 23, 24
AUS	31	2, 3, 4
IND	34 + Corr.1	10, 10A, 31, 32, 33
PRG	37	12
MLI	39(Rev.1)	8
ALG	40	-
PAK	44	14, 15, 16, 17

Administration	Document	Proposals
EQA	45	-
VUT	48	10
BFA	49	-
INS	52	3
THA	56	4
MEX	63	-
LUX	64	1
CUB	65	3
TZA	74	6
SEN	75	-
TUN	99	-
TUR	101	6
BEN	111	4
BGD	126	45, 46
LBY	131 + Add.1	1
CVA	135	1

Summary of Written Proposals for Preferred Band for BSS(S) Allocation

1.5 GHz (1 427 - 1 525 MHz)	AMOUNT OF SPECTRUM (MHz)	2.5 GHz (2 500 - 2 690 MHz)	AMOUNT OF SPECTRUM (MHz)	OTHER BANDS	AMOUNT OF SPECTRUM (MHz)	OTHER POSITIONS
PNG(3)/16	-	URS/7 (within 2 500 - 2 655 MHz)	60	USA/12 (2 310 - 2 360 MHz)	50	IND/34 a) (1 456 - 1 515 MHz) b) (2 500 - 2 690 MHz)
CAN(3)/23 (1 441 - 1 515 MHz)	74	KEN/13	-	NZL/26 (742 - 806 MHz)	64	EQA(1)/45
FNL(2)/28 (1 475 - 1 525 MHz)	50	*EUR/20 (2 570 - 2 620 MHz)	50			VUT(1)/48
B(3)/30 (1 427 - 1 475 MHz)	48	J/27 (2 565 - 2 625 MHz)	60			MEX(1)/63 (within 1.4 - 3 GHz)
AUS(3)/31 (1 456.5 - 1 490 MHz)	33.5	PAK/44 (2 570 - 2 620 MHz)	50			CUB(1)/65
PRG(3)/37 (1 427 - 1 475 MHz)	48	INS/52 (except 2 530 - 2 642 MHz)	-			**ARB(1)/119
MLI(1)/39	-	THA/56 (2 500 - 2 530 MHz)	30			
ALG(2)/40	50	TZA/74 (2 570 - 2 620 MHz)	50			
LUX(2)/64 (1 441 - 1 515 MHz)	74					
SEN(2)/75 (1 460 - 1 525 MHz)	65					
TUN(2)/99	50					
TUR(2)/101	-					
BEN(3)/111	-					
BGD/126 (1 441 - 1 525 MHz)	84					
LBY/131	60					
CVA/135	50					

* 19 Administrations ** 15 Administrations (1) Protection to existing services (2) Primary status foreseen (3) Co-primary status foreseen

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

Document DT/52-E
14 February 1992
Original: French/English

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP 5B

Source: Document 24

Report of the Drafting Group to Working Group 5B

On the instructions of Working Group 5B, the Drafting Group considered possible ways of eliminating the differences of interpretation between the English version on the one hand and the French and Spanish versions on the other. It reached the conclusion that the following modification would make the English version more precise:

MOD **2613** § 2. Non-geostationary space stations shall cease or reduce to a negligible level their emissions, and their associated earth stations shall not transmit to them, whenever there is insufficient angular separation between non-geostationary satellites and geostationary satellites [and whenever there is] resulting in unacceptable interference[1] to geostationary-satellite space systems in the fixed-satellite service operating in accordance with these Regulations.

M. LIMODIN
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/53-E
14 February 1992
Original: English

WORKING GROUP 4C

Note from Chairman, ad hoc Group 1 to Working Group 4C

An informal group of delegates from several Administrations met on 10 February to discuss the implications of proposals USA/12/121, 122, 123. The informal group requested that the results of that discussion be presented to the participants of ad hoc Group 1 to Working Group 4C for their consideration. This note presents that information.

Concern was expressed by the Administration of Canada regarding the allocation of the band 31.8 - 32.3 GHz to the space research service (deep space) (space-to-Earth) without due consideration of the safety aspects of the radionavigation service.

The safety aspects of the radionavigation service with respect to the inter-satellite service are adequately protected by Footnote 893. I would submit for your consideration a slight modification to this footnote to extend the same level of protection to the radionavigation service with respect to the space research service.

MOD **893** In designing systems for the space research (deep space), inter-satellite and radionavigation services in the band ~~32~~31.8 - 33 GHz, administrations shall take all necessary measures to prevent harmful interference between these ~~two~~ services, bearing in mind the safety aspects of the radionavigation service (see Recommendation 707).

R.M. TAYLOR
Chairman of ad hoc Group 1 to Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Revision 1 to
Document DT/54-E
17 February 1992
Original: English

WORKING GROUP 4B

Note from the Chairman of Sub-Working Group 4B-2 to the Chairman of Working Group 4B

PROPOSED ALLOCATIONS TO THE MOBILE-SATELLITE SERVICE AND RADIODETERMINATION-SATELLITE SERVICE IN THE BANDS 1 - 3 GHz

The documents included in this chart are:

7-URS, BLR, UKR, 9-NIG, 12-USA, 16-PNG, 20-EUR (AUT, BEL, BUL CVA, CYP, D, DNK, E, F, FNL, G, HOL, HUG, I, LIE, LUX, MCO, MLT, N, POL, POR, ROU, S, SMR, SUI, TCH, TUR), 23-CAN, 26-NZL, 27-J, 30-B, 31-AUS, 34-IND, 40-ALG, 44-PAK, 45-EQA, 48-VUT, 49-BFA, 51-ISR, 52-INS, 56-THA, 61-CHN, 62-CLN, 63-MEX, 65-CUB, 72-F, 74-TZA, 75-SEN, 99-TUN, 111-BEN, 133-NIG.

Documents that were considered but did not include MSS proposals are not reflected in the chart: (8-KOR, 39-MLI, 57 and 94-CTI, 79 and 80-ARG, 126-BGD).

L. LEVIN
Chairman

FREQUENCY BANDS		PRESENT STATUS (primary only)	URS/BLR/ UKR	ALG	TUN	BEN	CUB	EQA	EUR (27 countries)	IND	J	CLN	BFA	CHN	VUT
1 475.0	1 515.0	FIXED/ MOBILE									NOC				
1 515.0	1 525.0	FIXED/ MOBILE						MSS down > 1 514.5		MSS down	NOC				1 520 - 1 525 only < 1998
1 525.0	1 530.0	SPACE OPS/ FIXED	MMSS down	MMSS down	MMSS down	MMSS/lmss down	MMSS down	MMSS/lmss down	MMSS/lmss down		MMSS/lmss down	MSS down	MSS down	MMSS down	MMSS/lmss down
1 530.0	1 533.0	MMSS down LMSS down							NOC					NOC	
1 533.0	1 535.0	MMSS down							NOC			MSS down (priority to MMSS safety)		NOC	
1 535.0	1 544.0	MMSS down							NOC					NOC	
1 544.0	1 545.0	MSS safety down							NOC					NOC	
1 545.0	1 548.0	AMS(R)S down							NOC			MSS down (priority to AMS(R)S)	MSS down	NOC	
1 548.0	1 555.0								NOC					NOC	
1 555.0	1 559.0	LMSS down							NOC					NOC	

2 110.0	2 130.0	FIXED/MOBILE													
2 130.0	2 140.0														
2 140.0	2 160.0														
2 160.0	2 170.0														
2 170.0	2 180.0														

2 483.5	2 500.0	RDSS (R2) down FIXED/MOBILE								RDSS/MSS down				RDSS down	
2 500.0	2 520.0	FIXED/FSS/BSS									MSS down except AMS(R)S (domestic/regional)				
2 520.0	2 535.0								MSS down > 2005						
2 535.0	2 570.0								MMSS/LMSS down > 2005/2010						

		PRESENT STATUS (primary only)	B	PAK	NZL	AUS	MEX	CAN	USA	NIG	SEN	TZA	ISR	countries with unspecified proposals
1 475.0	1 515.0	FIXED/MOBILE	MSS down											
1 515.0	1 525.0	FIXED/MOBILE								MSS down			MSS down	
1 525.0	1 530.0	SPACE OPS/ FIXED	MMSS/ LMSS down	MMSS down			MMSS down		MSS down		MSS down		MMSS/lmss down	
1 530.0	1 533.0	MMSS down LMSS down			MSS down		MSS down (priority to MMSS safety)		MSS down		MSS down priority to			
1 533.0	1 535.0	MMSS down				MSS down		MSS down	(priority to MMSS safety)		MMSS safety)			
1 535.0	1 544.0	MMSS down												
1 544.0	1 545.0	MSS down			NOC	NOC								
1 545.0	1 548.0	AMS(R)S down			NOC	MSS down (priority to AMS(R)S)	MSS down (priority to AMS(R)S)	AMS(R)S down	MSS down (priority to AMS(R)S)		MSS down (priority to AMS(R)S)			
1 548.0	1 555.0							MSS down (priority to AMS(R)S)						
1 555.0	1 559.0	LMSS down			MSS down	MSS down								

1 850.0	1 900.0	FIXED/MOBILE												
1 900.0	1 960.0							MSS up > 2003	MSS up/down					
1 960.0	1 990.0							MSS down > 2003						
1 990.0	2 110.0													
2 110.0	2 130.0								MSS down	MSS unspecified				
2 130.0	2 140.0													
2 140.0	2 160.0							MSS down > 2003						
2 160.0	2 170.0								MSS down					
2 170.0	2 180.0													
2 180.0	2.200.0													

2 483.5	2 500.0	RDSS (R2) down					RDSS/ MSS down		RDSS/MSS down					
2 500.0	2 520.0	FIXED/FSS/BSS						MSS down	MSS down R1 & R3					MSS unspecified PNG up to 2 7000
2 520.0	2 535.0	FIXED/FSS/BSS		MSS down								MSS down	2 520 - 2 545 > 2000 2 545 - 2 570 > 2005	THA up to 2 700 (except 2 530 - 2 642 MHz)
2 535.0	2 570.0	FIXED/FSS/BSS											MSS down	
2 570.0	2 600.0													

FREQUENCY BANDS		PRESENT STATUS (primary only)	URS/BLR/ UKR	ALG	TUN	BEN	CUB	EQA	EUR (27 countries)	IND	J	INS	CLN	BFA	CHN	VUT
1 610.0	1 613.8	RDSS (R2) up AERONAUTICAL RADIONAVIGATION							NOC	MSS up RDSS up			RDSS/ MSS up RDSS/ MSS up mss down		RDSS up	
1 613.8	1 616.0															
1 616.0	1 621.5							MSS up	NOC			MSS up				
1 621.5	1 626.5								NOC							
1 626.5	1 631.5	MMSS up							NOC	MSS up				MSS up	NOC	
1 631.5	1 645.5														NOC	
1 645.5	1 646.5	MSS safety up							NOC						NOC	
1 646.5	1 649.5	AMS(R)S up							NOC					MSS up		
1 649.5	1 656.5														NOC	
1 656.5	1 660.0	LMSS up							NOC							
1 660.0	1 660.5	LMSS up/ RADIO ASTRONOMY							NOC						NOC	
1 670.0	1 720.0	FS/MS/METEO/METEOSAT														
1 765.0	1 775.0	FIXED/MOBILE								MSS up						
2 390.0	2 430	FIXED/MOBILE														
2 638.5	2 640.0	FS/MS/BSS/FSS														
2 640.0	2 655.0								MSS up > 2 005							
2 655.0	2 690.0								MMSS/LMSS up > 2005/2010		MSS up except AMS(R)S (domestic/regional)					

FREQUENCIES		PRESENT STATUS (primary only)	B	PAK	NZL	AUS	MEX	CAN	USA	NIG	SEN	TZA	ISR	countries with unspecified proposals
1 610.0	1 613.8	RDSS (R2) up				MSS up		MSS up	RDSS/MSS up					
1 613.8	1 616.0	AERONAUTICAL RADIONAVIGATION			RDSS up	MSS up MSS down	RDSS/ MSS up	MSS up/ mss down	RDSS/MSS up mss down					
1 616.0	1 621.5				MSS up/down					MSS up			RDSS/MSS up/ mss down	
1 621.5	1 626.5							MSS up/mss down no non GSO < 2001						
1 626.5	1 631.5	MMSS up	MMSS/LMSS up		MSS up	MSS up	MSS up (priority to MMSS safety)	MSS up	MSS up (priority to MMSS safety)		MSS up (priority to MMSS safety)			
1 631.5	1 645.5													
1 645.5	1 646.5	MSS safety up			NOC	NOC								
1 646.5	1 649.5	AMS(R)S up			NOC	MSS up (priority to AMS(R)S)	MSS up (priority to AMS(R)S)	AMS(R) up	MSS up (priority to AMS(R)S)		MSS up (priority to AMS(R)S)			
1 649.5	1 656.5							MSS up (priority to AMS(R)S)						
1 656.5	1 660.0	LMSS up				MSS up								
1 660.0	1 660.5	LMSS up/ RADIOASTRONOMY			MSS up									
1 670.0	1 720.0	FS/MS/METEO/ METEOSAT	MSS up											
1 765.0	1 775.0													
2 390.0	2 430.0	FS/MS							MSS up					
2 638.5	2 640.0	FS/MS/BSS/FSS						MSS up		MSS unspecified		MSS up	2 640 - 2 665 > 2000	PNG/THA (except 2 530 - 2 642 MHz)
2 640.0	2 655.0			MSS up										
2 655.0	2 690.0								MSS up R1 & R3				2 665 - 2 690 > 2005 MSS up	

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEAL ING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/54-E
14 February 1992
Original: English

DRAFTING GROUP 4B-2

The documents considered for this chart are listed below. Those documents that did not include MSS proposals were not included in the chart.

7-URS, 8-KOR, 9-NIG, 12-USA, 16-PNG, 20-EUR (AUT, BEL, BUL, CVA, CYP, D, DNK, E, F, FNL, G, HOL, HUG, I, LIE, LUX, MCO, MLT, N, POL, POR, ROU, S, SMR, SUI, TCH, TUR), 23-CAN, 26-NZL, 27-J, 30-B, 31-AUS, 34-IND, 39-MLI, 40-ALG, 44-PAK, 45-EQA, 48-VUT, 49-BFA, 51-ISR, 52-INS, 56-THA, 57-CTI, 61-CHN, 62-CLN, 63-MEX, 65-CUB, 72-F, 74-TZA, 75-SEN, 78 and 80-ARG, 94-CTI, 99-TUN, 111-BEN, 113-NIG.

FREQUENCY BANDS		PRESENT STATUS (primary only)	URS/CUB	ALG/VUT/BFA/TUN CHN/BEN	EQA	EUR (27 countries)	IND	J	CLN
1 475.0	1 515.0	FIXED/MOBILE							
1 515.0	1 525.0	FIXED/MOBILE			MSS down > 1 514.5		MSS down	NOC	
1 525.0	1 530.0	SPACE OPS/FIXED	MMSS down	MSS down	MMSS/lmss down	MMSS/lmss down		MMSS/lmss down	MSS down
1 530.0	1 533.0	MMSS down LMSS down	NOC			NOC			MSS down (priority to MMSS safety)
1 533.0	1 535.0	MMSS down	NOC			NOC			
1 535.0	1 544.0	MMSS down	NOC			NOC		NOC	
1 544.0	1 545.0	MSS safety down	NOC			NOC		NOC	
1 545.0	1 548.0	AMS(R)S down	NOC			NOC		NOC	MSS down (priority to AMS(R)S)
1 548.0	1 555.0							NOC	
1 555.0	1 559.0	LMSS down	NOC			NOC		NOC	
2 110.0	2 130.0	FIXED/MOBILE							
2 130.0	2 140.0								
2 140.0	2 160.0								
2 160.0	2 170.0								
2 170.0	2 180.0								
2 483.5	2 500.0	RDSS (R2) down FIXED/MOBILE					RDSS/MSS down	NOC	
2 500.0	2 520.0	FIXED/FSS/BSS						MSS down except AMS(R)S (domestic/regional)	
2 520.0	2 535.0					MSS down > 2 005			
2 535.0	2 570.0					MMSS/LMSS down > 2 005/2 010			

FREQUENCY BAND		PRESENT STATUS (primary only)	B	PAK	NZL	AUS	MEX	CAN	USA	NIG	SEN	TZA	ISR	countries with unspecified proposals
1 475.0	1 515.0	FIXED/MOBILE	MSS down											
1 515.0	1 525.0	FIXED/MOBILE				MSS down		MSS down		MSS down			MSS down	
1 525.0	1 530.0	SPACE OPS/FIXED	MMSS/LMSS down	MMSS down	MSS down		MSS down		MSS down		MSS down		MMSS/lmss down	
1 530.0	1 533.0	MMSS down LMSS down							MSS down (priority to MMSS safety)		MSS down priority to MMSS safety)			
1 533.0	1 535.0	MMSS down												
1 535.0	1 544.0	MMSS down												
1 544.0	1 545.0	MSS down			NOC	NOC								
1 545.0	1 548.0	AMS(R)S down			NOC	MSS down (priority to AMS(R)S)	MSS down (priority to AMS(R)S)	AMS(R)S down	MSS down (priority to AMS(R)S)		MSS down (priority to AMS(R)S)			
1 548.0	1 555.0							MSS down (priority to AMS(R)S)						
1 555.0	1 559.0	LMSS down			MSS down	MSS down								
1 850.0	1 900.0	FIXED/MOBILE							MSS up/down					
1 900.0	1 960.0							MSS up > 2003 MSS down > 2003						
1 960.0	1 990.0													
1 990.0	2 110.0													
2 110.0	2 130.0								MSS down	unspecified				
2 130.0	2 140.0													
2 140.0	2 160.0							MSS down > 2003						
2 160.0	2 170.0								MSS down					
2 170.0	2 180.0													
2 180.0	2.200.0													
2 483.5	2 500.0	RDSS (R2) down					MSS down		RDSS/MSS down					
2 500.0	2 520.0	FIXED/FSS/BSS						MSS down	MSS down R1 & R3 domestic					PNG THA (except 2 530 - 2 642 MHz)
2 520.0	2 535.0	FIXED/FSS/BSS		MSS down								MSS down	2 520 - 2 545 > 2 000 2 545 - 2 570 > 2 005 MSS down	
2 535.0	2 570.0	FIXED/FSS/BSS												
2 570.0	2 600.0													

FREQUENCY BANDS		PRESENT STATUS (primary only)	URS/CUB	ALG/VUT/BFA/TUN CHN/BEN	EQA	EUR (27 countries)	IND	J	INS	CLN
1 610.0	1 613.8	RDSS (R2) up AERONAUTICAL RADIONAVIGATION	NOC			NOC	MSS up RDSS up	NOC		RDSS/MSS up
1 613.8	1 616.0				MSS up				MSS up/down	RDSS/MSS up mss down
1 616.0	1 621.5									
1 621.5	1 626.5									
1 626.5	1 631.5	MMSS up	NOC			NOC	MSS up	NOC		
1 631.5	1 645.5									
1 645.5	1 646.5	MSS safety up	NOC			NOC		NOC		
1 646.5	1 649.5	AMS(R)S up	NOC			NOC		NOC		
1 649.5	1 656.5									
1 656.5	1 660.0	LMSS up	NOC					NOC		
1 660.0	1 660.5	LMSS up/ RADIO ASTRONOMY	NOC					NOC		
1 670.0	1 720.0	FS/MS/METEO/METEOSAT								
1 765.0	1 775.0	FIXED/MOBILE					MSS up			
2 390.0	2 430	FIXED/MOBILE						NOC		
2 638.5	2 640.0	FS/MS/BSS/FSS								
2 640.0	2 655.0					MSS up > 2 005				
2 655.0	2 690.0					MMSS/LMSS up > 2 005/2 010		MSS up except AMS(R)S (domestic/regional)		

FREQUENCIES		PRESENT STATUS (primary only)	B	PAK	NZL	AUS	MEX	CAN	USA	NIG	SEN	TZA	ISR	countries with unspecified proposals
1 610.0	1 613.8	RDSS (R2) up				MSS up		MSS up	RDSS/MSS up					PNG
1 613.8	1 616.0	AERONAUTICAL RADIONAVIGATION			RDSS up MSS up/down	MSS up MSS down		MSS up/mss down	RDSS/MSS up mss down					
1 616.0	1 621.5									MSS up			MSS up/ MSS down	
1 621.5	1 626.5							MSS up/mss down no non GSO < 2 001						
1 626.5	1 631.5		MMSS/LMSS up						MSS up (priority to MMSS safety)		MSS up (priority to MMSS safety)			
1 631.5	1 645.5	MMSS up			MSS up	MSS up	MSS up	MSS up						
1 645.5	1 646.5	MSS safety up			NOC	NOC								
1 646.5	1 649.5	AMS(R)S up			NOC	MSS up (priority to AMS(R)S)	MSS up	AMS(R) up	MSS up (priority to AMS(R)S)		MSS up (priority to AMS(R)S)			
1 649.5	1 656.5							MSS up (priority to AMS(R)S)						
1 656.5	1 660.0	LMSS up				MSS up								
1 660.0	1 660.5	LMSS up/ RADIOASTRONOMY			MSS up									
1 670.0	1 720.0	FS/MS/METEO/ METEOSAT	MSS up											
1 765.0	1 775.0													
2 390.0	2 430.0	FS/MS							MSS up					PNG
2 638.5	2 640.0	FS/MS/BSS/FSS						MSS up						PNG
2 640.0	2 655.0			MSS up					mss up R1 & R3 domestic			MSS up	2 640 - 2 665 > 2 000 2 665 - 2 690 > 2 005 MSS up	
2 655.0	2 690.0													

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/55-E
14 February 1992
Original: English

WORKING GROUP 5B

OUTSTANDING TASKS ATTRIBUTED TO WORKING GROUP 5B WHICH HAVE NOT YET RECEIVED DETAILED CONSIDERATION

Tasks still requiring detailed consideration by Working Group 5B are listed below, together with a proposal for the action to be taken.

1. Revisions to Articles 27 and 28

Proposal: treat when output of C4 is available.

USA/12
EUR/20
CAN/23
J/27
B/30
IND/34
EUR/46
MEX/63

2. Revisions to Article 29

RR 2613A — USA/12

Proposal: treat when output of WG/PL is available.

3. Revisions to Article 30

EUR/20

Proposal: treat when output of C4 is available.

4. Appendix 30A

(i) 14.5 - 14.8 GHz — KOR/8, J/27, B/30

(ii) Other — CAN/23

Proposal: treat when output of C4 is available.

5. Regulatory procedures for BSS

(i) Sound — EUR/20/54

(ii) HDTV — EUR/20/59, 60

Proposal: detailed consideration in next meeting of WG 5B.

J.P. LUCIANI
Chairman of Working Group 5B

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/56-E
14 February 1992
Original: English

WORKING GROUP 5B

Source: EUR/20/62
AUS/31/69

Draft

REPORT OF THE SUB-WORKING GROUP 5B1 TO WORKING GROUP 5B

1. As requested by Working Group 5B, the Sub-Working Group considered proposals under Agenda item 2.2.3b, for a draft Resolution relating to the future consideration of the Plans for the broadcasting-satellite service at 12 GHz for Regions 1 and 3, contained in Appendices 30 and 30A.

2. Agreement had been reached on the amalgamation of the source texts to form a combined Region 1/3 contribution.

Additional text has been included to:

a) convey a need of urgency for study by the CCIR, and

b) protect the Region 2 Plan.

3. The results of our considerations are given at annex.

J.O.N. SPURLING
Chairman of Sub-Working Group 5B1

DRAFT RESOLUTION No. HHH

Future Consideration of the Plans for the Broadcasting-Satellite Service in the Band 11.7 - 12.5 GHz (Region 1) and the Band 11.7 - 12.2 GHz (Region 3) in Appendix 30 and Associated Feeder-Link Plans in Appendix 30A

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that Article 14 of Appendix 30 indicates that the broadcasting-satellite service Plan for Regions 1 and 3 in Appendix 30 provides for requirements until January 1994;

b) that the WARC ORB-88 in Resolution No. 521, **resolves** 3, stated that "while the Plans for the 11.7 - 12.7 GHz band can already be used for certain types of HDTV, studies should be continued on the long range future suitability of these bands for HDTV without prejudice to the existing plans in this band";

c) that modernization of the Plans of AP30 associated with Regions 1 and 3, which had their origins in the WARC-77, would be valuable in offering the prospects of more efficient utilization of the spectrum and orbit resources by taking into account technological improvements (e.g. satellite antennas and receiver sensitivity) which could be used to increase the capacity and the flexibility of the Plan without reducing the number of current assignments to each country,

invites the CCIR

to study, as a matter of priority, the technical possibilities for improving the efficiency and flexibility of the Plans for Regions 1 and 3 contained in Appendices 30 and 30A, taking into account the intent of the conference referred to below,

urges administrations

to contribute to the studies of the CCIR and, also, to consider the need for a future competent conference to review and as necessary revise the relevant parts of Appendices 30 and 30A,

resolves

1. that the future conference in revising the Region 1 and 3 parts of Appendices 30 and 30A shall:

   a) maintain each country's assigned BSS capacity in the Plan, as a minimum;

   b) provide for the needs of new countries;

   c) protect existing and notified systems which are in accordance with the Plans;

   d) take due account, as far as possible, of systems which have been communicated to the IFRB under Article 4 of Appendix 30;

2. that once the date of the conference is established, as an exception to the normal requirement of Article 5 of Appendices 30 and 30A, for Regions 1 and 3 only, administrations may notify systems no earlier than 5 years before bringing them into use;

3. that the future conference shall ensure that the integrity of the Region 2 Plans and their associated provisions is preserved, by providing the same protection to the assignments contained in those Plans as they now receive under the relevant provisions of the Radio Regulations and by not requiring more protection from assignments in the Region 2 Plans than that currently provided under the Radio Regulations,

requests the Secretary-General

to bring this Resolution to the attention of the Administrative Council and the next full Plenipotentiary Conference with a view to the [early] establishment of a conference to undertake the review and any necessary revision of the relevant parts of Appendices 30 and 30A and associated provisions of the Radio Regulations, taking account of the latest CCIR studies.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/57-E
14 February 1992
Original: English

WORKING GROUP TO THE PLENARY

Note of the Chairman of the Working Group to the Plenary

The following texts have been proposed by the United States Delegation for item 3.7 and item 3.8 of Document DT/5(Rev.2).

Sharing criteria for LEO MSS below 1 GHz (Document DT/5(Rev.2), item 3.7)

Information developed recently in the CCIR has been provided which reflects current studies underway. This information gives some additional analysis of the sharing criteria and calculations on power flux-density limits. Also provided is information on a methodology for determining sharing between stations in the mobile service below 1 GHz. These techniques can be used in connection with procedures for coordination between the MSS and other services as suggested in regulatory contributions to the Conference.

Sharing considerations for LEO MSS above 1 GHz (Document DT/5(Rev.2), item 3.8)

The CCIR has identified various techniques that can be employed to achieve compatibility between low-Earth orbit (LEO) satellite systems and between LEO and geostationary-satellite systems operating in the same bands. Multiple LEO systems can be accommodated within the same allocated band using frequency, time and spatial separation techniques, either separately or in combination. The precise method of applying these techniques can best be determined in the application of the coordination procedures to be developed by this Conference for LEO satellite systems.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Corrigendum 1 to
Document DT/58-E
17 February 1992
Original: English

WORKING GROUP 4A

Note from the Chairman of Working Group 4A

Replace the table on page 2 by the following table:

PROPOSALS CONCERNING FOOTNOTES IN ARTICLE 8 OF THE RADIO REGULATIONS

Provision No.	Reference document/proposal	Proposal	Remark
446 447 449 457	HNG/140/1-4	MOD	Deletion of a country, not on agenda
464A	4, E/25/1, B/30/1	SUP	Obsolete in time; not on agenda
481	4, B/30/2	SUP	Obsolete in time; not on agenda
503	VUT/48/2, TZA/74/5, COG/95/2, KEN/13/5, NZL/26/1, BFA/49/2, AFR/109, BEN/111/3, PNG/16/1-5, EUR/20/24	NOC, MOD	Consequential changes? (might require a review of 2669/2673)
MOD 518	BFA/49/10	MOD	Addition of a country
ADD 521A	URS/7/19, J/27/4, MLI/39/18, ALG/40/4	ADD	Implementation of the new BC allocations in the HF bands
ADD 521B	USA/12/8	ADD	Implementation of the new BC allocations in the HF bands

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/58-E
14 February 1992
Original: English

WORKING GROUP 4A

NOTE FROM THE CHAIRMAN OF WORKING GROUP 4A

Attached are the proposals concerning the footnotes in Article 8 of the Radio Regulations in the bands below approximately 136 MHz.

S. HESS
Chairman of the Working Group 4A

PROPOSALS CONCERNING FOOTNOTES IN ARTICLE 8 OF THE RADIO REGULATIONS

Provision No.	Reference document/proposal	Proposal	Remark
446 447 449 457	HNG/140/1-4	MOD	Deletion of a country, not on agenda
464A	4, E/25/1, B/30/1	SUP	Obsolete in time; not on agenda
481	4, B/30/2	SUP	Obsolete in time; not on agenda
503	VUT/48/2, TZA/74/5, COG/95/2, KEN/13/5, NZL/26/1, BFA/49/2, AFR/109, BEN/111/3, EUR/20/24	NOC, MOD	Consequential changes? (might require a review of 2669/2673)
ADD 521A	URS/7/19, J/27/4, MLI/39/18, ALG/40/4	ADD	Implementation of the new BC allocations in the HF bands
ADD 521B	USA/12/8	ADD	Implementation of the new BC allocations in the HF bands

Provision No.	Reference document/proposal	Proposal	Remark
ADD 521A	USA/12/7	ADD	New bands for SSB only
ADD 521B	J/27/5	ADD	New bands for SSB only
ADD 521A	BUL/59/5	ADD	Continuation of the operation of FX/MO on non-interference basis
ADD 521B	MLI/39/19	ADD	Continuation of the operation of FX/MO on non-interference basis
ADD 521C	USA/12/9	ADD	Continuation of the operation of FX/MO on non-interference basis
ADD 521C	J/27/6	ADD	Implementation of the new BC allocation in HF
ADD 521D	J/27/7	ADD	Implementation of the new BC allocation in HF
525	MEX/63/9	MOD	Consequential change?
ADD 525A	USA/12/13, EUR/20/31, MEX/63/10	ADD	Implementation, reallocation
526	KEN/13/4	NOC	
528	BUL/59/134, MEX/63/11	MOD	Consequential change?
	USA/12/18, PNG/16/10, EUR/20/32	SUP	
528A 528B 528C	USA/12/19-21, PNG/16/9,EUR/20/33, MEX/63/12, PNG/16/14	ADD ADD ADD	Implementation of the new BC allocations in the HF bands

Provision No.	Reference document/proposal	Proposal	Remark
529B 529C	PNG/16/17, J/27/10, J/27/14	ADD ADD	Implementation of the new BC allocations in the HF bands
MOD 530	EUR/20/17	MOD	Continuation of FX/MO in reallocated bands
ADD 530A	EUR/20/18	ADD	Continuation of FX/MO in reallocated bands
531	KRE/8/16	MOD	Consequential changes
ADD 531A ADD 531B ADD 531C	EUR/20/19-21, CHN/61/5	ADD ADD ADD	Implementation of the new BC allocations
532	4, B/30/3	SUP	Obsolete in time, not on agenda
ADD 534A	J/27/23	ADD	Implementation of the new BC allocations
537	4, B/30/4	SUP	Obsolete in time, not on agenda
543	4, B/30/4	SUP	Obsolete in time, not on agenda
544	4, B/30/3	SUP	Obsolete in time, not on agenda
545	4, E/25/9, B/30/5	MOD	
551	4, E/25/2, B/30/6	SUP	Obsolete in time, not on agenda

Provision No.	Reference document/proposal	Proposal	Remark
555	YEM/41/8	MOD	Deletion of a country, not on agenda
569	4, B/30/6	SUP	Obsolete in time, not on agenda
571	HNG/140/5	MOD	Deletion of a country, not on agenda
572	4, B/30/7	MOD	Obsolete in time (partly), not on agenda
581	E/25/8, YEM/41/9	MOD	Deletion of a country, not on agenda
582	4, E/25/3, B/30/8	SUP	Obsolete in time, not on agenda
584	4, E/25/10	MOD	Partly obsolete, not on agenda
587	HNG/140/6	MOD	Deletion of a country, not on agenda
595	4, B/30/11	SUP	Partly obsolete, not on agenda

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/59-E
17 February 1992
Original: English

WORKING GROUP 4B

Source: Document DL/19

Draft

REPORT BY THE CHAIRMAN OF DRAFTING GROUP 4B4 TO THE CHAIRMAN OF WORKING GROUP 4B

SUMMARY OF WRITTEN PROPOSALS ON AGENDA ITEM 2.2.4c

This report contains a summary of written proposals only. The proposals listed below for terrestrial components on the Future Public Land Mobile Telecommunication Systems (FPLMTS) are attached as follows:

a) proposals on FPLMTS of various administrations (extracts) Annex I

b) proposed bands designated for FPLMTS Annex II

c) salient features of the proposals on FPLMTS of various administrations Annex III

Drafting Group (4B4) was composed of participants from the Administrations of New Zealand, Japan, Venezuela, Brazil, Yugoslavia, Switzerland, Germany, Italy, Israel, Mexico, France, India, China, Papua New Guinea, Spain, Australia, Pakistan, Canada, Austria, Sweden, Indonesia, Korea (ROK), the United States, Europe (25 countries), Saudi Arabia, Finland and Hungary.

A. A. SHAIKH
Chairman

Annexes: 3

ANNEX I

United States (USA) - Document 12(Add.8)

Agenda item 2.2.4a, 2.6

I. Introduction

The United States proposes an allocation footnote (proposal USA/12/82) to add the mobile-satellite service to the band 1 850 - 1 990 MHz without direction indicators. This addition is intended to complement the existing fixed and mobile services, which share an allocation in the 1 850 - 1 990 MHz band. The added flexibility should permit greater sharing of the bands and promote the development of a variety of personal communications services.

II. Discussion

The United States does not endorse a mobile allocation designated for FPLMTS since there are many services competing for spectrum in the 1 - 3 GHz band and the CCIR studies to develop the technical parameters of the service have not been completed. The United States believes that it is premature to designate a specific mobile service band to FPLMTS and questions whether a separate allocation is required at all.

Within the FPLMTS architecture is a satellite component that can be used in place of the terrestrial service as the need warrants. It is anticipated that the same equipment can be used on both the satellite and the terrestrial portion of the FPLMTS. Since the same equipment is to be used in both portions of the network, especially in the case of the hand-held telephony units, it is important that a mobile-satellite allocation be close to the allocation for the terrestrial mobile portion so that the same RF on the mobile/mobile earth terminal can be utilized to access the satellite or the terrestrial base station.

As with the FPLMTS in general, the CCIR has not yet completed its technical study of the satellite portion of the FPLMTS. The United States believes that an MSS allocation for this service needs to be made now, but should be made without direction indicators to allow for flexibility in the implementation of the satellite service. For instance, there is a proposal for a personal communications system using an MSS system that transmits its up link and down link in the same band. An MSS allocation without direction indicators can permit the implementation of a LEO, HEO or GSO satellite system using any variety of access and modulation schemes. It also allows for different types of implementations in different regions of the world and permits each region to decide what specific part of the band to allocate for the satellite portion of the service without predetermining the characteristics of the system.

III. Technical considerations

CCIR Working Party 8D in its December 1991 meeting drafted two Recommendations concerning the satellite interworking with FPLMTS. The first Recommendation described some general characteristics of the satellite portion and the second Recommendation set up a framework for the detailed Recommendations that are to come at a later date.

There were four draft Recommendations that were forwarded related to possible spectrum allocations for the satellite portion.

"5. that the spectrum used for the satellite network be as close as possible to those of the terrestrial networks, particularly with respect to the Earth-to-space frequencies of the satellite network in which case separations of less than [10%] are advantageous;

6. that in selecting frequency bands for operation of the satellite network in the space-to-Earth direction account should be taken of the constraints which could be imposed by power flux-density limits which may apply in the relevant bands. In the case of direct access, power flux-density limits may be particularly constraining on system design;

13. that there is a need for common channels of frequency bands to facilitate regional and/or worldwide operation, particularly with the increasing use of personal (hand-held, portable) terminals;

14. that the use of internationally agreed frequency bands will facilitate the planning of national networks and reduce the risk of harmful interference with other radio services."

These Recommendations indicate that the satellite and the terrestrial portions of the FPLMTS will be operating in a common band of frequencies that will enable a person to roam worldwide using their personal communications device, switching freely between the terrestrial and satellite portion of the service, whichever has the coverage with greater signal levels. An allocation like the one proposed by the United States will facilitate the development of both portions of the service.

IV. Summary

The text of Working Party 8D's proposed Recommendations does not specify the technical parameters of the satellite portion of the FPLMTS. In WP 8D and TG 8-1 Recommendations, it is stated that there have been no clear cost advantages identified for adoption of TDMA, FDMA or CDMA or for a combination of these access techniques in either or both the satellite and the terrestrial modes. It is the intention of the Working Party to study these options during the current cycle of the CCIR. These studies will not be completed for a year or two, further emphasizing the need to maintain flexibility in the allocation.

The Recommendations of the Working Party concerning spectrum does specifically state that the spectrum allocation for the satellite portion of FPLMTS needs to be "close" to the terrestrial mobile portion (within 10% or so), universal and as unencumbered as possible with power flux-density limitations. All of these features can be identified within the United States allocation proposals.

United States (USA) - Document 12(Add.8)

V. Mobile services in the approximate range 1 - 3 GHz

Mobile service allocations and future public land mobile telecommunication systems

The demand for spectrum for the mobile services is growing. Considerable emphasis has been placed on accommodating future mobile service needs by providing suitable allocations in the 1 700 - 2 450 MHz band. These needs include personal communication networks, cordless telephones and future public land mobile telecommunication systems (FPLMTS). As the Table of Frequency Allocations contains a primary mobile allocation in Region 2 from 1 700 - 2 690 MHz, which could permit future implementation of mobile services, we see no need to make specific allocation proposals for Region 2.

Further, we note that the WARC will specifically consider possible designation of a band of frequencies for use by future public land mobile telecommunication systems (FPLMTS). This concept, which embraces a wide variety of personal communications applications, has been under intensive study by the CCIR. Proponents wish to set aside a band of frequencies for future use which they indicate would facilitate global roaming of personal stations. While we support the work of the CCIR on FPLMTS, we believe that the WARC must exercise caution before reserving spectrum, particularly because of the numerous demands in the 1 - 3 GHz frequency range. Furthermore, technical standards such as modulation parameters, protocols, and channelization schemes will be just as important as an allocated band in facilitating any requirements for global roaming. These standards and protocols may obviate the need for a common worldwide band for international roaming. We believe that it is premature to designate a frequency band until the CCIR has progressed further in its work.

Korea (ROK) - Document 8

2. Agenda item 2.2.4c - For the development of the international use of the mobile service for future public land mobile telecommunication systems, as indicated in Recommendation 205 (Mob-87), or designate for this use a band already allocated to the mobile service

The explosive growth of demands for the land mobile communication services necessitates development of more spectrum-efficient technology, and furthermore, the trend toward personalized communication needs requires implementation of a worldwide compatible system. These new phenomena require an adjustment of the current allocation of frequency spectrum, which can be discussed at the WARC-92.

The Administration proposes that the bands 1 875 - 2 025 MHz and 2 110 - 2 200 MHz be designated on a worldwide basis for the use of FPLMTS in order to facilitate the introduction of FPLMTS together with other services. This proposal is based on the ongoing studies of CCIR Study Groups on the expected demand and spectrum sharing. The use of these bands for the FPLMTS can be achieved without any significant change in the Table of Frequency Allocations, since the band 1 710 - 2 290 MHz is already allocated to the mobile service.

2.8 Agenda item 2.2.4c - Future public land mobile telecommunications systems (FPLMTS)

NIG/9/7

Nigeria registers its interest in FPLMTS but adequate protection should be provided for existing and future fixed services.

Papua New Guinea (PNG) - Document 16

VIII. Agenda item 2.2.4c - Allocation of frequency bands in the range 1 - 3 GHz for future public land mobile telecommunications systems

Papua New Guinea recognizes the impact FPLMTS will have on personal communications in the future and supports:

- the allocation of spectrum on a worldwide basis to fully exploit roaming possibilities as well as to minimize equipment and infrastructure costs through standardization;
- spectrum allocation on the basis of need so that more spectrum than is needed to meet the particular requirements of countries is not unnecessarily allocated.

Furthermore, to minimize disruption of existing fixed services, it is preferred that allocated spectrum should overlap the fixed link band gaps at 1 806 and 2 101 MHz. Adequate time should also be given to ensure smooth transfer of affected services to alternative bands.

Europe (EUR) (25 countries) - Document 20

Future Public Land Mobile Telecommunications System

6. The CEPT has considered the extensive work done by the CCIR and others on the characteristics of land mobile systems (FPLMTS) capable of providing a wide range of services, voice and non-voice, including personal communications with regional and/or international roaming facilities, plus the potential value to developing countries and others with sparsely populated areas having limited communications facilities. The development of such systems and services must clearly be supported by the designation of a suitable frequency band, if possible on a worldwide basis with all the advantages of compatibility, access and cost reductions due to large scale production that would result. Against this background the CEPT takes the view that a frequency band of the order of 200 MHz bandwidth be designated and, having regard to the other services existing and planned in this part of the spectrum, concludes that the bands 1 900 - 2 025 MHz and 2 110 - 2 200 MHz be so chosen.

MHz
1 700 - 2 025

	Allocation to Services		
	Region 1	Region 2	Region 3
EUR/20/82 MOD	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ~~Mobile except aeronautical mobile~~ 671 722 ~~743A~~	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 671 722 743	
EUR/20/83 MOD	**1 710 - ~~2 290~~2 025** FIXED MOBILE ~~Mobile~~ 722 739A ~~743A~~ 744 746 746A 746B ~~747 748 750~~	**1 710 - ~~2 290~~2 025** FIXED MOBILE 722 739A 744 745 746 746A 746B ~~747 748 749 750~~	

EUR/20/84
ADD 746A The frequency band 1 900 - 2 025 MHz is designated and shall be made available from the year 2000 as required for Future Public Land Mobile Telecommunications Systems (FPLMTS), the technical characteristics of which are being studied by the CCIR. The frequency band 2 110 - 2 200 MHz is also designated for this purpose and shall be made available from the year 2010 as required for the development and operation of the FPLMTS.

EUR/20/86
SUP **743A** **Mob-87**

Consequential upon elevating the mobile service in Region 1 from secondary to primary status.

Reasons: To make provisions, as previously stated, for terrestrial aeronautical public correspondence; and to elevate the space services at 2 GHz from footnotes to the status of primary allocations in the Table.

MHz
2 110 - 2 300

EUR/20/91
MOD

Allocation to Services		
Region 1	Region 2	Region 3
~~1 710~~2 110 - ~~2 290~~2 200	~~1 710~~2 110 - ~~2 290~~2 200	
FIXED	FIXED	
MOBILE	MOBILE	
~~Mobile~~		
~~722 743A 744 746~~ 746A 746B ~~747~~ 748 ~~750~~	~~722 744 745 746~~ 746A 746B ~~747~~ 748 749 ~~750~~	

Canada (CAN) - Document 23

1 710 - 2 290 MHz

Under **Agenda item 2.2.4c[3]**, WARC-92 will make provisions as necessary for the Future Public Land Mobile Telecommunication System (FPLMTS). The CCIR has identified a requirement for 230 MHz of spectrum, of which 60 MHz is for "personal" systems, and the remainder in support of "vehicular" systems. These maximum requirements are projected in large urban areas. Canada anticipates and supports a personal segment that will be ubiquitous and highly portable, requiring spectrum on a worldwide basis. On the other hand, the mobile vehicular segment will operate from base stations which can have frequencies selected from national or regional channelling plans. Studies indicate that sharing between the vehicular stations and fixed point-to-point systems is reasonably viable, either on adjacent frequencies within the same area, or on overlapping frequencies, in which case tens of kilometres provide adequate separation between the stations of the two services.

Canada is proposing ADD 746A which designates the band 1 900 - 1 960 MHz as a core of spectrum for FPLMTS intended to satisfy the personal component needs. This band has been chosen to reduce the impact on existing and future fixed systems as 1 900 MHz is a boundary between two CCIR channelling arrangements. The remaining spectrum for FPLMTS may be chosen from the other mobile primary spectrum which is suitable for these applications.

Under Agenda item 2.2.4a, Canada is proposing the allocation of the bands 1 960 - 1 990 MHz and 2 140 - 2 170 MHz to the mobile-satellite service, to become effective in the year 2003 as shown in Figure 2. The proximity to the proposed designation of spectrum for FPLMTS in the band 1 900 - 1 960 MHz will leave open the possibility of synergy between these two services. The space-to-Earth direction will be added on a secondary basis in the band 1 960 - 1 990 MHz to support bi-directional satellite transmission. ADD 732A will support non-GSO operation in both bands.

MHz
1 710 - 2 025

	Allocation to Services		
	Region 1	Region 2	Region 3
CAN/23/57 **MOD**	**1 710 - ~~2 290~~2 025** FIXED ~~Mobile~~ MOBILE 722 732A 743A 744~~746~~ 746A 746B 746C ~~747 748 750~~	**1 710 - ~~2 290~~2 025** FIXED MOBILE 722 732A 744 745 746 746A 746B 746C~~747 748 749 750~~	

CAN/23/40
ADD **732A** In the bands 1 610 - 1 626.5 MHz, 1 960 - 1 990 MHz, 2 140 - 2 170 MHz, 24.25 - 24.75 GHz and 25.25 - 27.5 GHz, the provisions of MOD 2613 do not apply.

CAN/23/64
SUP **749**

Reasons: The period of time associated with this footnote has elapsed.

CAN/23/66
SUP **750**

Reasons: The removal of Article 14 must be accompanied by sharing conditions. The general parameters applying to systems in this frequency range have proven satisfactory and should be clearly established as the band sharing conditions. Systems conforming to these limits must be safe against claims from harmful interference to the extent of the limits, including future uses of the space services of a different nature (e.g. safety of life). No. 750 may be suppressed. There are consequential modifications to Nos. 2509, 2558 and 2559 of Articles 27 and 28. Coordination of earth stations and terrestrial stations is still required under Article 11.

CAN/23/58
ADD **746A** Use of the band 1 900 - 1 960 MHz by the mobile service is designated on a worldwide basis for personal public land mobile telecommunications systems having characteristics in accordance with the Recommendations of the CCIR. The band 1 900 - 1 930 MHz shall be available for such use commencing in 1998 and the band 1 930 - 1 960 MHz shall be made available after the year 2003. Use of these bands by these systems has priority over other mobile uses of the bands.

Reasons: To enable the introduction of personal public mobile systems in a common band of spectrum having characteristics as defined in Recommendations of the CCIR addressing Future Public Land Mobile Telecommunications Systems (FPLMTS). This work is currently underway in the CCIR Task Group 8-1. The intent of the wording of the proposed ADD 746A is to provide a priority only over other mobile systems, thus allowing the continued use of the fixed service, should an administration choose this. It is noted that additional spectrum will be necessary for the implementation of all the various applications of FPLMTS in the future particularly in urban areas. It is envisaged that administrations would designate other spectrum allocated to the mobile service in the 1 - 3 GHz range for this purpose on a national basis or as a result of bilateral or multilateral agreements. It is also proposed to align the status of the mobile service worldwide in the band 1 710 - 2 450 MHz to facilitate the development of worldwide application of FPLMTS.

FPLMTS (Agenda item 2.2.4c)

The designation of 60 MHz of mobile spectrum, intended to satisfy the personal component needs of FPLMTS, will accommodate worldwide implementation of this technology which is in the process of being studied by the CCIR. Studies show a good degree of compatibility with the fixed service, which will permit expansion into adjacent bands at national discretion.

New Zealand (NZL) - Document 26

Agenda item 2.2.4c - For the development of the international use of the mobile service for FPLMTS or designate for this use a band already allocated to the mobile service

Please refer to Annex 4 for proposed changes to Article 8.

New Zealand supports the designation for FPLMTS on a worldwide basis. This is essential for the economic implementation of FPLMTS and would facilitate worldwide roaming.

Consistent with this, New Zealand proposes a modification to Article 8 to change the mobile service allocation in Region 1 from secondary to primary in the band 1 710 - 2 450 MHz, noting that the band 1 700 - 2 450 MHz has primary mobile allocation status in Regions 2 and 3. (See also 2.2.4a.)

New Zealand would support the designation, by footnote, for worldwide use, in the range 1 720 - 2 300 MHz. Noting the spectrum requirements in the CCIR Report, New Zealand supports the designation of up to 230 MHz. As a minimum, 60 MHz should be designated for FPLMTS, to support personal stations.

Finally, noting that the use of Frequency Division Duplex/Time Division Duplex (FDD/TDD) may require different approaches for spectrum utilization, the preferred designation may need to be in two equal bands to support either duplex technique.

Agenda item 2.2.4c

MHz
1 710 - 2 290

	Allocation to Services		
	Region 1	Region 2	Region 3
NZL/26/19 MOD	**1 710 - 2 290** FIXED MOBILE ~~Mobile~~ 722 743A 743B 744 746 747 748 750	**1 710 - 2 290** FIXED MOBILE 722 743B 744 745 746 747 748 749 750	

NZL/26/20
ADD **743B** The band [1 720 - 2 300 MHz] is designated for use by FPLMTS.

Reasons: To provide up to 230 MHz for the worldwide roaming element from within this band.

Japan (J) - Document 27

b) For the development of the international use of the mobile service for future public land mobile telecommunication systems, as indicated in Recommendation No. 205 (Mob-87), or designated for this use a band already allocated to the mobile service.

In WARC MOB-87 a study concerning future public land mobile telecommunication systems (FPLMTS) was recommended.

CCIR continues to study technical characteristics of future public land mobile telecommunication systems (FPLMTS), and has not reached a conclusion yet. CCIR considers that worldwide interoperability is necessary.

Analyses on sharing between FPLMTS and both of the mobile satellite and the space operation services were conducted in CCIR JIWP WARC-92. The result shows that it is unfeasible for FPLMTS to share the same frequency bands with those services because unacceptable interferences with each other will occur.

In Japan, suitable frequency bands have been studied in the frequency range from 1 to 3 GHz based on the agenda item. Japan has used the 1.5 GHz band for the terrestrial mobile service whose demand is increasing rapidly. The 2.6 GHz band is considered to be suitable for the mobile-satellite and the broadcasting-satellite (sound) service. Therefore, Japan considers that it is desirable to select bands for FPLMTS from the 2 GHz band taking the sharing analyses by CCIR into account.

In order to achieve the worldwide interoperability which is recommended in the CCIR JIWP WARC-92 report, Japan considers that the allocation should be made on a worldwide basis. However, it is not necessary to allocate all of the band on a worldwide basis, which is needed for FPLMTS. Considering the result of CCIR JIWP WARC-92, about 60 MHz bandwidth would be appropriate for worldwide allocation.

Because technical characteristics of FPLMTS are not clear even in a CCIR study, it is difficult to discuss appropriate frequency bands for all of the system. Therefore, Japan proposes that the parts of the frequency band for FPLMTS, which are the bands for personal stations, should be allocated on a primary worldwide basis. Taking into account the allocation to the space operation service, Japan proposes to allocate 1 995 - 2 010 MHz band (from 1 July 1998), 2 010 - 2 025 MHz band (from 1 January 2005) and 2 170 - 2 200 MHz band (from 1 July 1998) to FPLMTS.

J/27/41

ADD **750A** The frequency bands 1 995 - 2 010 MHz and 2 170 - 2 200 MHz are designated for Future Public Land Mobile Telecommunication Systems (FPLMTS) from 1 July 1998, and the band 2 010 - 2 025 MHz from 1 January 2005.

Reasons: To assure the frequency band for FPLMTS on a worldwide basis.

MHz
1 710 - 2 290

	Allocation to Services		
	Region 1	Region 2	Region 3
J/27/34 MOD	**1 710 - ~~2 290~~2 070** FIXED ~~Mobile~~ MOBILE 722 ~~743A~~ 744 746 MOD 747 ~~748 750~~ 750A	**1 710 - ~~2 290~~2 070** FIXED MOBILE 722 744 745 746 MOD 747 ~~748 749 750~~750A	
J/27/35 MOD	**~~1 710~~2 070 - ~~2 290~~2 110** FIXED SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) Mobile ~~722~~ 743A~~744 746 747 748 750~~	**~~1 710~~2 070 - ~~2 290~~2 110** FIXED MOBILE SPACE RESEARCH (Earth-to-space) (space-to-space) SPACE OPERATION (Earth-to-space) (space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space) (space-to-space) ~~722 744 745 746 747 748 749 750~~	
J/27/36 MOD	**~~1 710~~2 110 - ~~2 290~~2 250** FIXED ~~Mobile~~ MOBILE ~~722 743A 744 746 747~~ 748 MOD 750 750A	**~~1 710~~2 110 - ~~2 290~~2 250** FIXED MOBILE ~~722 744 745 746 747~~ 748 ~~749~~ MOD 750 750A	
J/27/37 MOD	**~~1 710~~2 250 - 2 290** FIXED SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) Mobile ~~722~~ 743A ~~744 746 747 748 750~~	**~~1 710~~2 250 - 2 290** FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) ~~722 744 745 746 747 748 749 750~~	

Finland (FNL) - Document 29

Introduction

Finland is in favour of Document 20, Part V, concerning frequency bands for Mobile Services within 1 700 MHz - 2 300 MHz and the Space Services at 2 000 MHz and is willing to support the document except the proposed Footnote 746A (See proposal EUR/20/84).

As stated in the CCIR Report to WARC-92, the spectrum requirement for FPLMTS is 230 MHz. This requirement is considered to be sufficient for large metropolitan areas with a high density of traffic and, therefore, a lesser amount of spectrum is likely to suffice for other areas in the foreseeable future. Consequently, the designation of a frequency band for FPLMTS should be done in such a flexible way that the future use of the same spectrum by presently allocated services would not be unduly restricted.

A minimum requirement for FPLMTS to be internationally compatible for roaming stations is that signalling and control can be carried out in a common band.

According to the CCIR Report to WARC-92, a future choice of duplexing method - frequency division or time division - does not affect the total spectrum requirement. Unfortunately, this would not hold true in case only a small amount of common spectrum for signalling and control could be designated by the Conference. In this case, one small block of frequencies would be required for time division duplex but two separate blocks would be necessary for frequency division duplex. Furthermore, for frequency division duplex the two blocks should be separated from each other by a suitable frequency separation (duplex separation).

It is not advisable for the Conference to prejudge the outcome of further CCIR studies on basic characteristics of the FPLMTS such as the duplexing method.

The optimum solution in this situation would clearly be to earmark a contiguous band fulfilling the total requirement of spectrum for FPLMTS on a worldwide basis, and leave to future studies to specify which parts of the spectrum should be taken into use and within what kind of time-table and sharing constraints.

When considering possible candidate bands for FPLMTS the following should be taken into account:

The bands 2 025 MHz - 2 110 MHz and 2 200 MHz - 2 290 MHz are allocated to certain Space Services. According to the CCIR Report to WARC-92, sharing between these Space Services and FPLMTS is not feasible.

In the band 2 400 MHz - 2 500 MHz a large number of ISM-equipment is being used, and this equipment could cause interference problems in particular for the Personal Stations in FPLMTS.

An allocation for mobile-satellite services above 2 520 MHz is proposed, which makes, from the sharing point of view, use of that part of the spectrum impossible for FPLMTS.

On the basis of the above reasons the only possible contiguous band is between 1 700 MHz - 2 025 MHz.

ARTICLE 8

Frequency Allocations

Section IV. Table of Frequency Allocations

The following footnote is proposed:

FNL/29/1
ADD **746A**

The frequency band 1 700 MHz - 1 950 MHz is designated and shall be made available from the year 2000 as required for Future Public Land Mobile Telecommunications Systems (FPLMTS), the technical characteristics of which are being studied by the CCIR.

Reference to this footnote is proposed to be added to the part of Article 8, Section IV which gives allocations to services within the band 1 700 MHz - 1 710 MHz and 1 710 MHz - 2 290 MHz.

MHz
1 700 - 2 290

Allocation to Services		
Region 1	Region 2	Region 3
FNL/29/2 MOD		
1 700 - 1 710 FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 671 722 743A <u>746A</u>	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 671 722 743 <u>746A</u>	
FNL/29/3 MOD		
1 710 - 2 290 FIXED MOBILE 722 743A 744 746 <u>746A</u> 747 748 750	**1 710 - 2 290** FIXED MOBILE 722 744 745 746 <u>746A</u> 747 748 749 750	

Brazil (B) - Document 30

2.7 Future Public Land Mobile Telecommunications Systems (FPLMTS)

The Brazilian Administration takes the view that the spectrum allocated in the approximate range 1 - 3 GHz to the mobile services in Region 2 is sufficient to meet their requirements until the year 2010. Furthermore, it agrees with the conclusion of the CCIR that a common 60 MHz spectrum should be designated on a worldwide basis to accommodate the personal stations of the Future Public Land Mobile Telecommunications Systems (FPLMTS).

The development of such systems supported by the designation of a suitable common frequency band on a worldwide basis will bring to all countries the advantages of compatibility and cost reductions due to large scale production that would result. Any additional spectrum necessary to the operation of the FPLMTS mobile stations should be designated on a domestic basis or through regional agreements, and taking into account the convenience of being contiguous to the band designated to personal stations.

To accommodate the requirement for FPLMTS personal stations Brazil proposes the designation of the 1 880 - 1 940 MHz band.

MHz
1 720 - 2 025

	Allocation to Services		
	Region 1	Region 2	Region 3
B/30/34 MOD	~~1 710~~1 720 - ~~2 290~~1 880 FIXED Mobile 722 743A 744 746 ~~747 748 750~~	~~1 710~~1 720 - ~~2 290~~2 025 FIXED MOBILE 746A	
B/30/35 MOD	~~1 710~~1 880 - ~~2 290~~1 940 FIXED ~~Mobile~~MOBILE 746A ~~722~~743A ~~744 746 747 748 750~~		
B/30/36 MOD	~~1 710~~1 940 - ~~2 290~~2 025 FIXED Mobile ~~722~~ 743A ~~744 746 747 748 750~~	722 744 745 746 ~~747 748 749 750~~	

B/30/42 SUP **747, 748 and 750**

B/30/44 SUP **749**

Reasons: The time limit has already expired.

B/30/37

ADD **746A** The band 1 880 - 1 940 MHz is designated, on a worldwide basis, effective from 1 January 2000, for the operation of the personal stations of the Future Public Land Mobile Telecommunications Systems (FPLMTS), whose technical characteristics are to be defined by the CCIR.

Reasons: To enable the introduction of the personal segment of FPLMTS in a common worldwide band of spectrum thus facilitating the planning and implementation of these systems.

Australia (AUS) - Document 31

Agenda item 2.2.4c - Future public land mobile telecommunication system (FPLMTS)

Australia strongly supports measures that will assist in the introduction of worldwide system standards for future public land mobile telecommunications systems. Australia considers that there are significant economic, technical and operational advantages for designating common worldwide frequency allocations for the FPLMTS interfaces. These advantages are:

a) the provision of cost effective telecommunications, particularly for developing countries and remote areas, through the use of common technology;

b) the development of common standards for FPLMTS mobile and personal stations will facilitate global markets which lead to greater cost effectiveness for equipment manufacturers and service providers;

c) efficient spectrum utilization by FPLMTS mobile and personal stations will facilitate the planning and implementation of the system and sharing with other services;

d) facilitation of a worldwide roaming capability for FPLMTS personal stations.

We therefore consider that Article 8 should contain footnote provisions designating the bands to be used by FPLMTS.

Australian studies on FPLMTS spectrum requirements in high density traffic areas support the estimates of the CCIR of 170 MHz for the mobile station (R1) interface and 60 MHz for the personal station (R2) interface. For lower traffic density areas, sharing with other services within the same bands will be practicable.

Australia considers that the 1 700 - 2 300 MHz band is the most suitable for FPLMTS. In Australia and many other countries this band is currently utilized by fixed service systems providing low and medium capacity radio relay links, and by the space research, space operations and earth exploration-satellite services in the upper portion of the band. This band is also being considered by many countries for the introduction of cordless and personal communication systems.

Taking this situation into account, we consider that the following factors are particularly important in the designation of spectrum for FPLMTS:

a) the rapid growth of new mobile, personal and wireless systems, and the need to provide for migration of existing and pre-FPLMTS mobile technologies (such as DCS-1800 and DECT) to FPLMTS;

b) there is a need to maximize spectrum efficiency of the 600 MHz wideband (1 700 - 2 300 MHz) for fixed and mobile applications, and to minimize the impact on the fixed service. Considering that the current CCIR fixed service plans in this band require bandwidths of either 200 MHz or 400 MHz, and that FPLMTS requires a bandwidth of around 200 MHz, the band should be considered as three 200 MHz segments. As sharing between FPLMTS and the space research, space operations and earth exploration-satellite services in the second and third segments would be difficult, FPLMTS should be substantially located in the first segment;

c) if FPLMTS is located in either of the second or third segments, the needs of the space research, space operations and earth exploration-satellite services (see our comments on agenda item 2.2.6) may limit the usage of the remaining spectrum by the fixed service;

d) the FPLMTS personal station (R2) interface should overlap the boundary at 1 900 MHz of the CCIR 1 800 and 2 100 MHz fixed service channel plans. This would allow countries to adopt the R2 interface and international roaming while still retaining their fixed service channel plans;

e) there is a need to make provision for the application of space techniques to FPLMTS.

Australia therefore proposes designating spectrum for FPLMTS as follows:

1 700 - 1 870 MHz: FPLMTS vehicular stations (R1 interface)
1 870 - 1 930 MHz: FPLMTS personal stations (R2 interface).

MHz
1 710 - 2 300 (contd.)

	Allocation to Services		
	Region 1	Region 2	Region 3
AUS/31/34 MOD	~~**1 710**~~**2 200 - 2 290** FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) ~~Mobile~~ ~~722 743A 744 746~~ ~~747 748 750~~750A	~~**1 710**~~**2 200 - 2 290** FIXED MOBILE SPACE RESEARCH (space-to-Earth) (space-to-space) SPACE OPERATION (space-to-Earth) (space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth) (space-to-space) ~~722 744 745 746~~ ~~747 748 749 750~~750A	
AUS/31/35 MOD	**2 290 - 2 300** FIXED SPACE RESEARCH (deep space) (space-to-Earth) Mobile except aeronautical mobile 743A 750A	**2 290 - 2 300** FIXED MOBILE except aeronautical mobile SPACE RESEARCH (deep space) (space-to-Earth) 750A	

AUS/31/36
ADD **744B** Use of the band 1 700 - 1 870 MHz by the mobile service is designated for the R1 interface (vehicular stations) of public land mobile telecommunication systems having characteristics in accordance with the Recommendations of the CCIR.

AUS/31/37
ADD **744C** Use of the band 1 870 - 1 930 MHz by the mobile service is designated for the R2 interface (personal stations) of public land mobile telecommunication systems having characteristics in accordance with the Recommendations of the CCIR.

AUS/31/38
ADD **744D** In the bands 1 710 - 1 870 MHz and 1 870 - 1 930 MHz, the use of space techniques, in accordance with the Recommendations of the CCIR, may also be authorized when they are used in connection with the uses specified in Nos. 744B and 744C.

Reasons:

1. Agenda item 2.2.4c: To designate a band for the R1 and R2 interfaces of FPLMTS in the bands 1 700 - 1 870 MHz and 1 870 - 1 930 MHz, and to make provision for the application of space techniques to FPLMTS above 1 710 MHz.

Mali (MLI) - Document 39

MLI/39/9

No new or supplementary allocation should be made to terrestrial APC systems in the above-mentioned bands reserved for the aeronautical service.

c) Development of the use of future public land mobile telecommunication systems

Pursuant to Recommendation No. 205 (Mob-87), the CCIR has examined this question and defined the characteristics and operational conditions which would be desirable for this system. In view of the enormous size of its territory, Mali considers however that greater protection should be given to the fixed service and to other services.

Pakistan (PAK) - Document 44

Agenda Item 2.2.4c - Consideration of allocation of frequency band for the development of international use of mobile service for future land/mobile telecommunications systems (FPLMTS)

The minimum bandwidth requirement estimated for future public land mobile telecommunication systems is 230 MHz (60 MHz for personal stations and 170 MHz for mobile stations) in the CCIR Report to WARC-92. The potential of FPLMTS for providing economic and rapid communication facilities to rural areas is an attractive feature for developing countries.

The frequency bands from 1 700 - 2 690 MHz have primary allocation for mobile service in Regions 2 and 3 providing a total bandwidth of 990 MHz sharing with other services. Thus, as far as Region 3 is concerned, future mobile services can be implemented without the need for any modification to the Table of Frequency Allocations in Article 8.

Regarding the specific designation of a frequency band for future use by FPLMTS, it is proposed that this may be considered after further progress of CCIR work on technical standards for the system i.e. modulation parameters, protocols, etc. In view of the extensive use and future demands on the spectrum in the frequency bands mentioned above, we favour a cautious approach to reservation of a frequency band of the order of 230 MHz bandwidth for FPLMTS at this stage.

Vanuatu (VUT) - Document 48

V. FPLMTS

VUT/48/8

Vanuatu supports measures that would lead to a worldwide standard for FPLMTS and we support our regional neighbour, Australia's, proposal for the following FPLMTS bands:

1 700 - 1 870 MHz Vehicular stations (Document 31, proposal AUS/31/36)

1 870 - 1 930 MHz Personal stations (Document 31, proposal AUS/31/37)

VUT/48/9

Our fixed digital microwave links lie in the band 2.1 GHz - 2.3 GHz and consequently we would not like to see FPLMTS allocations within these frequencies.

Indonesia (INS) - Document 52

Agenda item 2.2.4c - Development of future public land mobile telecommunication systems

INS/52/5

For the initial implementation of FPLMTS, the meeting agreed to propose the centre frequency of fixed service at the 1.8 GHz band (1 790.5 - 1 825.5 MHz) and 2.0 GHz (1 982.5 - 2 017.5 MHz).

Thailand (THA) - Document 56

6. Agenda item 2.2.4c - On the allocation of frequency bands 1 - 3 GHz for the development of the international use of the mobile service for future public land mobile telecommunication systems

FPLMTS will meet the rapid increase in demand for mobile radio worldwide. The CCIR report indicated the wide bandwidth of spectrum required for FPLMTS. Thailand considered that the frequency band 1.8 GHz (1 713.5 - 1 902.5 MHz) and 2.0 GHz (1 905.5 - 2 094.5 MHz) shared with the fixed service is appropriate. Thailand proposes that:

THA/56/7

- The centre gap frequency of 35 + 35 MHz of the fixed service in the band 1.8 GHz (1 790.5 - 1 825.5 MHz) and 2.0 GHz (1 982.5 - 2 017.5 MHz) be allocated to FPLMTS.

THA/56/8

- Future extension of frequency bands for FPLMTS to meet the minimum spectrum bandwidth requirement of 170 MHz for mobile stations and 60 MHz for personal stations should be on the 1.8 GHz (1 713.5 - 1 902.5 MHz) and the 2.0 GHz (1 905.5 - 2 094.5) bands.

Mexico (MEX) - Document 63

3. Allocations to the mobile service and to future public land mobile telecommunication systems

A growing demand for spectrum for the mobile services, both in radiotelephony and data transmission, has been noted in Mexico in the past few years. Personal communications have been on the increase owing to the acceptance by the public of cellular technologies, trunks for vehicle fleets and radio-paging, etc. Since the future of personal communications is of interest to Mexico, it is proposed that the Conference should adopt measures which make for greater flexibility in the use of the bands below 1 GHz so that these needs can be met. In particular, Mexico proposes to add its name under Nos. 675 and 678 of the Radio Regulations and to raise to primary status the present secondary allocation to the mobile service in the band 942 - 960 MHz.

MEX/63/23
MOD **675**

Different category of service: in Chile, Colombia, Ecuador, the United States, Guyana ~~and~~, Jamaica and Mexico, the allocation of the bands 470 - 512 MHz and 614 - 806 MHz to the fixed and mobile services is on a primary basis (see No. 425), subject to agreement obtained under the procedure set forth in Article 14.

Reasons: To provide flexibility for use of the bands 470 - 512 MHz and 614 - 806 MHz.

MEX/63/24
MOD **678**

Additional allocation: in Costa Rica, El Salvador, Ecuador, the United States, Guatemala, Guyana, Honduras, Jamaica, 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 the procedure set forth in Article 14.

Reasons: To provide flexibility for use of the band 512 - 608 MHz.

MEX/63/25
MOD

MHz
942 - 960

Allocation to Services		
Region 1	Region 2	Region 3
942 - 960	**942 - 960**	**942 - 960**
FIXED	FIXED	FIXED
MOBILE except aeronautical mobile	MOBILE ~~Mobile~~	MOBILE
BROADCASTING 703		BROADCASTING
704	~~708~~	701

Reasons: To provide flexibility for use of the band 942 - 960 MHz.

MEX/63/26
SUP **708**

Reasons: Consequence of the proposal to upgrade the status of the mobile service.

Tanzania (TZA) - Document 74

c) For the development of the international use of the mobile service for future public land mobile telecommunication systems, as indicated in Recommendation No. 205 (Mob-87), or designate for this use a band already allocated to the mobile service.

TZA/74/10

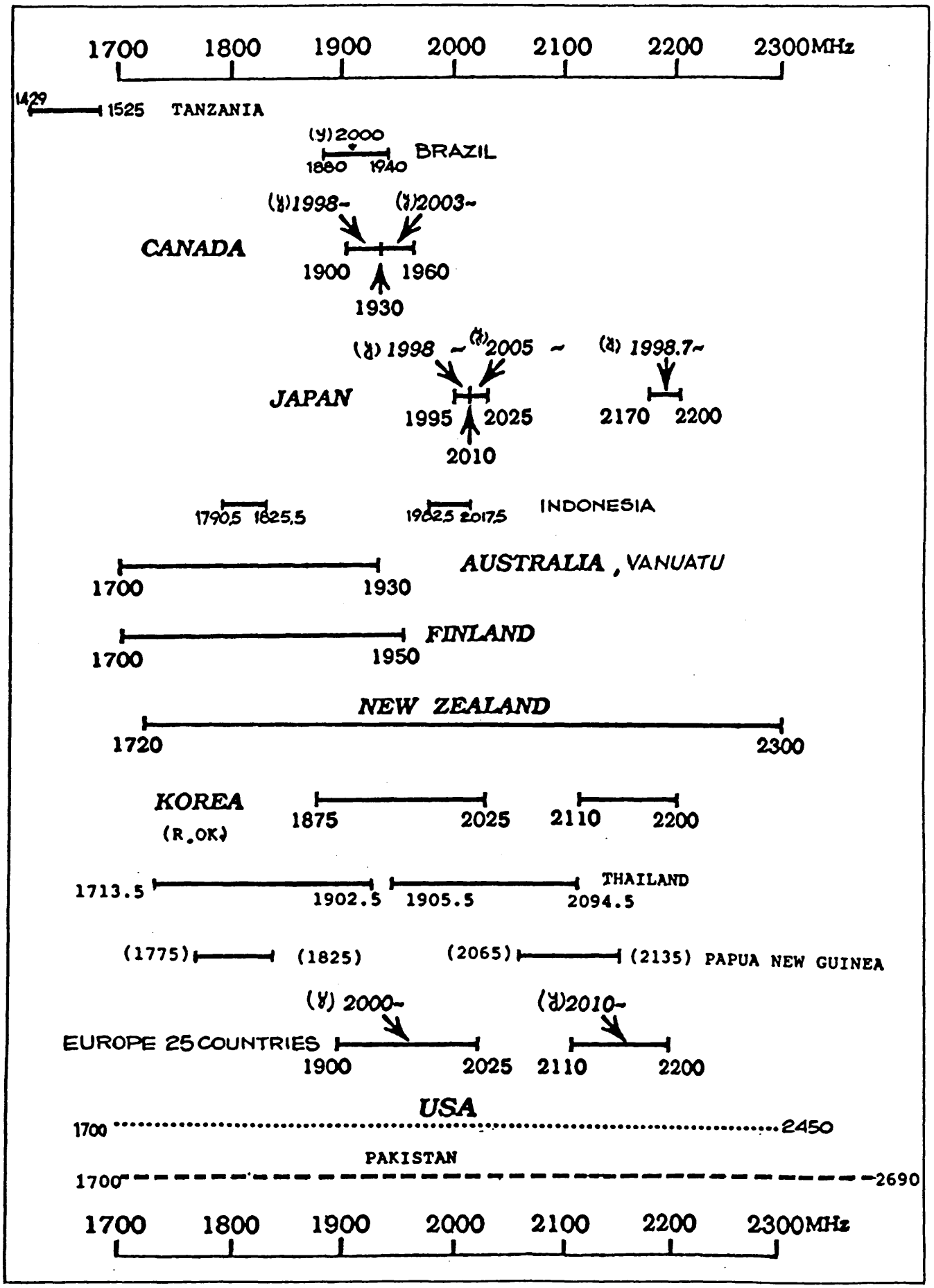
Tanzania is of the view that a frequency band be allocated for future public land mobile telecommunications systems (FPLMTS) on a worldwide basis to provide a wide range of services, voice and non-voice, with the potential value to developing countries and others with sparsely populated areas having limited communication facilities. The frequency band 1 429 - 1 525 MHz is considered appropriate for this service.

Senegal (SEN) - Document 75

The Administration of Senegal wishes to express its interest in future public land mobile telecommunication systems, while drawing attention to the need to protect existing systems.

ANNEXE II/ANNEX II/ANEXO II

BANDES PROPOSEES POUR LES FSMTPT
PROPOSED BANDS FOR FPLMTS
BANDAS PROPUESTAS PARA LOS FSPTMT



ANNEX III

Future Public Land Mobile Telecommunications Systems (FPLMTS)
(terrestrial component only)

No.	Name of the Country	Doc. No.	Page	Frequency Band MHz	BW (MHz)	Remarks
1.	Belarus, Russian Federation and Ukraine	7-E	-	-	-	a) No specific proposal on FPLMTS b) Mobile service upgraded to primary in Region 1
2.	Korea (ROK)	8-E	1, 2, 6,	1 875 - 2 025 2 110 - 2 200	240	a) ADD 746A, 746B b) SUP 749 and MOD 863
3.	Nigeria	9-E	3	-	-	No specific proposal on FPLMTS
4.	United States	12-E Add.8	1, 2	1 700 - 2 450	-	No specific designation proposed on FPLMTS
5.	Papua New Guinea	16-E	3	1 775 - 1 825 2 065 - 2 135	-	-
6.	Europe (25 countries)	20-E	41, 43, 45	1 900 - 2 025 2 110 - 2 200	215	a) Mobile service upgraded to primary in Region 1 b) SUP 743A (746A for FPLMTS)
7.	Canada	23-E	9, 37	1 900 - 1 960	60 (R 2)	a) (746A added for FPLMTS) b) Mobile service upgraded to primary in Region 1
8.	New Zealand	26-E	4, 17	1 720 - 2 300	230 60 (R 2)	a) Mobile service upgraded to primary in Region 1 b) (743B added for FPLMTS)
9.	Japan	27-E	5, 6, 19	1 995 - 2 025 2 170 - 2 200	60 (R 2)	(750A added for FPLMTS)
10.	Finland	29-E	2	1 700 - 1 950	250	a) Mobile service upgraded to primary in Region 1 b) (746A added for FPLMTS)
11.	Brazil	30-E	4, 17	1 880 - 1 940 Remaining bt. 1 - 3 GHz	60 (R 2)	Add. 746A, SUP 726 and SUP 737
12.	Australia	31-E	9, 10, 24, 25	1 700 - 1 870 1 870 - 1 930	170 (R 1) 60 (R 2)	Add. 744B, 744D a) Add. 744C, 744D b) Mobile service upgraded to primary in Region 1

No.	Name of the Country	Doc. No.	Page	Frequency Band MHz	BW (MHz)	Remarks
13.	Pakistan	44-E	4	1 700 - 2 690	-	No special designation proposed
14.	Vanuatu	48-E	4	1 700 - 1 870 1 870 - 1 930	170(R 1) 60 (R 2)	-
15.	Indonesia	52-E	2	1 790.5 - 1 825.5 1 982.5 - 2 017.5	35 35 } 70	-
16.	Thailand	56-E	2, 3	1 713.5 - 1 902.5 1 905.5 - 2 094.5	89 89 } 178	In two phases
17.	Mexico	63-E	4, 14	942 - 960	18	a) No specific proposal on FPLMTS b) Mobile service upgraded to primary in Region 2 in band 942 - 960 MHz
18.	Tanzania	74-E	4	1 429 - 1 525	96	-

Note - R 1 and R 2 are mobile and personal component interfaces respectively.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/60-E
17 February 1992
Original: English

SUB-WORKING GROUP 4C1

NOTE FROM COMMITTEE 4 TO COMMITTEE 5

DRAFT REPORT FROM INFORMAL DRAFTING GROUP

In choosing an allocation for BSS for high-definition television, Committee 4 has formed a view that all of the candidate bands have difficulties for countries in high rainfall climatic zones because of the high attenuation.

It is considered that improvements in the utilization of the 12 GHz planned bands may enable the needs for countries who have high rainfall climatic zones to be accommodated in that band.

Committee 4 requests that Committee 5 take note of this opinion and requests that the CCIR study the particular needs of high rainfall climatic zones for HDTV and the technical methods which could be used to accommodate those needs in the 12 GHz band.

R. BARTON
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/61-E
17 February 1992
Original: English

SUB-WORKING GROUP 4C1

REPORT BY THE CHAIRMAN OF AD HOC 2 TO SUB-WORKING GROUP 4C1

Ad hoc Group 2 of SWG 4C1 held two meetings, Friday, 14 February 1992 (1630 - 1800 hours) and Saturday, 15 February 1992 (1130 - 1330 hours).

At the first meeting the issue of feeder links for the BSS (wide-RF band HDTV) was discussed. At the second meeting a descriptive text [Document DT/62] was approved on this issue, which was prepared by a Drafting Group between the two meetings.

In addition to this text some points were raised which should be brought to the attention of SWG 4C1.

Further modifications were announced as far as Table B of Document DT/19(Rev.3) is concerned. Benin deleted its entry under the frequency range 27.5 - 30 GHz and Algeria proposed to use (in addition to the 28.5 - 29.5 GHz) the band 17.3 - 18.1 GHz for countries having high rain rates. Brazil associated itself with the band 21.4 - 22.2 GHz. Consequently the band 19.7 - 20.2 GHz does not appear as a candidate band for feeder links in Document DT/4C1.

A discussion was held on the question of a possible a priori plan for the feeder links to the BSS (wide-RF band HDTV).

As a result the Chairman was requested to communicate to SWG 4C1 the following note:

"Adopting digital techniques would reduce the need for a priori planning and thus maintain the greatest flexibility for implementing the service while maintaining equitable access to the GSO."

C. DOSCH
Chairman of Drafting Group 2
to Sub-Working Group 4C1

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/62-E
15 February 1992
Original: English

SUB-WORKING GROUP 4C1

REPORT OF AD HOC GROUP 2 TO SUB-WORKING GROUP 4C1

FACTORS RELATED TO THE CHOICE OF A FREQUENCY BAND FOR THE FEEDER LINKS OF THE BSS INTENDED FOR WIDE-RF BAND HDTV

1. Introduction

In association with agenda item 2.2.3b, the Conference is to consider appropriate frequency bands for the feeder links to the wide-RF band HDTV broadcasting-satellite service (W-BSS). While some Administrations have indicated that the allocation or designation in a specific band would be premature because of the limited number of stations to be expected to transmit wide-RF band in the near future (and these few stations should be coordinated as if they were FSS Earth-to-space), many Administrations have indicated that the allocation or designation in a specific band would be desirable. Various bands in the frequency range between 17.3 - 31 GHz were proposed (see Table B in Document DT/19(Rev.3)).

2. Influence of the choice for the down-link band

It is obvious that the choice of a feeder-link band cannot necessarily be considered independent from the determination of the corresponding BSS (down-link) band. About 15% of frequency separation between up link and down link would be required to allow proper filtering in the satellite.

For the following consideration of individual frequency bands for feeder links, the assumption is made that a corresponding down-link band was determined which would make the usage of that feeder-link band technically possible.

3. Propagation and cost consideration

Given the cost of the space segments the influence of the frequency band, as far as the cost for the up-linking station is concerned, seems to be rather uncritical. Depending on the location of the feeder-link station, however, there can be the need for site-diversity, i.e. the operation of a second feeder-link station in order to meet the generally agreed criterion of 99.9% of service availability in the worst month.

Ninety-nine percent of the worst month (which in attenuation terms corresponds to 99.979% of an average year), means that for 43 minutes of the worst month (or 108 minutes of the year, respectively) the established service criterion is not met and the service can be seriously degraded or completely lost.

Annex I gives examples for total attenuation and atmospheric cross-polar discrimination. Assuming the favourable case of a digital HDTV transmission with rugged channel coding, XPD values in the order of 20 to 25 dB seem to be appropriate as a minimum criterion for orthogonal operation. It can be seen that the variation of XPD with frequency is only significant for very low elevation angles.

A country like FNL (low elevation but a favourable rain zone) might just do without space diversity for the feeder-link station at all frequencies between 17 and 30 GHz. The maximum excess power needed is 13.7 dB which could probably be coped with by power control. For this purpose a beacon signal on board the satellite should be emitted.

In the case of SUI the limiting factor tends to be the atmospheric XPD. Even if the signal attenuation for 99.9% of the worst month (11.7 - 29.2 dB for 17 - 30 GHz) might be coped with by power control, the XPD requirement calls for site diversity. This second station, at least 10 km apart*, would not only improve the service availability to almost 100% of the time but would also reduce the necessary amount of power control for each individual station.

The example for MDG clearly indicates the need for space diversity because of high atmospheric attenuation. The excess power required for 99% of the worst month could be feasible with proper power control, even at 30 GHz (17.2 dB of excess power corresponds to an increase of the transmitter output power by a factor of 52), and for 99% of the worst month the atmospheric XPD remains for the frequency range under consideration at about 25 dB.

4. Sharing considerations

The sharing implications differ for each of the candidate bands in respect of the services involved and the level of implementation of those services by Administrations. No proposal explicitly foresees the displacement of existing services as feeder links to the BSS could share with existing services with few constraints, although some coordinating difficulties may be introduced by the use of transportable feeder-link stations.

17.3 - 18.1 GHz: This 800 MHz band is allocated to and planned for the feeder links to the BSS in accordance with Appendix 30A of the Radio Regulations. The band 17.3 - 18.1 GHz is also allocated to the fixed, the mobile and the fixed-satellite service (space-to-Earth).

Advantages:	Relatively low propagation margins, no burden on FSS (Earth-to-space).
Disadvantages:	Most satellites of the W-BSS would be constrained from co-location with satellites of the BSS (Appendix 30) for the same service zone.
Remarks:	Feeder-link stations for W-BSS might use a full 600 MHz wide frequency band and not just single channels. This might complicate sharing with existing services in the band 17.7 - 18.1GHz especially for transportable feeder-link stations.

18.1 - 18.6 GHz: The usage of this 500 MHz band was proposed by some Administrations in order to find a spectrum for feeder links of W-BSS outside the established up-link bands of the FSS, e.g. outside 27.5 - 30 GHz, and in order to minimize the propagation problem.

The band is currently allocated to the fixed, the fixed-satellite (space-to-Earth) and the mobile service.

Advantages:	As 17.3 - 18.1 GHz
Disadvantages:	As 17.3 - 18.1 GHz, plus reverse band working with FSS (space-to-Earth).
Remarks:	The band is only 500 MHz wide. If 600 MHz is allocated for W-BSS this might result in non-transparent transponders on board the W-BSS spacecraft. Sharing with the existing fixed and mobile service can create difficulties for transportable earth stations. Reverse band working with FSS (space-to-Earth) "requires

---

* For tropical countries higher separation distances may be required to cope effectively with large tropical bad weather frontiers.

21.4 - 22.2 GHz: The usage of this 800 MHz band was proposed by several Administrations in order to find a spectrum for feeder links of W-BSS at relatively low frequencies and outside the bands allocated to FSS (Earth-to-space). This band is also proposed by these Administrations as a candidate for feeder links of the BSS (12 GHz), to avoid the domestic problems of reverse band sharing if the band 17.3 - 17.8 GHz were allocated to W-BSS.

The band is currently allocated to the fixed and the mobile services.

Advantages:	For most countries proper margins are still reasonable. No burden on FSS. No reverse band working.
Disadvantages:	If the band is to be used for feeder links to BSS (12 GHz) and W-BSS, there may not be sufficient spectrum, in which case the satellites for these two applications could not be co-located.
Remarks:	Sharing a few fixed feeder-link stations with the existing services might not be too difficult. Sharing with the existing fixed and mobile services can create difficulties for transportable earth stations.

24.25 - 25.25 GHz: One Administration has expressed support for the usage of this band which is currently allocated to the radionavigation service. Only one Administration has actually a service implemented (airport surface, detection radar) in this band.

Advantages:	Little sharing constraints because of very limited use.
Disadvantages:	Relatively high propagation margins.
Remarks:	Except for one country the band is not used. The existing service in the country could be shifted below 24.65 GHz. As long as the radionavigation service is limited to the mentioned airport radars sharing with feeder-link earth stations would probably be possible throughout the band on a geographical separation basis.

27.5 - 30 GHz: The usage of this band was proposed by a number of organizations, some of which restrict their proposal to 28.5 - 29.5 GHz. The band 27.5 - 29.5 GHz is currently allocated to the fixed, the fixed-satellite (Earth-to-space) and the mobile service; the band 29.5 - 30 GHz is only allocated (on a primary basis) to the FSS (Earth-to-space). The band 27.5 - 30 GHz has a corresponding allocation to FSS (space-to-Earth) between 17.7 and 20.2 GHz.

Advantages:	No reverse band working.
Disadvantages:	High propagation margins needed. The use of this band for feeder-links for W-BSS may impact on the balance between up-link and down-link allocations of the FSS.*
Remarks:	Sharing a few fixed feeder-link stations with the existing service might not be too difficult. The operation of transportable feeder-link stations might, however, complicate the situation as coordination for a full band of, e.g. 600 MHz width, could be required.

---

* In order to alleviate this burden one Administration proposes to consider the band 27 - 31 GHz for up links to the W-BSS.

5. Regional issues

There is an existing allocation to BSS (in Regions 2 and 3) between 22.5 and 23 GHz (subject to certain restrictions). There is a corresponding band (27 - 27.5 GHz) allocated in those Regions to FSS (Earth-to-space) which is not paired with an equivalent allocation to the FSS (space-to-Earth).

If an alternative allocation for BSS (for W-HDTV) were made for Regions 2 and 3 in conjunction with a corresponding allocation to Region 1, and if a feeder-link band were allocated to or designated for this service, a worldwide solution would be achieved. There seems to be a tendency that transportable (or easy to move stations) were of more interest to certain countries in Regions 2 and 3 than to countries in Region 1.

Annex: 1

ANNEX I

Zone C (light rain) e.g. FNL

	Elev. Angle[1]	Total Attenuation [dB] (rain, gases, clouds)[2]		Atmospheric XPD[2] [dB]	
		99%	99.9%	99%	99.9%
17 GHz	15°	2.1	4.6	32	23.4
20 GHz	15°	3.8	7.6	30.4	21.5
22 GHz	15°	5.6	10.1	30.0	21.1
30 GHz	15°	6	13.7	28.8	19.9

Zone K (moderate) e.g. SUI

	Elev. Angle[1]	Total Attenuation [dB] (rain, gases, clouds)[2]		Atmospheric XPD[2] [dB]	
		99%	99.9%	99%	99.9%
17 GHz	30°	4.0	11.7	24.0	14.8
20 GHz	30°	5.9	16.1	23.4	14.1
22 GHz	30°	7.8	19.7	23.2	13.8
30 GHz	30°	10.4	29.2	22.5	13.2

Zone P (highly tropical) e.g. MDG

	Elev. Angle[1]	Total Attenuation [dB] (rain, gases, clouds)[2]		Atmospheric XPD[2] [dB]	
		99%	99.9%	99%	99.9%
17 GHz	60°	7.8	24.8	25.1	16.0
20 GHz	60°	10.3	32	24.9	15.7
22 GHz	60°	12.5	37.2	24.8	15.6
30 GHz	60°	17.2	54.3	24.8	15.6

1) The satellite positions are such as to give the indicated angle of elevation.

2) Calculated in accordance with CCIR Reports 564-4, 563-4 and 721-3 for the indicated percentages of the worst month.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

Corrigendum 2 to
Document DT/63 (Rev. 1)-E
27 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Chairman of the Working Group to the Plenary

REVIEW OF THE EXISTING RESOLUTIONS AND RECOMMENDATIONS IN THE RADIO REGULATIONS

Please make the following modifications to Document DT/63 (Rev. 1):

1. The following texts should be deleted from the list in Annex I and should be maintained:

- Resolution 505

- Resolution 704

- Recommendation 100.

2. Page 1, last paragraph, "21 Resolutions and 11 Recommendations" should read "19 Resolutions and 10 Recommendations".

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Corrigendum 1 to
Document DT/63 (Rev. 1)-E
26 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Chairman of the Working Group to the Plenary

REVIEW OF THE EXISTING RESOLUTIONS AND RECOMMENDATIONS IN THE RADIO REGULATIONS

Please make the following modifications to Document DT/63 (Rev. 1):

1. The following texts should be deleted from the list in Annex I and should be maintained:

- Resolution 505

- Recommendation 100.

2. Page 1, last paragraph, "21 Resolutions and 11 Recommendations" should read "20 Resolutions and 10 Recommendations".

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/63 (Rev. 1)-E
25 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Chairman of the Working Group to the Plenary

REVIEW OF THE EXISTING RESOLUTIONS AND RECOMMENDATIONS IN THE RADIO REGULATIONS

The Working Group to the Plenary has examined all of the existing Resolutions and Recommendations except for those assigned to Committee 4 by the terms of reference given in Document 66.

As a result, it was found that certain texts can be deleted without any adverse effects, because:

- the effective date has expired;
- all the necessary action has been accomplished;
- the text is too obsolete;
- the text is not entirely obsolete, but is of little use.

The deletion of unnecessary texts will contribute to the simplification of the Radio Regulations.

The Working Group to the Plenary proposes the deletion of 21 Resolutions and 11 Recommendations which fall in the above categories. Annex I gives a rationale for the deletion of texts.

ANNEX I

RATIONALE FOR DELETION OF CERTAIN RESOLUTIONS AND RECOMMENDATIONS

1. Definition of symbols used in this annex

The following symbols are used for categorizing the deletion:

SUP-A: should be deleted because the effective date has expired, all the necessary action has been accomplished, or the text is too obsolete;

SUP-B: can be deleted because the text is of little use.

2. Resolutions

2.1 *Resolution No. 6*, relating to the preparation of a handbook to explain and illustrate the procedures of the Radio Regulations (SUP-A)

This was adopted in 1979 and resolves that the IFRB should prepare a handbook. It was completed in1984. The last update was made in 1987.

Instructs the Secretary-General 1 (publication of the handbook) was completed in 1984 and last update in 1987.

Instructs the Secretary-General 2 (insertion of the flow charts in published editions of the Radio Regulations) still remains, but does not justify the maintaining of the Resolution. Such work can be continued as a regular part of the editing work.

2.2 *Resolution No. 9*, relating to the revision of entries in the Master International Frequency Register in the bands allocated to the fixed service between 3 000 kHz and 27 500 kHz (SUP-A)

This was adopted in 1979 and gives the procedure for revising the parts of the Master Register relating to the bands allocated to the fixed service between 3 000 kHz and 27 500 kHz.

All the necessary work was accomplished.

2.3 *Resolution No. 36*, relating to the preparation of explanatory information by the International Frequency Registration Board on the application of the new method for designating emissions in notification procedures and the consequential revision of the Master International Frequency Register (SUP-A)

This was adopted in 1979. All the necessary work was accomplished.

2.4 *Resolution No. 62*, relating to the experimental use of radio waves by ionospheric research satellites (SUP-B)

This text was adopted in 1971 and amended in 1979, and resolves that administrations may continue to permit the emissions of radio waves from ionospheric research satellites in orbit above the ionosphere in the MF and HF bands. It is now obsolete.

2.5 *Resolution No. 64*, relating to study of lightning protection of radio equipment (SUP-B)

This was adopted in 1979 and invites the CCIR to study the lightning phenomenon and protection techniques.

The CCIR has published a number of texts on the subject.

2.6 *Resolution No 66*, relating to the division of the world into Regions for the purposes of allocating frequency bands (SUP-A)

This was adopted in 1979 and requests the CCIR to study the technical and operational bases for the possible revision of the division of the world. The CCIR has prepared a report.

2.7 *Resolution No. 67*, relating to improvements in the design and use of radio equipment (SUP-B)

This was adopted in 1979 and resolves that administrations should encourage improvements in the design and construction of radio equipment and in the mode of operation of systems in order to improve the utilization of the radio frequency spectrum. It is too broad in its scope and not effective.

2.8 *Resolution No. 68*, relating to the redefinition of certain terms contained in Annex Z to the International Telecommunication Convention (Málaga-Torremolinos, 1973) and applicable to the Radio Regulations (SUP-A)

This was adopted in 1979 and addresses to the 1982 Plenipotentiary Conference. The effective date has expired.

2.9 *Resolution No. 90 (Mob-83)*, relating to the revision, replacement and abrogation of Resolutions and Recommendations of the World Administrative Radio Conference, Geneva, 1979 (SUP-A)

This lists the Resolutions and Recommendations abrogated by the WARC Mob-83. No longer necessary.

2.10 *Resolution No. 91 (HFBC-87)*, revision, replacement and abrogation of Resolutions and Recommendations of the World Administrative Radio Conference (Geneva, 1979) (SUP-A)

This lists the Resolutions and Recommendations abrogated by the WARC HFBC-87. No longer necessary.

2.11 *Resolution No. 92 (Orb-88)*, revision, replacement and cancellation of Resolutions of the World Administrative Radio Conference, Geneva, 1979, and the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session - Geneva, 1985) (Orb-85) (SUP-A)

This lists the Resolutions and Recommendations abrogated by the WARC Orb-88. No longer necessary.

2.12 *Resolution No. 108 (Orb-88)*, use of the bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.2-11.45 GHz and 12.75-13.25 GHz prior to the date of entry into force of Appendix 30 B (SUP-A)

Appendix 30 B went into force on 16 March 1990.

2.13 *Resolution No. 324 (Mob-87)*, procedures to be applied for the coordination of the use of the frequency 518 kHz for the international NAVTEX system (SUP-A)

This permits the application of the new Article 14A before the entry into force of the Final Acts, which went into force on 16 March 1990. No longer necessary.

2.14 *Resolution No. 326 (Mob-87)*, transfer of frequency assignments of radiotelephone stations operating in accordance with Appendix 25 (SUP-A)

This determines the procedure for transfer of frequency assignments of radiotelephone stations. All actions were accomplished.

2.15 *Resolution No. 337 (Mob-87)*, Resolutions and Recommendations which remain in effect until the provisions of the Radio Regulations as partially revised by WARC Mob-87 take effect (SUP-A)

The Final Acts of WARC Mob-87 took effect on 3 October 1989. No longer necessary.

2.16 *Resolution No. 501*, relating to examination by the IFRB of the notices relating to stations in the broadcasting service in Region 2 in the band 535-1 605 kHz during the period preceding the entry into force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2) (SUP-A)

This was adopted in 1979 and gives an interim procedure until the entry into force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2).

The Final Acts entered into force on 1 July 1990.

2.17 *Resolution No. 505*, relating to the broadcasting-satellite service (sound) in the frequency range 0.5 GHz to 2 GHz (SUP-A)

This was adopted in 1979 and resolves that the broadcasting-satellite service (sound) should be placed on the agenda of a future WARC. This was reflected in Resolution No. 520 (Orb-88) and then in the agenda of this Conference. No longer necessary.

2.18 *Resolution No. 509*, relating to the convening of a Regional Broadcasting Conference to review and revise the provisions of the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963 (SUP-A)

The Conference took place.

2.19 *Resolution No. 510*, relating to the convening of a Planning Conference for Sound Broadcasting in the Band 87.5-108 MHz for Region 1 and Certain Countries Concerned in Region 3 (SUP-A)

The Conference took place.

2.20 *Resolution No. 704 (Mob-83)*, relating to the holding of a Regional Administrative Radio Conference to Prepare Frequency Assignment Plans for the Maritime Mobile Service in the Bands Between 435 kHz and 526.5 kHz and in Parts of the Band Between 1 606.5 kHz and 3 400 kHz in Region 1 and to Plan for the Aeronautical Radionavigation Service in the Band 415-435 kHz in Region 1 (SUP-A)

The Conference took place.

2.21 *Resolution No. 709 (Orb-88)*, coordination between feeder-link earth stations and stations of other services in the bands 14.5-14.8 GHz and 17.7-18.1 GHz in Regions 1 and 3 (SUP-A)

This text was adopted by WARC Orb-88 in order to establish an interim procedure for early implementation of § 5.1.4 of AP 30A (Orb-88). The Final Acts of WARC Orb-88 entered into force on 16 March 1990. Therefore, no longer necessary.

3. Recommendations

3.1 *Recommendation No. 3*, relating to the transmission of electric power by radio frequencies from a spacecraft (SUP-B)

This was adopted in 1979 and asks the CCIR to study the effects of radio transmission of power from space on radiocommunication services. Recommendation No. 3 initiated the CCIR study but nowadays the study seems to be at a standstill due to difficulties in technology development. Anyway, it is of no use to maintain the Recommendation.

3.2 *Recommendation No. 12*, relating to the convening of future administrative radio conferences to deal with specific services (SUP-A)

This was adopted in 1979 and lists 12 administrative radio conferences to be convened, out of which 11 have been convened. The only exception is CARR-3, but Resolution No. 702 is maintained for that conference. Therefore, no need to maintain Recommendation No. 12.

3.3 *Recommendation No. 67*, relating to the definition of "service area" and "coverage area" (SUP-A)

This was adopted in 1979, inviting the CCIR to establish the definition of "service area" and "coverage area". Section A5 of CCIR Recommendation 573-3 gives a reply.

3.4 *Recommendation No. 70*, relating to studies of the technical characteristics of equipment (SUP-A)

This was adopted in 1959 and amended in 1979. It requests the CCIR to make studies on a wide range of technical characteristics of equipment. It is too broad and the text is too obsolete.

3.5 *Recommendation No. 100*, relating to preferred frequency bands for systems using tropospheric scatter (SUP-A)

This was adopted in 1979, its main purpose being to ask the CCIR to issue a Recommendation concerning the specific frequency bands found preferable for trans-horizon systems.

CCIR Recommendation 698 "Preferred frequency bands for trans-horizon radio-relay systems" is a reply.

3.6 *Recommendation No. 101*, relating to feeder links for the broadcasting-satellite service (SUP-B)

This was adopted in 1977 and amended in 1979, asking the CCIR to carry out a wide range of studies on feeder links. Although the studies may not have been completed, it is of little use to maintain this Recommendation.

3.7 *Recommendation No. 102*, relating to the study of modulation methods for radio-relay systems in relation to sharing with fixed-satellite service systems (SUP-A)

This was adopted in 1963 and amended in 1979, advocating studies by the CCIR on digital modulation techniques. Nowadays, digital modulations are so popular that it is not necessary to maintain the Recommendation.

3.8 *Recommendation No. 104 (Mob-87)*, provision of frequency bands for feeder links in the fixed-satellite service for the mobile-satellite service or for the aeronautical, land, or maritime mobile-satellite services in the bands 1 530-1 559 MHz and 1 626.5-1 660.5 MHz (SUP-A)

This requests the WARC-ORB-88 to take necessary actions concerning feeder links, which have been done.

3.9 *Recommendation No. 504*, relating to the preparation of a broadcasting plan in the band 1605-1 705 kHz in Region 2 (SUP-A)

This was adopted in 1979 and recommends the convening of a Region 2 RARC. The Conference took place.

3.10 *Recommendation No. 602 (Rev. Mob-83)*, relating to the planning of frequencies in the band 283.5-315 kHz used by maritime radiobeacons in the European Maritime Area (SUP-A)

This recommends the convening of a regional administrative conference which took place.

3.11 *Recommendation No. 708*, relating to frequency bands shared between space radiocommunication services and between space and terrestrial radiocommunication services (SUP-A)

This was adopted in 1971 and amended in 1979, giving detailed instructions for studies to be carried out by the CCIR. After 21 or 13 years, no longer necessary.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/63-E
18 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Chairman of the Working Group to the Plenary

REVIEW OF THE EXISTING RESOLUTIONS AND RECOMMENDATIONS IN THE RADIO REGULATIONS

The Working Group to the Plenary has examined all of the existing Resolutions and Recommendations except for those assigned to Committee 4 by the terms of reference given in Document 66.

As a result, it was found that certain texts can be deleted without any adverse effects, because:

- the effective date has expired;
- all the necessary action has been accomplished;
- the text is too obsolete;
- the text is not entirely obsolete, but is of little use.

The deletion of unnecessary texts will contribute to the simplification of the Radio Regulations.

The Working Group to the Plenary proposes the deletion of 21 Resolutions and 13 Recommendations which fall in the above categories. Annex I gives a rationale for the deletion of texts.

ANNEX I

RATIONALE FOR DELETION OF CERTAIN RESOLUTIONS AND RECOMMENDATIONS

1. Definition of symbols used in this annex

The following symbols are used for categorizing the deletion:

SUP-A: should be deleted because the effective date has expired, all the necessary action has been accomplished, or the text is too obsolete;

SUP-B: can be deleted because the text is of little use.

2. Resolutions

2.1 *Resolution No. 6*, relating to the preparation of a handbook to explain and illustrate the procedures of the Radio Regulations (SUP-A)

This was adopted in 1979 and resolves that the IFRB should prepare a handbook. It was completed in .

Instructs the Secretary-General 1 (publication of the handbook) was completed in .

Instructs the Secretary-General 2 (insertion of the flow charts in published editions of the Radio Regulations) still remains, but does not justify the maintaining of the Resolution. Such work can be continued as a regular part of the editing work.

2.2 *Resolution No. 9*, relating to the revision of entries in the Master International Frequency Register in the bands allocated to the fixed service between 3 000 kHz and 27 500 kHz (SUP-A)

This was adopted in 1979 and gives the procedure for revising the parts of the Master Register relating to the bands allocated to the fixed service between 3 000 kHz and 27 500 kHz.

All the necessary work was accomplished.

2.3 *Resolution No. 36*, relating to the preparation of explanatory information by the International Frequency Registration Board on the application of the new method for designating emissions in notification procedures and the consequential revision of the Master International Frequency Register (SUP-A)

This was adopted in 1979. All the necessary work was accomplished.

2.4 *Resolution No. 62*, relating to the experimental use of radio waves by ionospheric research satellites (SUP-B)

This text was adopted in 1971 and amended in 1979, and resolves that administrations may continue to permit the emissions of radio waves from ionospheric research satellites in orbit above the ionosphere in the MF and HF bands. It is now obsolete.

2.5 *Resolution No. 64*, relating to study of lightning protection of radio equipment (SUP-B)

This was adopted in 1979 and invites the CCIR to study the lightning phenomenon and protection techniques.

The CCIR has published a number of texts on the subject.

2.6 *Resolution No. 67*, relating to improvements in the design and use of radio equipment (SUP-B)

This was adopted in 1979 and resolves that administrations should encourage improvements in the design and construction of radio equipment and in the mode of operation of systems in order to improve the utilization of the radio frequency spectrum. It is too broad in its scope and not effective.

2.7 *Resolution No. 68*, relating to the redefinition of certain terms contained in Annex Z to the International Telecommunication Convention (Málaga-Torremolinos, 1973) and applicable to the Radio Regulations (SUP-A)

This was adopted in 1979 and addresses to the 1982 Plenipotentiary Conference. The effective date has expired.

2.8 *Resolution No. 108 (Orb-88)*, use of the bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.2-11.45 GHz and 12.75-13.25 GHz prior to the date of entry into force of Appendix 30 B (SUP-A)

Appendix 30 B went into force on 16 March 1990.

2.9 *Resolution No. 324 (Mob-87)*, procedures to be applied for the coordination of the use of the frequency 518 kHz for the international NAVTEX system (SUP-A)

This permits the application of the new Article 14A before the entry into force of the Final Acts, which went into force on 16 March 1990. No longer necessary.

2.10 *Resolution No. 325 (Mob-87)*, use of the additional channels reserved for duplex radiotelephony in the HF bands allocated to the maritime mobile service (SUP-A)

This gives the procedure for the initial allotment of newly available channels. All actions were accomplished.

2.11 *Resolution No. 326 (Mob-87)*, transfer of frequency assignments of radiotelephone stations operating in accordance with Appendix 25 (SUP-A)

This determines the procedure for transfer of frequency assignments of radiotelephone stations. All actions were accomplished.

2.12 *Resolution No. 327 (Mob-87)*, transfer of paired frequency assignments reserved for narrow-band direct-printing telegraphy and data transmission systems (SUP-A)

This determines the procedure for transfer of paired frequency assignments. All actions were accomplished.

2.13 *Resolution No. 328 (Mob-87)*, transfer of frequency assignments to coast stations for wideband telegraphy, for A1A or A1B Morse telegraphy, for facsimile, special and data transmission systems and for direct-printing telegraphy systems operating in the bands allocated exclusively to the maritime mobile service between 4 000 and 27 500 kHz (SUP-A)

This determines the procedure for transfer of frequency assignments to coast stations. All actions were accomplished.

2.14 *Resolution No. 335 (Mob-87)*, use of non-paired ship station frequencies for narrow-band direct-printing telegraphy and data transmission systems (SUP-A)

This instructs the IFRB to delete from the Master Register all assignments recorded as a result of the application of Resolution No. 301. All actions were accomplished.

2.15 *Resolution No. 337 (Mob-87)*, Resolutions and Recommendations which remain in effect until the provisions of the Radio Regulations as partially revised by WARC Mob-87 take effect (SUP-A)

The Final Acts of WARC Mob-87 took effect on 3 October 1989. No longer necessary.

2.16 *Resolution No. 501*, relating to examination by the IFRB of the notices relating to stations in the broadcasting service in Region 2 in the band 535-1 605 kHz during the period preceding the entry into force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2) (SUP-A)

This was adopted in 1979 and gives an interim procedure until the entry into force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2).

The Final Acts entered into force on .

2.17 *Resolution No. 505*, relating to the broadcasting-satellite service (sound) in the frequency range 0.5 GHz to 2 GHz (SUP-A)

This was adopted in 1979 and resolves that the broadcasting-satellite service (sound) should be placed on the agenda of a future WARC. This was reflected in Resolution No. 520 (Orb-88) and then in the agenda of this Conference. No longer necessary.

2.18 *Resolution No. 509*, relating to the convening of a Regional Broadcasting Conference to review and revise the provisions of the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963 (SUP-A)

The Conference took place.

2.19 *Resolution No. 510*, relating to the convening of a Planning Conference for Sound Broadcasting in the Band 87.5-108 MHz for Region 1 and Certain Countries Concerned in Region 3 (SUP-A)

The Conference took place.

2.20 *Resolution No. 704 (Mob-83)*, relating to the holding of a Regional Administrative Radio Conference to Prepare Frequency Assignment Plans for the Maritime Mobile Service in the Bands Between 435 kHz and 526.5 kHz and in Parts of the Band Between 1 606.5 kHz and 3 400 kHz in Region 1 and to Plan for the Aeronautical Radionavigation Service in the Band 415-435 kHz in Region 1 (SUP-A)

The Conference took place.

2.21 *Resolution No. 709 (Orb-88)*, coordination between feeder-link earth stations and stations of other services in the bands 14.5-14.8 GHz and 17.7-18.1 GHz in Regions 1 and 3 (SUP-A)

Expired.

3. Recommendations

3.1 *Recommendation No. 3*, relating to the transmission of electric power by radio frequencies from a spacecraft (SUP-B)

This was adopted in 1979 and asks the CCIR to study the effects of radio transmission of power from space on radiocommunication services. Recommendation No. 3 initiated the CCIR study

but nowadays the study seems to be at a standstill due to difficulties in technology development. Anyway, it is of no use to maintain the Recommendation.

3.2 *Recommendation No. 12*, relating to the convening of future administrative radio conferences to deal with specific services (SUP-A)

This was adopted in 1979 and lists 12 administrative radio conferences to be convened, out of which 11 have been convened. The only exception is CARR-3, but Resolution No. 702 is maintained for that conference. Therefore, no need to maintain Recommendation No. 12.

3.3 *Recommendation No. 67*, relating to the definition of "service area" and "coverage area" (SUP-A)

This was adopted in 1979, inviting the CCIR to establish the definition of "service area" and "coverage area". Section A5 of CCIR Recommendation 573-3 gives a reply.

3.4 *Recommendation No. 70*, relating to studies of the technical characteristics of equipment (SUP-A)

This was adopted in 1959 and amended in 1979. It requests the CCIR to make studies on a wide range of technical characteristics of equipment. It is too broad and the text is too obsolete.

3.5 *Recommendation No. 100*, relating to preferred frequency bands for systems using tropospheric scatter (SUP-A)

This was adopted in 1979, its main purpose being to ask the CCIR to issue a Recommendation concerning the specific frequency bands found preferable for trans-horizon systems.

CCIR Recommendation 698 "Preferred frequency bands for trans-horizon radio-relay systems" is a reply.

3.6 *Recommendation No. 101*, relating to feeder links for the broadcasting-satellite service (SUP-B)

This was adopted in 1977 and amended in 1979, asking the CCIR to carry out a wide range of studies on feeder links. Although the studies may not have been completed, it is of little use to maintain this Recommendation.

3.7 *Recommendation No. 102*, relating to the study of modulation methods for radio-relay systems in relation to sharing with fixed-satellite service systems (SUP-A)

This was adopted in 1963 and amended in 1979, advocating studies by the CCIR on digital modulation techniques. Nowadays, digital modulations are so popular that it is not necessary to maintain the Recommendation.

3.8 *Recommendation No. 103*, relating to carrier energy dispersal in systems in the fixed-satellite service (SUP-A)

This was adopted in 1971 and amended in 1979, recommending the use of carrier energy dispersal. CCIR Recommendation 446 gives more detailed information, therefore no longer necessary.

3.9 *Recommendation No. 104 (Mob-87)*, provision of frequency bands for feeder links in the fixed-satellite service for the mobile-satellite service or for the aeronautical, land, or maritime mobile-satellite services in the bands 1 530-1 559 MHz and 1 626.5-1 660.5 MHz (SUP-A)

This requests the WARC-ORB-88 to take necessary actions concerning feeder links, which have been done.

3.10 *Recommendation No. 504*, relating to the preparation of a broadcasting plan in the band 1605-1 705 kHz in Region 2 (SUP-A)

This was adopted in 1979 and recommends the convening of a Region 2 RARC. The Conference took place.

3.11 *Recommendation No. 602 (Rev. Mob-83)*, relating to the planning of frequencies in the band 283.5-315 kHz used by maritime radiobeacons in the European Maritime Area (SUP-A)

This recommends the convening of a regional administrative conference which took place.

3.12 *Recommendation No. 620*, relating to the meteorological aids service in the band 27.5- 28 MHz (SUP-B)

This was adopted in 1959 and amended in 1979, recommending the transfer of the meteorological aids service in the band 27.5-28 MHz to higher frequency bands.

After 30 years, it seems no longer necessary to maintain it.

3.13 *Recommendation No. 708*, relating to frequency bands shared between space radiocommunication services and between space and terrestrial radiocommunication services (SUP-A)

This was adopted in 1971 and amended in 1979, giving detailed instructions for studies to be carried out by the CCIR. After 21 or 13 years, no longer necessary.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/64-E
17 February 1992
Original: English

WORKING GROUP 4C

Draft

REPORT OF AD HOC GROUP 1 TO WORKING GROUP 4C

ALLOCATION PROPOSALS IN THE FREQUENCY RANGE 25.25 - 158 GHz

1. Introduction

The Conference is to consider the allocation of frequencies for new space service applications in the frequency bands above 20 GHz. The ad hoc Group held two meetings to consider the proposals from Administrations on the services of space research, earth exploration-satellite and inter-satellite between the bands 25.25 - 158 GHz.

Terms of reference for the Group's work and a complete list of the pertinent proposals can be found in Document DT/32(Rev.2).

2. Results

A summary of the results of the Group discussion is attached.

The following allocation proposals are recommended for adoption by Working Group 4C:

25.25 - 27.5 GHz **INTER-SATELLITE 881A**

881A Use of the 25.25 - 27.5 GHz band by the inter-satellite service is limited to space research and earth exploration-satellite applications, and also transmission of data from industrial and medical activities in space.

25.5 - 27 GHz **Earth Exploration-Satellite (space-to-Earth)**

31.8 - 32.3 GHz **SPACE RESEARCH (Deep Space Only) (space-to-Earth) 893**

MOD **893** In designing systems for the inter-satellite and radionavigation services in the band 32 - 33 GHz, and for the space research service (deep space) in the band 31.8 - 32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these ~~two~~ services, bearing in mind the safety aspects of the radionavigation service (see Recommendation No. 707).

34.2 - 34.7 GHz **SPACE RESEARCH (Deep Space Only) (Earth-to-space)**

37.5 - 40.5 GHz **Earth Exploration-Satellite (space-to-Earth)**

40 - 40.5 GHz **EARTH EXPLORATION-SATELLITE (Earth-to-space)**
SPACE RESEARCH (Earth-to-space)

74 - 84 GHz **Space Research (space-to-Earth)**

Some issues remain in square brackets and require further consideration by Working Group 4C. They are as follows:

Provision of 100 MHz between 20 and 40 GHz for the transmission of space VLBI data from space-to-Earth. The ad hoc Group recommends that an allocation for this purpose be made. Two proposals were considered, one at 27.5 - 28.5 GHz and one at 37 - 38 GHz. The proposal at 37 - 38 GHz may offer the advantage of some spectrum efficiency in that part of the band, i.e. 37 - 37.5 GHz is also proposed for the purpose of future planetary missions. However, concern was expressed regarding sharing the part of the band from 37.5 - 38 GHz between the fixed-satellite service and the space research service in the space-to-Earth direction. Delegates have been provided with copies of the input document to IWP 2/2 which addresses sharing feasibilities. Should the sharing feasibility concerns not be resolved after consideration of this material, then the ad hoc Group recommends adoption of the proposal to allocate the band 27.5 - 28.5 GHz to the space research service, on a primary basis in the space-to-Earth direction for the purpose of data transmission for space VLBI. Additionally, further consideration of the proposal to allocate the band 37 - 37.5 GHz to the space research service on a primary basis in the space-to-Earth direction for the purpose of future planetary missions should be addressed. It should be noted that the companion band (i.e. Earth-to-space) is the already recommended band from 40 - 40.5 GHz.

The requirement to allocate 1.5 GHz of spectrum to the earth exploration-satellite service, on a secondary basis, in the Earth-to-space direction was addressed. The Group recommends that such an allocation be made, and has already recommended that 3 GHz of spectrum be allocated in the opposite direction (see above 37.5 - 40.5 GHz). The purpose of these allocations is to provide feeder links for communication of wideband ecological and Earth environment data. The proposed band being considered by the ad hoc Group is 29.5 - 31 GHz. Concern was expressed regarding the feasibility of sharing in the part of the band 30 - 31 GHz between existing and anticipated systems in the fixed-satellite and mobile-satellite services and systems in the proposed earth exploration-satellite service. Further consideration will be necessary pending a decision on the proposal 28.5 - 29.5 GHz band for HDTV feeder links.

The allocation of 156 - 158 GHz to the earth exploration-satellite service on a primary basis for passive observations of atmospheric water vapour is recommended to Working Group 4C. The issue still under discussion among delegates is whether it is necessary to delete the existing allocation to the mobile service in this band. It is recommended that the allocation to the fixed-satellite service be deleted from 156 - 158 GHz, but that the existing allocations to the inter-satellite and fixed services be retained.

Note - The proposal, submitted by the Administration of Japan, to append Footnote 881B was not considered, pending the result of discussion between the Chairman of Working Group 4C and the Chairman of the Working Group of the Plenary.

3. Consequential changes

The proposals to delete the allocation to the fixed-satellite service in Earth-to-space direction in the band 27 - 27.5 GHz may be considered to be consequential to the allocation Recommendation from Sub-Working Group 4C1 on a feeder-link band for HDTV. If the allocation to the fixed-satellite service is not deleted then consideration should be given to proposals to modify the Radio Regulations to provide some relief from the provisions of RR 2613 for low-Earth orbit satellites operating in the inter-satellite service from 27 - 27.5 GHz.

Consequential to the allocation of the bands 31.8 - 32.3 GHz and 34.2 - 34.7 GHz to the space research service limited to deep space only, the existing secondary allocations to the space research service in these frequency bands should be examined, along with Footnotes 891, 892 and 896 with a view to suppression, deletion or modification.

ATTACHMENT

Summary of proposals adopted by ad hoc Group 1 to Working Group 4C

FREQUENCY ALLOCATION SERVICE	CONDITIONS
INTER-SATELLITE 25.25 - 27.5 GHz	Footnote 881A. Use of the 25.25 - 27.5 GHz band by the inter-satellite service is limited to space research and earth exploration-satellite applications, and also transmission of data from industrial and medical activities in space.
Footnote **881B**	Not discussed pending discussion with Mr. Kimball and Mr. Murotani.
Earth exploration-satellite 25.5 - 27 GHz (space-to-Earth)	
[SPACE RESEARCH 27.5 - 28.5 GHz (space-to-Earth)]	In abeyance pending consideration of 37 - 38 GHz proposal
Earth exploration-satellite [29.5 - 31 GHz (Earth-to-space)] 37.5 - 40.5 GHz (space-to-Earth)	Pending resolution of HDTV feeder-link issue. Objections based on sharing considerations with existing FSS and MSS systems in the 30 - 31 GHz band.
SPACE RESEARCH (deep space) 31.8 - 32.3 GHz (space-to-Earth)* 34.2 - 34.7 GHz (Earth-to-space)	* **MOD 893:** In designing systems for the inter-satellite and radionavigation services in the band 32 -33 GHz, and for the space research service (deep space) in the frequency band 31.8 - 32.3 GHz, administrations shall take all necessary measures to prevent harmful interference between these ~~two~~ services, bearing in mind the safety aspects of the radionavigation service (see Recommendation 707).
[SPACE RESEARCH 37 - 38 GHz (space-to-Earth)]	Pending resolution of sharing question with respect to FSS in 37.5 - 38.8 GHz.

FREQUENCY ALLOCATION SERVICE	CONDITIONS
EARTH EXPLORATION-SATELLITE SPACE RESEARCH 40 - 40.5 GHz (Earth-to-space)	
space research 74 - 84 GHz (space-to-Earth)	
[EARTH EXPLORATION-SATELLITE (passive) 156 - 158 GHz]	Proposed deletion of mobile service subject to further discussion.

R.M. TAYLOR
Chairman of ad hoc Group 1 to Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/65-E
17 February 1992
Original: English

Source: Document DT/23(Rev.1)

WORKING GROUP 4C

Draft

SECOND REPORT OF WORKING GROUP 4C TO COMMITTEE 4

Agenda item 2.2.5

Working Group 4C considered proposals of several Administrations concerning Footnote 797B.

Agreement was reached concerning the need that Footnote 797B continues to make reference to Article 14.

The request of Japan to include in the footnote the fixed service for this country was not solved.

The Working Group concluded that the countries listed in Annex A should be included in Footnote 797B.

H.G. KIMBALL
Chairman of Working Group 4C

Annex: 1

ANNEX A

J/27/58

MOD **797B**
Mob-87 Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Japan, Jordan, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14[and in Japan, this band is also allocated to the fixed service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.]

POR/77/1

MOD **797B**
Mob-87 Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Morocco, Norway, the Netherlands, Pakistan, Portugal, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

BEL/LUX/115/1

MOD **797B**
Mob-87 Additional allocation: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, France, Finland, Israel, Italy, Jordan, Luxembourg, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

GRC/130/1

MOD **797B**
Mob-87 Additional allocation: in the Federal Republic of Germany, Austria, Denmark, Spain, France, Finland, Greece, Israel, Italy, Jordan, Morocco, Norway, the Netherlands, Pakistan, the United Kingdom, Sweden, Switzerland, Syria and Tunisia, the band 5 150 - 5 250 MHz is also allocated to the mobile service, on a primary basis, subject to the agreement obtained under the procedure set forth in Article 14.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/66-E
17 February 1992
Original: English

COMMITTEE 5

Working Group 5C

SECOND AND FINAL REPORT OF THE CHAIRMAN OF WORKING GROUP 5C TO COMMITTEE 5

1. Introduction

Included in this report are the proposed texts of two Resolutions [as well as further modifications to Article 1] prepared by Working Group 5C. These texts are based in consideration of proposals submitted to the Conference by 33 administrations in Documents 12 (United States), 20 (Europe), 21 (Germany), 27 (Japan), 32 (Spain), 39 (Mali), 75 (Senegal), [80 (Argentina),] 123 (Morocco) and 148 (Morocco).

Three other documents were also considered from CCIR (Document 3) and IFRB (Documents 4 and 33).

2. Summary of proceedings

The Working Group established two Sub-Working Groups and one Drafting Group:

a) Sub-Working Group 5C-1, under the chairmanship of Mr. V. Rubio Carreton (Spain). This Sub-Working Group had the task to develop a draft Resolution relating to the implementation of changes in frequency allocations in the HF bands;

b) Sub-Working Group 5C-2, under the chairmanship of Mr. T. Hahkio (Finland). This Sub-Working Group had the task to develop a draft Resolution relating to terrestrial digital sound broadcasting;

c) Drafting Group 5C-3, with the convenor Mr. T. Jeacock (United Kingdom). The Drafting Group had the task to redraft some text from the draft Resolution relating to terrestrial digital sound broadcasting.

The Working Group held nine meetings in total and has completed its allotted task.

3. Conclusion

With regard to the Resolution relating to the implementation of changes in frequency allocations in the HF bands, the Kingdom of Morocco proposed an additional **considering**, ("that similar action carried out by the IFRB in application of Resolution Nos. 8 and 9 of the World Administrative Radio Conference, Geneva, 1979, did not produce the expert results"). Although it was generally accepted that the statement was not incorrect, the majority of the Working Group did not support the inclusion. The Working Group agreed on the text as given in Annex 1. Some items remained within square brackets. Frequency allocation matters were considered to be subject to decisions of Committee 4 and the mentioned dates are to be decided by Committee 5.

With regard to the Resolution relating to terrestrial digital sound broadcasting, the Working Group agreed on the text as given in Annex 2. Because there was insufficient time to reach consensus, some items remained within square brackets. The United States supported by Mexico and Cuba were of the opinion that the subject matter concerned only Region 1 and certain countries of Region 3. They will raise this matter in Committee 5.

[On the basis of a liaison statement from WG/PL the Working Group agreed to recommend a modification to Article 1, see Annex 3.]

[With regard to a proposal from Argentina, to include a synoptic table, the Working Group agreed to include such a table in Article 1. The table is given in Annex 4.]

J.F. BROERE
Chairman

Annexes: 4

ANNEX 1

Draft

NEW RESOLUTION COM5/[...]

RELATING TO IMPLEMENTATION OF CHANGES IN FREQUENCY ALLOCATIONS BETWEEN [4 000 kHz AND 20 000 kHz]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that parts of the frequency bands between [4 000 kHz and 20 000 kHz] which were previously allocated on an exclusive or shared basis to the fixed and mobile services have been reallocated to the broadcasting service;

b) that some existing fixed and mobile assignments may need to be removed progressively from those reallocated bands to make way for the broadcasting [or amateur] services;

c) that the assignments to be removed, termed "displaced assignments", must be reaccommodated in other appropriate frequency bands;

d) that developing countries may require special assistance from the IFRB in replacing the displaced assignments with appropriate protection;

e) that procedures exist already in Article 12 of the Radio Regulations that may be used to this effect,

recognizing

the difficulties that might face administrations and the IFRB during the period of transition from the previous allocations to those made by this Conference,

resolves that

1. the duration of the transition period shall be from [1.4.1992] to [1.1.2007];

2. administrations should no longer notify any frequency assignments to stations of the fixed and mobile services in the reallocated bands as of [1.4.1992]. Assignments notified in these bands after the date [1.4.1992], shall bear a symbol to indicate that they will be deleted from the Master International Frequency Register on [1.1.2007];

3. as of [1.4.1992], the IFRB shall undertake a continuing action to review the Master International Frequency Register with the help of the administrations. In this respect the IFRB shall periodically consult the administrations for the frequency assignments for links for which another satisfactory means of telecommunication exists; with a view to either downgrading assignments of class of operation A or deleting such assignments;

4. administrations shall, for assignments of class of operation A in the reallocated bands, either notify the IFRB the replacement frequencies or request the IFRB assistance in selecting the replacement frequencies in application of RR 1218 and Resolution No.103;

5. the IFRB shall develop in due time a draft procedure to be used for the replacement of remaining frequency assignments and shall consult administrations in accordance with RR 1001.1;

6. the IFRB should modify the draft procedures taking account to the extent practicable of comments received from administrations and propose replacement assignments at the latest three years before [1.1.2007]. In so doing, the IFRB shall request administrations to take appropriate action in relation to their assignments to be in conformity with the Table of Frequency Allocations by the due date;

7. a replacement frequency assignment whose basic characteristics with, the exception of the assigned frequency, have not been modified in the above process, shall keep its original date in accordance with RR 1445 - RR 1449. However, if these basic characteristics of a replacement frequency assignment are different from those of the displaced assignment, the replacement assignment shall be treated in accordance with RR 1376 - RR 1380,

invites Administrations

when seeking reaccommodation of the displaced assignments for their fixed and mobile services in the bands between [4 000 kHz and 20 000 kHz] which have been reallocated to the broadcasting [or amateur] services, to make every effort to find replacement assignments in the bands allocated to the fixed and mobile services concerned.

ANNEX 2

Draft

NEW RESOLUTION COM5/[...]

RELATING TO TERRESTRIAL DIGITAL SOUND BROADCASTING

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that advances in technology have made available digital sound broadcasting systems of high quality;

b) that such a digital sound broadcasting system will offer a considerably higher sound quality as well as additional system characteristics which are not supported by the present FM broadcasting system;

c) that digital sound broadcasting can, in addition to the properties mentioned above, have a higher frequency efficiency than conventional FM sound broadcasting;

[d) that extensive studies have been made in the CCIR on digital sound broadcasting between 0.5 and 3.0 GHz;]

d) that digital sound broadcasting systems require less effective radiated power;

e) that the bands 87.5 - 108 MHz in Region 1, 88 - 108 MHz in Region 2 and 87 - 108 MHz in Region 3 are generally much used for the high-powered FM sound broadcasting service, except in some countries;

f) that several European countries are considering the implementation of digital sound broadcasting on an interim basis in the band 87.5 - 108 MHz or other broadcasting bands,

resolves to invite the CCIR

in order to harmonize the implementation of digital sound broadcasting;

1. to undertake as a matter of urgency, the relevant technical studies associated with introducing terrestrial digital sound broadcasting in the VHF [broadcasting] band[s];

2. in particular, to consider the system characteristics and propagation in relation to developing compatibility criteria in the same and adjacent bands including protection of the safety services,

resolves further

to request the Secretary General to bring this Resolution to the notice of the Administrative Council for consideration of placing on the agenda of a competent administrative radio conference the subject of terrestrial digital sound broadcasting,

invites Administrations

to contribute actively to the CCIR studies in this respect.

ANNEX 3

Draft modification to Article 1 of the Radio Regulations

MOD 182

8.14 Geostationary-satellite orbit: The orbit ~~in which a satellite must be placed to be a geostationary satellite.~~ of a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator.

ANNEX 4

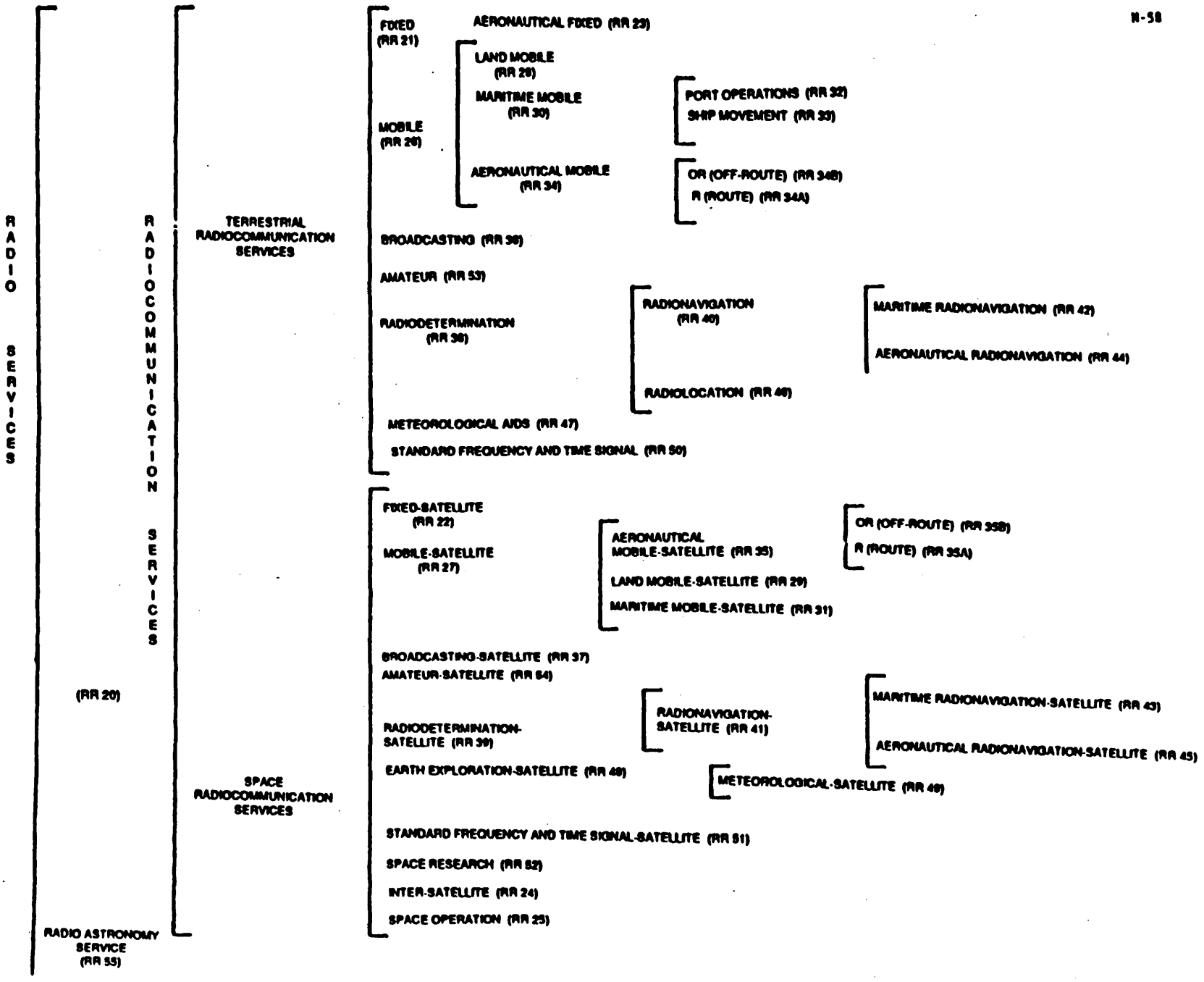
Tables giving the classifications of services and stations to be added to Article 1 of the Radio Regulations

The tables, Table 58 and Table 59, are enclosed for inclusion in Article 1.

Encl: 2

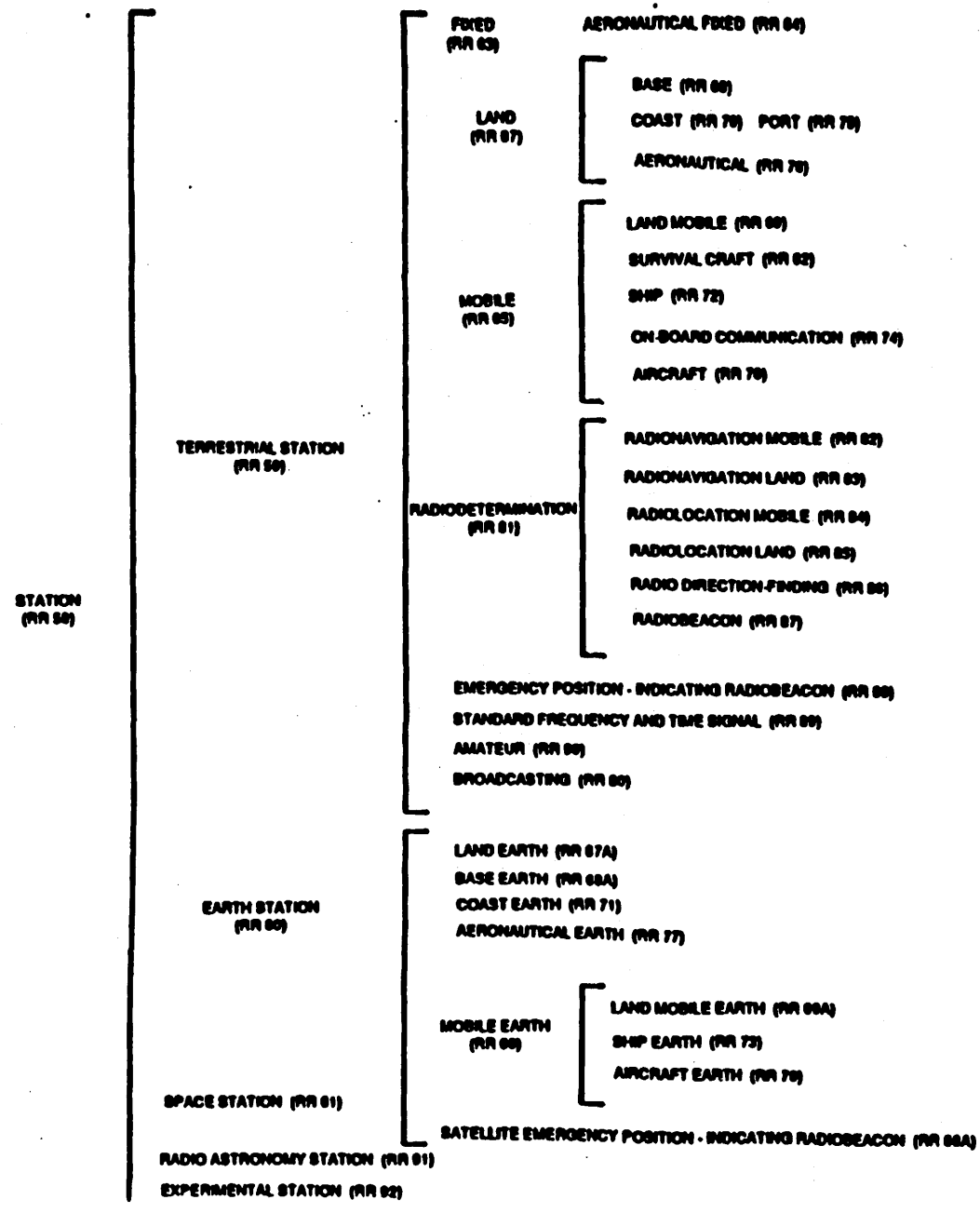
CLASSIFICATION OF RADIO STATIONS IN ACCORDANCE WITH THE RADIO REGULATIONS

(See Section III of Article 1)



CLASSIFICATION OF RADIO STATIONS IN ACCORDANCE WITH THE RADIO REGULATIONS

(See Section IV of Article 1)



INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/67-E
17 February 1992
Original: French

BUDGET CONTROL COMMITTEE

Draft

REPORT OF THE BUDGET CONTROL COMMITTEE TO THE PLENARY MEETING

1. The Budget Control Committee held x meetings during the Conference and examined the questions arising from its terms of reference.

Under Nos. 476 to 479 of the International Telecommunication Convention (Nairobi, 1982), the Committee's terms of reference are:

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

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

c) to estimate the costs that may be entailed by the execution of the decisions taken by the Conference.

2. Agreement with the inviting Administration

In accordance with Resolution No. 83 (amended) of the Administrative Council of the ITU on the organization, financing and liquidation of the accounts of conferences and meetings of the ITU, the Spanish Government and the Secretary-General of the ITU concluded an agreement concerning the organization and financing of WARC-92.

The Budget Control Committee took note of the agreement concluded between the Spanish Government and the Secretary-General of the Union.

3. Appreciation of the organization and facilities available to delegates

The Budget Control Committee considered that the organization and facilities made available to delegates were entirely satisfactory and wishes to express its thanks for all the efforts made to ensure the smooth running of the Conference.

4. Conference budget

The Budget Control Committee examined the Conference budget, as approved by the Administrative Council at its 46th session, 1991, amounting to 2,581,000 Swiss francs.

This budget includes 100,000 Swiss francs for IFRB post-conference work.

The Committee noted that the Conference budget had been adjusted to take into account changes in the Common System of the United Nations and the specialized agencies with regard to salaries and allowances and fluctuations in the rate of exchange between the US dollar and the Swiss franc, as required by Administrative Council Resolution No. 647. These adjustments raised the budget for the Conference to 2,697,000 Swiss francs, i.e. an increase of 116,000 Swiss francs (see Annex 1).

The Committee noted that the budget did not include expenditure incurred for the Conference in respect of supernumerary staff for the common services of the General Secretariat, which is included in a special section of the ordinary budget of the Union. This expenditure was evaluated at 1,285,000 Swiss francs.

5. Situation of Conference expenditure

Under No. 478 of the Convention, the Budget Control Committee has to submit a report to the Plenary Meeting showing, as accurately as possible, the estimated total expenditure of the Conference.

Accordingly, Annex 2 contains a statement showing the budget for the Conference and for post-conference work, as approved by the Administrative Council and adjusted under Administrative Council Resolution No. 647, together with a breakdown of credits among the budget subheads and items, as well as the actual expenditure incurred as at February 1992. There is also an indication of the expenditure committed up to that date and an estimate of expenditure up to the end of the financial year 1992.

The above statement shows that the total amount to be charged to the ordinary budget for WARC-92 is estimated at Swiss francs, i.e. Swiss francs less than the amount allocated by the Administrative Council. It can therefore be assumed that 1992 expenditure will remain within the established limits.

6. Expenditure limit for WARC-92

The Committee considered the situation regarding the expenditure limit for WARC-92 decided by the Plenipotentiary Conference (Nice, 1989). The unbudgeted amount available for WARC-92 post-conference work is 1,100,000 Swiss francs, valued at 1 April 1991, as shown in Annex 3. This amount will need to be adjusted to take account of actual 1991 and 1992 expenditure.

7. Estimate of work for the execution of WARC-92 decisions

To be completed.

8. Recognized private operating agencies and international organizations taking part in the Conference

Under Article 16 of the Financial Regulations, the report of the Budget Control Committee must include a list of the recognized private operating agencies and international organizations which contribute to the expenses of the Conference. To this shall be added a list of the international organizations which have been exempted from payment in accordance with Resolution No. 925 of the Administrative Council.

The list is found in Annex 4 to this document.

It should be noted that, on the basis of the provisions of No. 383 of the Convention (Nice, 1989), the contributory unit for recognized private operating agencies and international organizations not exempt under Administrative Council Resolution 925 amounts to 11,500 Swiss francs. These contributions are to be considered as income in the Union's budget.

* * * * *

The Plenary Meeting is requested to examine and approve this Report, which, together with the comments of the Plenary Meeting, will then be transmitted to the Secretary-General for submission to the Administrative Council at its next annual meeting.

B. GRACIE

Vice-Chairman of the Budget
Control Committee

ANNEX 1

Budget of the WARC-92 Conference adjusted at 1 February 1992

WARC-92		1992 budget basis 1.1.91*	1992 budget at 1.2.92**
		Swiss francs	
Subhead I	**Staff expenses**		
	Salaries and related expenses	1,532,000	1,648,000
	Travel (recruitment)	167,000	167,000
	Insurance	17,000	17,000
	Staff provided for the Conference	---	----
		1,716,000	1,832,000
Subhead II	**Premises and equipment**		
	Premises, furniture, machines	150,000	150,000
	Document production	305,000	305,000
	Supplies and office expenses	50,000	50,000
	PTT	112,000	112,000
	Technical installations	20,000	20,000
	Sundry and unforeseen	20,000	20,000
		657,000	657,000
Subhead III	**Other expenses**		
	Conference Final Acts	108,000	108,000
	Travel expenses for the preparation of the Conference	---	---
		108,000	108,000
Subhead IV	**Post-conference work of the IFRB**	100,000	100,000
Subhead V	**Travel costs away from Geneva**		
	Per diem	---	---
	Travel expenses	---	---
	Transport and dispatch costs	---	---
		---	---
Total		2,581,000	2,697,000

* Basis: exchange rate at 1 January 1991: 1 US $ = 1.27 Swiss francs

** Basis: exchange rate at 1 February 1992: 1 US $ = 1.43 Swiss francs

ANNEX 2

Portion of the WARC-92 accounts

(to be completed later)

ANNEX 3

Limit on expenditure set for WARC-92

			- Swiss francs -
1)	Limit on expenditure set for WARC 1992 under Decision No. 1, 4.1 a)		5,100,000
less:			
2)	Budget provision for 1991 - Limit value		443,000
3)	Limit available for 1992-94		4,657,000
4)	Estimated expenditure in the draft budget for 1992	3,866,000*	
5)	Differences referred to in 5.1 and 5.2 of Decision No. 1 of the Plenipotentiary Conference (Nice, 1989) to take into account increases in salary scales, pension contributions and allowances, including post adjustments established by the United Nations Common System for application to its staff employed in Geneva, changes in the exchange rate between the Swiss franc and the United States dollar insofar as this affects the costs of staff on United Nations scales	-179,000	
6)	Differences referred to in 5.3 of Decision No. 1 of the Plenipotentiary Conference (Nice, 1989) to take into account changes in the purchasing power of the Swiss franc in relation to non-staff items of expenditure	-130,000	
7)	Expenditure on WARC 1992 for 1992 - Limit value		3,557,000
8)	Limit value for 1993/94 (3 - 7)		1,100,000

* i.e. 2,581,000 Sw.frs. under Section 11.2
1,285,000 Sw.frs. under Section 17

ANNEX 4

List of recognized private operating agencies and international organizations contributing to the expenses of the Conference

		Number of contributory units
I.	**Recognized private operating agencies**	
	None	
II.	**International organizations**	
II.1	United Nations	*)
II.2	Specialized agencies	
	International Civil Aviation Organization (ICAO)	*)
	International Maritime Organization (IMO)	*)
	World Meteorological Organization (WMO)	*)
II.3	Regional telecommunications organizations	
	Asia-Pacific Telecommunity (APT)	*)
	European Conference of Postal and Telecommunications Administrations (CEPT)	*)
	Caribbean Telecommunications Union (CTU)	*)
	Pan-African Telecommunication Union (PATU)	*)
	Arab Satellite Communications Organization (ARABSAT)	1/2
	European Telecommunications Satellite Organization (EUTELSAT)	1/2
	International Maritime Satellite Organization (INMARSAT)	1/2
	International Telecommunications Satellite Organization (INTELSAT)	**)
II.4	Other international organizations	
	Asia-Pacific Broadcasting Union (ABU)	*)
	International Broadcasting Association (IBA)	*)
	Arab States Broadcasting Union (ASBU)	*)
	European Space Agency (ESA)	**)
	European Communities (EC)	1/2
	International Committee of the Red Cross (ICRC)	*)

International Maritime Radio Committee (IMRC)	*)
International Satellite System for Search and Rescue (COSPAS-SARSAT)	*)
Gulf Cooperation Council for Arab Countries (GCC)	*)
International Amateur Radio Union (IARU)	*)
International Air Transport Association (IATA)	*)
International Chamber of Shipping (ICS)	1/2
International Organization of Space Communications (INTERSPUTNIK)	**)
International Transport Workers Federation (ITF)	1/2
Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	*)
International Society for Aeronautical Telecommunications (ISAT)	1/2
European Broadcasting Union (EBU)	*)
Union of National Radio and Television Organizations of Africa (URTNA)	*)

*) Exempt from any contribution in accordance with Administrative Council Resolution No. 925.

**) The Secretary-General was not informed of the class of contribution by 17 February 1992.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/68-E
17 February 1992
Original: English

WORKING GROUP 4C

Note from the Chairman of Drafting Group 2

Proposed modifications to Article 8 to address the inbalance which exists between up-link and down-link spectrum allocated to the FSS in the range 10 - 17 GHz.

GHz
13.4 - 14

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**13.4 - ~~14~~13.75**	RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855	
MOD	**~~13.4~~13.75 - 14**	RADIOLOCATION 855B FIXED SATELLITE (Earth-to-space) 855A Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855 855C	

ADD **855A** 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, with a minimum antenna diameter of 4.5 metres.

ADD **855B** In the band 13.75 - 14 GHz, the e.i.r.p., averaged over one second, radiated by a station in the radiolocation service toward the geostationary-satellite orbit shall not exceed 59 dBW.

ADD **855C** In the band 13.75 - 14 GHz, geostationary space stations in the space research service, notified prior to 31 January 1992, shall operate on an equal basis with stations in the fixed-satellite service.

M.J.L. DROLET
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/69-E
17 February 1992
Original: English

WORKING GROUP 4C

Source: Document DT/60

Note from the Chairman of Sub-Working Group 4C-1
to Working Group 4C

DRAFT NOTE FROM COMMITTEE 4 TO COMMITTEE 5

In choosing an allocation for BSS for high-definition television, Committee 4 has formed a view that all of the candidate bands have difficulties for countries in high rainfall climatic zones because of the high attenuation, which is higher than at 12 GHz and increases with frequency in those bands.

It is considered that improvements in the utilization of the 12 GHz planned bands may enable some countries which have high rainfall climatic zones to accommodate their needs or part of their needs in that band.

Committee 4 requests that Committee 5 take note of this opinion and requests that the CCIR study the particular needs of high rainfall climatic zones for HDTV and the technical methods which could be used to implement this service in the 12 GHz band.

K. WHITTINGHAM
Chairman of Sub-Working Group 4C-1

V. STEPANIAN
Vice-Chairman of Sub-Working Group 4C-1

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/70-E
17 February 1992
Original: English

WORKING GROUP 4C

Report of ad hoc Group 2 to Working Group 4C

Ad hoc Group 2, which held two meetings on Friday, 14 February and Monday, 17 February respectively, was tasked with the responsibility of reviewing proposals pertaining to Agenda item 2.2.5 in recognition of the imbalance which exists between up-link and down-link spectrum allocated to the fixed-satellite service (FSS). Although the 14.5 - 14.8 GHz band is allocated to the FSS, it is limited to feeder links for the broadcasting-satellite service and is reserved for the use of countries outside of Europe.

A number of countries presenting proposals advanced the proposition that the 14.5 - 14.8 GHz band should be opened up for FSS applications; others, however, proposed no change to the allocation. The situation is complicated by the fact that the 14.5 - 14.8 GHz band is allocated on a co-primary basis with the fixed and mobile services, and that sharing with certain mobile services, such as the aeronautical mobile service, would be difficult. In addition, certain restrictions would be required to ensure full protection of the frequency assignments listed in the BSS feeder-link plan of Appendix 30A of the Radio Regulations for countries outside of Europe.

In view of the apparent difficulty in reaching consensus on this complicated subject, it was suggested that a Resolution be advanced which is directed to the Administrative Council to consider the inclusion of the question of balancing the FSS up-link and down-link allocations in the agenda of a future competent conference. Another possibility, which was put forward was to consider the feasibility of alternative approaches to address the imbalance question. Towards this end, a Drafting Group was formed under the chairmanship of Canada to analyse the band 13.75 - 14.0 GHz based on a proposal formulated by one administration. The determination of the conditions under which the FSS could operate on a co-primary basis with the radiolocation service was the focus of the Drafting Group.

The Chairman would like to take the opportunity to thank the participants for their advice and cooperation, as well as the Conference Secretariat and interpreters for their excellent support.

B.A. GRACIE
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

Addendum 1 to
Document DT/71(Rev.1)-E
19 February 1992
Original: English

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Source: Document DT/71(Rev.1) WORKING GROUP 4B

MOD 663, PROPOSED BY THE ADMINISTRATIONS OF BRAZIL AND FRANCE

MOD **663** Additional allocation: in ~~Brazil, France and~~ the French Overseas Departments in Region 2, and India, the band 433.75 - 434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis, ~~until 1 January 1990, subject to agreement obtained under the procedure set forth in Article 14. After 1 January 1990, the band 433.75 - 434.25 MHz will be allocated in the same countries to the same service on a secondary basis.~~ In France and in Brazil the band is allocated to the same service on a secondary basis.

G.F. JENKINSON
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Revision 1 to
Document DT/71-E
19 February 1992
Original: English

WORKING GROUP 4B

Note from the Chairman of Working Group 4B

Following the discussion of the ninth meeting in Working Group 4B on Document 165 + Corr.1 the unresolved matters are reproduced in this working document.

In addition, proposals not discussed by Sub-Working Group 4B-1 are included.

1. Allocation of frequency band 400.15 - 401 MHz to the space research service and frequency band 942 - 960 MHz to MS below 1 GHz

MHz
400.15 - 401

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**400.15 - 401**	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) 647A Space Operation (space-to-Earth) 647	

ADD **647A** The band 400.15 - 401 MHz is also allocated to the space research service in the space-to-space direction for communication with manned space vehicles. In this application, the space research service will not be regarded as a safety service.

Note - The above table and the footnote were approved at the ninth meeting of Working Group 4B on 17 February 1992.

It should be noted that the allocation of the frequency band 400.15 - 401 MHz may be combined with the allocation to the LEO systems, if so decided.

MHz
942 - 960

MOD

Allocation to Services		
Region 1	Region 2	Region 3
942 - 960	**942 - 960**	**942 - 960**
FIXED	FIXED	FIXED
MOBILE except aeronautical mobile	~~Mobile~~ MOBILE	MOBILE
BROADCASTING 703		BROADCASTING
704	~~708~~	701

SUP **708**

2. Following is the result of considerations on proposed changes of footnotes which are not related to LEO systems, mobile service, communication with manned space vehicles and Footnote 635.

2.1 Modifications and suppressions approved by 4B1.

MOD **596** Different category of service: in Afghanistan, Saudi Arabia, Bahrain, Brunei, China, the United Arab Emirates, India, Indonesia, Iran, Iraq, Kuwait, Malaysia, Oman, Pakistan, Qatar, Singapore~~,~~ and Thailand, ~~Yemen A.R. and Yemen (P.D.R. of),~~ the allocation of the band 137 - 138 MHz to the fixed and mobile, except aeronautical mobile (R), services is on a primary basis (see No. 425).

MOD **604** Additional allocation: in Ethiopia, Finland, Kenya, Malta, Somalia, Sudan, Tanzania~~, Yemen A.R.~~ and Yugoslavia, the band 138 - 144 MHz is also allocated to the fixed service on a primary basis.

SUP **614**

MOD **621** **Mob-87** Additional allocation: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Monaco, Norway, the Netherlands, the United Kingdom, Sweden~~,~~ and Switzerland ~~and Yemen (P.D.R. of)~~, the band 174 - 223 MHz is also allocated to the land mobile service on a permitted basis. However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

MOD **622** Different category of service: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Luxembourg, Monaco, Norway, the Netherlands, Portugal, the United Kingdom, Sweden~~,~~ and Switzerland ~~and Yemen (P.D.R. of)~~, the band 223 - 230 MHz is allocated to the land mobile service on a permitted basis (see No. 425). However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

SUP **633**

SUP **634**

MOD **675** Different category of service: in Chile, Colombia, Ecuador, the United States, Guyana ~~and~~, Jamaica and Mexico, the allocation of the bands 470 - 512 MHz and 614 - 806 MHz to the fixed and mobile services is on a primary basis (see No. 425), subject to agreement obtained under the procedure set forth in Article 14.

MOD **676** Additional allocation: in Burundi, Cameroon, the Congo, Ethiopia, Israel, Kenya, Libya, Senegal, Sudan, and Syria ~~and Yemen (P.D.R. of)~~, the band 470 - 582 MHz is also allocated to the fixed service on a secondary basis.

MOD **678** Additional allocation: in Costa Rica, El Salvador, Ecuador, the United States, Guatemala, Guyana, Honduras, Jamaica, 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 the procedure set forth in Article 14.

SUP **682**

2.2 Proposals considered to be dealt with by Working Group 4B.

2.2.1

KRE/15/2
MOD **659** Additional allocation: in Angola, Bulgaria, Cameroon, the Congo, Gabon, Hungary, Mali, Mongolia, Niger, Poland, the German Democratic Republic, Dem. People's Rep. of Korea, Romania, Rwanda, Chad, Czechoslovakia and the U.S.S.R., the band 430 - 440 MHz is also allocated to the fixed service on a primary basis.

B/30/11
SUP **595**
Mob-87

B/30/19
MOD **663** Additional allocation: in Brazil, France and the French Overseas Departments in Region 2, and India, the band 433.75 - 434.25 MHz is also allocated to the space operation service (Earth-to-space) on a ~~primary~~secondary basis ~~until 1 January 1990, subject to agreement obtained under the procedure set forth in Article 14. After 1 January 1990, the band 433.75 - 434.25 MHz will be allocated in the same countries to the same service on a secondary basis.~~

B/30/16
MOD **627** In Region 2, ~~the band 216 - 225 MHz is allocated to~~no new stations in the radiolocation service ~~on a primary basis until 1 January 1990~~may be authorized in the band 216 - 225 MHz. ~~On and after 1 January 1990, no new stations in that service may be authorized.~~ Stations authorized prior to 1 January 1990 may continue to operate on a secondary basis.

E/25/11
MOD **703** In Region 1, in the band 862 - 960 MHz, stations of the broadcasting service shall be operated only in the African Broadcasting Area (see Nos. 400 to 403) excluding Algeria, Egypt, Spain, Libya and Morocco, subject to agreement obtained under the procedure set forth in Article 14. ~~Such operations shall be in accordance with the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963.~~

2.2.2 Late proposals.

HNG/140/7
MOD **672** Different category of service: in Afghanistan, Bulgaria, China, Cuba, ~~Hungary,~~ Japan, Mongolia, Poland, Czechoslovakia and the U.S.S.R., the allocation of the band 460 - 470 MHz to the meteorological-satellite service (space-to-Earth) is on a primary basis (see No. 425) and is subject to agreement obtained under the procedure set forth in Article 14.

F/159/1
MOD **663** Additional allocation: in Brazil, ~~France and~~ the French Overseas Departments in Region 2, and India, the band 433.75 - 434.25 MHz is also allocated to the space operation service (Earth-to-space) on a primary basis ~~until 1 January 1990, subject to agreement obtained under the procedure set forth in Article 14. After 1 January 1990, the band 433.75 - 434.25 MHz will be allocated in the same countries to the same service on a secondary basis~~. In France, the band is allocated to the same service on a secondary basis.

3. Possible allocations of frequency bands below 1 GHz to low-Earth orbiting mobile satellite systems on the basis of appropriate sharing criteria

Down-link Allocations

MHz
137 - 137.175

Allocation to Services		
Region 1	Region 2	Region 3
137 - ~~138~~137.025	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	
~~137~~137.025 - ~~138~~137.175	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	

MHz
137.175 - 138

Allocation to Services		
Region 1	Region 2	Region 3
~~137~~137.175 - ~~138~~137.825	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	
~~137~~137.825 - 138	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	

ADD 599A Coordination of mobile satellite systems will be in accordance with the provisions [of Resolution ....] The mobile-satellite service will be limited to a power flux-density of -120 dBW/m²/4 kHz, at the surface of the Earth. This power flux-density limit shall not be exceeded for more than 1% of the time. The mobile-satellite service will limit out-of-band emissions in the band 150.05 - 153 MHz to [-223 dB(W/m²/4 kHz)].

MHz
400.15 - 401

Allocation to Services		
Region 1	Region 2	Region 3
400.15 - 401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Space Operation (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 647 647X	

ADD 647X Coordination of mobile satellite systems will be in accordance with the provision of [Resolution ....]. The mobile-satellite service will be limited to a power flux-density of -120 dBW/m²/4 kHz at the surface of the Earth. This power flux-density limit shall not be exceeded for more than 1% of the time. The mobile-satellite service will limit out-of-band emissions in the band 406.1 - 410 MHz to [-223 dB(W/m²/4 kHz)].

Up-link Allocations

MHz
148 - 150.05

Allocation to Services		
Region 1	Region 2	Region 3
148 - 149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 608 608X	**148 - 149.9** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 608 608X	
149.9 - 150.05	RADIONAVIGATION-SATELLITE MOBILE-SATELLITE (Earth-to-space) 608Y 609 609A 609B	

ADD **608X** The mobile-satellite service shall not constrain the development and use of fixed, mobile and space operations services in this allocation. MSS mobile earth station transmitters will not cause a power flux-density in excess of -150 dBW/m²/4 kHz outside of national boundaries more than 1% of any 1 hour period.

ADD **609B** The mobile-satellite service shall be secondary in this allocation until 1 January 1997.

ADD **608Y** The mobile-satellite service shall not constrain the development and use of the band 149.9 - 150.05 MHz by the radionavigation-satellite service. Mobile earth station transmitters shall not exceed a power flux-density of -150 dBW/m²/4 kHz outside of national boundaries.

MHz
273 - 322

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	273 - ~~322~~312	FIXED MOBILE MOD 641	
MOD	~~273~~312 - ~~322~~315	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 641A	
MOD	~~273~~315 - 322	FIXED MOBILE MOD 641	

MHz
335.4 - 399.9

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	335.4 - ~~399.9~~387	FIXED MOBILE MOD 641	
MOD	~~335.4~~387 - ~~399.9~~390	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 641A	
MOD	~~335.4~~390 - 399.9	FIXED MOBILE MOD 641	

MOD **641** Subject to agreement obtained under the procedure set forth in Article 14, the bands 235 - 312 MHz, 315 - 322 MHz ~~and~~, 335.4 - 387 MHz and 390 - 399.9 MHz may be used by the mobile-satellite service, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table.

ADD **641A** Use of the frequency bands 312 - 315 MHz and 387- 390 MHz by the mobile-satellite service is limited to links with low-orbit satellites.

MOD

MHz
890 - 942

Allocation to Services		
Region 1	Region 2	Region 3
890 - 942 FIXED MOBILE except aeronautical mobile BROADCASTING 703 Radiolocation	**890 - 902** FIXED MOBILE except aeronautical mobile Radiolocation 704A 705	**890 - 942** FIXED MOBILE BROADCASTING Radiolocation
	902 - 928 FIXED Amateur Mobile except aeronautical mobile Radiolocation 705 707 707A	
	928 - 942 FIXED MOBILE except aeronautical mobile Radiolocation	
704 <u>705A</u>	705 <u>705A</u>	<u>705A</u> 706

ADD

705A The band 934 - 939 MHz is also allocated to the mobile-satellite service on a primary basis. This use is restricted to links using low-orbit satellites within the national territory and is subject to agreement in accordance with the procedure established in Article 14.

4. MSS below 1 GHz (other than LEO systems)

MHz
610 - 890

	Allocation to Services		
	Region 1	Region 2	Region 3
	470 - 790	**608 - 614**	**610 - 890**
		614 - 806	FIXED
		BROADCASTING	MOBILE
	790 - 862	Fixed	BROADCASTING
	FIXED	Mobile	
	BROADCASTING	675 692 692A 693	
MOD	694 695 695A 696 697 <u>700A</u> 702	**806 - 890**	
	862 - 890	FIXED	
	FIXED	MOBILE	
	MOBILE except aeronautical mobile	BROADCASTING	
	BROADCASTING 703		
MOD	<u>700A</u> 704	692A 700	677 688 689 690 691 693 701

ADD **700A** Additional allocation: Region 1, the bands 806 - 890 and 942 - 960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of this service is subject to agreement under the procedure established in Article 14.

<u>Note from the Chairman</u> - The modifications in section 4 are proposed under Agenda item 2.2.4a and were not considered by Sub-Working Group 4B-1.

G.F. JENKINSON
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/71-E
17 February 1992
Original: English

WORKING GROUP 4B

Note from the Chairman of Working Group 4B

Following the discussion of the ninth meeting in Working Group 4B on Document 165 + Corr.1 the unresolved matters are reproduced in this working document.

In addition, in paragraphs 2.2.2, 2.2.3 and 5 proposals not discussed by Sub-Working Group 4B-1 are presented.

1. Allocation of frequency band 400.15 - 401 MHz to the space research service and frequency band 942 - 960 MHz to MS below 1 GHz

The modification to the Table of Frequency Allocations together with associated text of RR 647A as approved by Sub-Working Group 4B-1 are put forward for consideration.

It should be noted that the allocation of the frequency band 400.15 - 401 MHz may be combined with the allocation to the LEO systems, if so decided.

MHz
400.15 - 401

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**400.15 - 401**	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) 647A Space Operation (space-to-Earth) 647	

ADD **647A** The band 400.15 - 401 MHz is also allocated to the space research service in the space-to-space direction for communication with manned space vehicles. In this application, the space research service will not be regarded as a safety service.

Note - The above table and the footnote were approved at the ninth meeting of Working Group 4B on 17 February 1992.

MHz
942 - 960

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**942 - 960**	**942 - 960**	**942 - 960**
	FIXED	FIXED	FIXED
	MOBILE except aeronautical mobile	~~Mobile~~ MOBILE	MOBILE
	BROADCASTING 703		BROADCASTING
	704	~~708~~	701

SUP **708**

2. Following is the result of considerations on proposed changes of footnotes which are not related to LEO systems, mobile service, communication with manned space vehicles and Footnote 635.

2.1 Modifications and suppressions approved by 4B1.

MOD **596** Different category of service: in Afghanistan, Saudi Arabia, Bahrain, Brunei, China, the United Arab Emirates, India, Indonesia, Iran, Iraq, Kuwait, Malaysia, Oman, Pakistan, Qatar, Singapore~~,~~ and Thailand, ~~Yemen A.R. and Yemen (P.D.R. of),~~ the allocation of the band 137 - 138 MHz to the fixed and mobile, except aeronautical mobile (R), services is on a primary basis (see No. 425).

MOD **604** Additional allocation: in Ethiopia, Finland, Kenya, Malta, Somalia, Sudan, Tanzania~~, Yemen A.R.~~ and Yugoslavia, the band 138 - 144 MHz is also allocated to the fixed service on a primary basis.

SUP **614**

MOD **621** **Mob-87** Additional allocation: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Monaco, Norway, the Netherlands, the United Kingdom, Sweden~~,~~ and Switzerland ~~and Yemen (P.D.R. of)~~, the band 174 - 223 MHz is also allocated to the land mobile service on a permitted basis. However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

MOD **622** Different category of service: in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Israel, Italy, Liechtenstein, Luxembourg, Monaco, Norway, the Netherlands, Portugal, the United Kingdom, Sweden~~,~~ and Switzerland ~~and Yemen (P.D.R. of)~~, the band 223 - 230 MHz is allocated to the land mobile service on a permitted basis (see No. 425). However, the stations of the land mobile service shall not cause harmful interference to, nor claim protection from, broadcasting stations, existing or planned, in countries other than those listed in this footnote.

SUP **633**

SUP **634**

MOD **675** Different category of service: in Chile, Colombia, Ecuador, the United States, Guyana ~~and~~, Jamaica and Mexico, the allocation of the bands 470 - 512 MHz and 614 - 806 MHz to the fixed and mobile services is on a primary basis (see No. 425), subject to agreement obtained under the procedure set forth in Article 14.

MOD **676** Additional allocation: in Burundi, Cameroon, the Congo, Ethiopia, Israel, Kenya, Libya, Senegal, Sudan~~,~~ and Syria ~~, and Yemen (P.D.R. of)~~, the band 470 - 582 MHz is also allocated to the fixed service on a secondary basis.

MOD **678** Additional allocation: in Costa Rica, El Salvador, Ecuador, the United States, Guatemala, Guyana, Honduras, Jamaica, 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 the procedure set forth in Article 14.

SUP **682**

2.2 Proposals considered to be dealt with by Working Group 4B.

2.2.1

KRE/15/2
MOD **659**

Reasons: There was no delegate of the Democratic People's Republic of Korea participating in SWG 4B1, and also there was no support of the proposal.

2.2.2

B/30/11
SUP **595** [in connection with B/30/9]

B/30/19
MOD **663**

2.2.3 Proposals not considered in Sub-Working Group 4B-1.

B/30/16
MOD **627**

2.2.4 Late proposals.

ISR/51/11
ADD **594B** In Israel, the allocation to the aeronautical mobile (R) service in the band 136 - 137 MHz is on a secondary basis.

ISR/51/12
ADD **597A** In Israel, the allocation to the satellite mobile service in the band 137 - 138 MHz is on a secondary basis.

ISR/51/13
ADD 608A In Israel, the allocation to the satellite mobile service in the band 148 - 149.9 MHz is on a secondary basis.

Reasons: In Israel, the following bands are heavily used for mobile communication.

3.

E/25/11
MOD 703

Reasons: One Administration objected to pick up these proposals without specific guidance by the Conference, and another Administration expressed its intention to submit a new proposal to modify Footnote 663.

4. Possible allocations of frequency bands below 1 GHz to low-Earth orbiting mobile satellite systems on the basis of appropriate sharing criteria

Down-link Allocations

MHz
137 - 137.175

Allocation to Services		
Region 1	Region 2	Region 3
137 - ~~138~~137.025	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	
~~137~~137.025 - ~~138~~137.175	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	

MHz
137.175 - 138

Allocation to Services		
Region 1	Region 2	Region 3
~~137~~137.175 - ~~138~~137.825	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	
~~137~~137.825 - 138	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) Fixed Mobile except aeronautical mobile (R) 596 597 598 599 599A	

ADD **599A** Coordination of mobile satellite systems will be in accordance with the provisions [of Resolution ....] The mobile-satellite service will be limited to a power flux-density of -120 dBW/m^2/4 kHz, at the surface of the Earth. This power flux-density limit shall not be exceeded for more than 1% of the time. The mobile-satellite service will limit out-of-band emissions in the band 150.05 - 153 MHz to [-223 dB(W/m^2/4 kHz)].

MHz
400.15 - 401

Allocation to Services		
Region 1	Region 2	Region 3
400.15 - 401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Space Operation (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 647 647X	

ADD **647X** Coordination of mobile satellite systems will be in accordance with the provision of [Resolution ....]. The mobile-satellite service will be limited to a power flux-density of -120 dBW/m^2/4 kHz at the surface of the Earth. This power flux-density limit shall not be exceeded for more than 1% of the time. The mobile-satellite service will limit out-of-band emissions in the band 406.1 - 410 MHz to [-223 dB(W/m^2/4 kHz)].

Up-link Allocations

MHz
148 - 150.05

Allocation to Services		
Region 1	Region 2	Region 3
148 - 149.9 FIXED MOBILE except aeronautical mobile (R) MOBILE-SATELLITE (Earth-to-space) 608 608X	**148 - 149.9** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 608 608X	
149.9 - 150.05	RADIONAVIGATION-SATELLITE MOBILE-SATELLITE (Earth-to-space) 608Y 609 609A 609B	

ADD **608X** The mobile-satellite service shall not constrain the development and use of fixed, mobile and space operations services in this allocation. MSS mobile earth station transmitters will not cause a power flux-density in excess of -150 dBW/m^2/4 kHz outside of national boundaries more than 1% of any 1 hour period.

ADD **609B** The mobile-satellite service shall be secondary in this allocation until 1 January 1997.

ADD **608Y** The mobile-satellite service shall not constrain the development and use of the band 149.9 - 150.05 MHz by the radionavigation-satellite service. Mobile earth station transmitters shall not exceed a power flux-density of -150 dBW/m^2/4 kHz outside of national boundaries.

MHz
273 - 322

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	273 - ~~322~~312	FIXED MOBILE MOD 641	
MOD	~~273~~312 - ~~322~~315	FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 641A	
MOD	~~273~~315 - 322	FIXED MOBILE MOD 641	

MHz
335.4 - 399.9

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	335.4 - ~~399.9~~387	FIXED MOBILE MOD 641	
MOD	~~335.4~~387 - ~~399.9~~390	FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 641A	
MOD	~~335.4~~390 - 399.9	FIXED MOBILE MOD 641	

MOD **641** Subject to agreement obtained under the procedure set forth in Article 14, the bands 235 - 312 MHz, 315 - 322 MHz ~~and~~, 335.4 - 387 MHz and 390 - 399.9 MHz may be used by the mobile-satellite service, on condition that stations in this service do not cause harmful interference to those of other services operating or planned to be operated in accordance with the Table.

ADD **641A** Use of the frequency bands 312 - 315 MHz and 387- 390 MHz by the mobile-satellite service is limited to links with low-orbit satellites.

MHz
890 - 942

Allocation to Services		
Region 1	Region 2	Region 3
890 - 942 FIXED MOBILE except aeronautical mobile BROADCASTING 703 Radiolocation	**890 - 902** FIXED MOBILE except aeronautical mobile Radiolocation 704A 705	**890 - 942** FIXED MOBILE BROADCASTING Radiolocation
	902 - 928 FIXED Amateur Mobile except aeronautical mobile Radiolocation 705 707 707A	
	928 - 942 FIXED MOBILE except aeronautical mobile Radiolocation	
MOD 704 <u>705A</u>	705 <u>705A</u>	<u>705A</u> 706

ADD **705A** The band 934 - 939 MHz is also allocated to the mobile-satellite service on a primary basis. This use is restricted to links using low-orbit satellites within the national territory and is subject to agreement in accordance with the procedure established in Article 14.

5. MSS below 1 GHz (other than LEO systems)

MHz
610 - 890

	Allocation to Services		
	Region 1	Region 2	Region 3
	470 - 790	**608 - 614**	**610 - 890**
		614 - 806	FIXED
		BROADCASTING	MOBILE
	790 - 862	Fixed	BROADCASTING
	FIXED	Mobile	
	BROADCASTING	675 692 692A 693	
MOD	694 695 695A 696 697 700A 702	**806 - 890**	
		FIXED	
	862 - 890	MOBILE	
	FIXED	BROADCASTING	
	MOBILE except aeronautical mobile		
	BROADCASTING 703		
MOD	700A 704	692A 700	677 688 689 690 691 693 701

ADD **700A** Additional allocation: Region 1, the bands 806 - 890 and 942 - 960 MHz are also allocated to the mobile-satellite, except aeronautical mobile-satellite (R), service. The use of this service is subject to agreement under the procedure established in Article 14.

Note from the Chairman - These modifications are proposed under Agenda item 2.2.4a and were not considered by Sub-Working Group 4B-1.

G.F. JENKINSON
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/72-E
17 February 1992
Original: English

WORKING GROUP 4C

Note from the Chairman of Sub-Working Group 4C-1 to Working Group 4C

FACTORS RELATED TO THE CHOICE OF A FREQUENCY BAND FOR THE FEEDER LINKS OF THE BASS INTENDED FOR WIDE-RF BAND HDTV

1. Introduction

In association with Agenda item 2.2.3b, the Conference is to consider appropriate frequency bands for the feeder links to the wide-RF band HDTV broadcasting-satellite service (W-BSS). While some administrations have indicated that the allocation or designation in a specific band would be premature because of the limited number of stations to be expected to transmit wide-RF band in the near future (and these few stations should be coordinated as if they were FSS Earth-to-space), many administrations have indicated that the allocation or designation in a specific band would be desirable. Various bands in the frequency range between 17.3 - 31 GHz were proposed (see Table B in Document DT/19(Rev.3)).

2. Influence of the choice for the down-link band

It is obvious that the choice of a feeder-link band cannot necessarily be considered independent from the determination of the corresponding BSS (down-link) band. About 15% of frequency separation between up link and down link would be required to allow proper filtering in the satellite.

For the following consideration of individual frequency bands for feeder links, the assumption is made that a corresponding down-link band was determined which would make the usage of that feeder-link band technically possible.

3. Propagation and cost consideration

Given the cost of the space segments the influence of the frequency band, as far as the cost for the up-linking station is concerned, seems to be rather uncritical. Depending on the location of the feeder-link station, however, there can be the need for site-diversity, i.e. the operation of a second feeder-link station in order to meet the generally agreed criterion of 99.9% of service availability in the worst month.

99.9% of the worst month (which in attenuation terms corresponds to 99.979% of an average year), means that for 43 minutes of the worst month (or 108 minutes of the year, respectively) the established service criterion is not met and the service can be seriously degraded or completely lost.

Annex I gives examples for total attenuation and atmospheric cross-polar discrimination. Assuming the favourable case of a digital HDTV transmission with rugged channel coding, XPD values in the order of 20 to 25 dB seem to be appropriate as a minimum criterion for operation with orthogonal polarization. It can be seen that the variation of XPD with frequency is only significant for very low elevation angles. Note should be taken of the advantages of linear polarization over circular polarization to provide good atmospheric XPD characteristics particularly in high rain rate zones (ref.: Annex I).

A country like FNL (low elevation but a favourable rain zone) might just do without space diversity for the feeder-link station at all frequencies between 17 and 30 GHz. The maximum excess power needed is 13.7 dB which could probably be coped with by power control. For this purpose a beacon signal on board the satellite should be emitted.

In the case of SUI the limiting factor tends to be the atmospheric XPD. Even if the signal attenuation for 99.9% of the worst month (11.7 - 29.2 dB for 17 - 30 GHz) might be coped with by power control, the XPD requirement calls for site diversity. This second station, at least 10 km apart*, would not only improve the service availability to almost 100% of the time but would also reduce the necessary amount of power control for each individual station.

The example for MDG clearly indicates the need for space diversity because of high atmospheric attenuation. The excess power required for 99% of the worst month could be feasible with proper power control, even at 30 GHz (17.2 dB of excess power corresponds to an increase of the transmitter output power by a factor of 52), and for 99% of the worst month the atmospheric XPD remains for the frequency range under consideration at about 25 dB.

4. Sharing considerations

The sharing implications differ for each of the candidate bands in respect of the services involved and the level of implementation of those services by administrations. No proposal explicitly foresees the displacement of existing services as feeder links to the BSS could share with existing services with few constraints, although some coordinating difficulties may be introduced by the use of transportable feeder-link stations.

17.3 - 18.1 GHz: This 800 MHz band was proposed by some administrations and is allocated to and planned for the feeder links to the BSS in accordance with Appendix 30A of the Radio Regulations. The band 17.3 - 18.1 GHz is also allocated to the fixed, the mobile and the fixed-satellite service (space-to-Earth).

Advantages:	Relatively low propagation margins, no burden on FSS (Earth-to-space).
Disadvantages:	Most satellites of the W-BSS would be constrained from co-location with satellites of the BSS (Appendix 30) for the same service zone.
Remarks:	Feeder-link stations for W-BSS might use a full 600 MHz wide frequency band and not just single channels. This might complicate sharing with existing services in the band 17.7 - 18.1GHz especially for transportable feeder-link stations.

18.1 - 18.6 GHz: The usage of this 500 MHz band was proposed by some administrations in order to find a spectrum for feeder links of W-BSS outside the established up-link bands of the FSS, e.g. outside 27.5 - 30 GHz, and in order to minimize the propagation problem.

The band is currently allocated to the fixed, the fixed-satellite (space-to-Earth) and the mobile service.

Advantages:	As 17.3 - 18.1 GHz
Disadvantages:	As 17.3 - 18.1 GHz, plus reverse band working with FSS (space-to-Earth).

---

* For tropical countries higher separation distances may be required to cope effectively with large tropical bad weather frontiers.

Remarks: The band is only 500 MHz wide. If 600 MHz is allocated for W-BSS this might result in non-transparent transponders on board the W-BSS spacecraft. Sharing with the existing fixed and mobile service can create difficulties for transportable earth stations. Reverse band working with FSS (space-to-Earth) requires separation distances between 1 and 72 km without site shielding effect (see Table 2-921 of the CCIR Report to WARC ORB-88).

21.4 - 22.2 GHz: The usage of this 800 MHz band was proposed by several administrations in order to find a spectrum for feeder links of W-BSS at relatively low frequencies and outside the bands allocated to FSS (Earth-to-space). This band is also proposed by these administrations as a candidate for feeder links of the BSS (12 GHz), to avoid the domestic problems of reverse band sharing if the band 17.3 - 17.8 GHz were allocated to W-BSS.

The band is currently allocated to the fixed and the mobile services.

Advantages: For most countries propagation margins are still reasonable. No burden on FSS. No reverse band working.

Disadvantages: If the band is to be used for feeder links to BSS (12 GHz) and W-BSS, there may not be sufficient spectrum, in which case the satellites for these two applications could not be co-located.

Remarks: Sharing a few fixed feeder-link stations with the existing services might not be too difficult. Sharing with the existing fixed and mobile services can create difficulties for transportable earth stations and coordination may be required with stations in the radio astronomy service in the 22 - 22.2 GHz band.

24.25 - 25.25 GHz: One administration has expressed support for the usage of this band which is currently allocated to the radionavigation service. Only one administration has actually a service implemented (airport surface detection radar) in this band.

Advantages: Little sharing constraints because of very limited use.

Disadvantages: Relatively high propagation margins.

Remarks: Except for one country the band is not used. The existing service in the country could be shifted below 24.65 GHz. As long as the radionavigation service is limited to the mentioned airport radars sharing with feeder-link earth stations would probably be possible throughout the band on a geographical separation basis. However, in some specific cases there might be the possibility of harmful interference from airport radars into feeder-link receivers on board satellites located near the radar horizon.

27.5 - 30 GHz: The usage of this band was proposed by a number of administrations, some of which restrict their proposal to 28.5 - 29.5 GHz. The band 27.5 - 29.5 GHz is currently allocated to the fixed, the fixed-satellite (Earth-to-space) and the mobile service; the band 29.5 - 30 GHz is only allocated (on a primary basis) to the FSS (Earth-to-space). The band 27.5 - 30 GHz has a corresponding allocation to FSS (space-to-Earth) between 17.7 and 20.2 GHz.

Advantages:	No reverse band working.
Disadvantages:	High propagation margins needed. The use of this band for feeder-links for W-BSS may impact on the balance between up-link and down-link allocations of the FSS.*
Remarks:	Sharing a few fixed feeder-link stations with the existing service might not be too difficult. The operation of transportable feeder-link stations might, however, complicate the situation as coordination for a full band of, e.g. 600 MHz width, could be required.

5. Regional issues

There is an existing allocation to BSS (in Regions 2 and 3) between 22.5 and 23 GHz (subject to certain restrictions). There is a corresponding band (27 - 27.5 GHz) allocated in those Regions to FSS (Earth-to-space) which is not paired with an equivalent allocation to the FSS (space-to-Earth).

If an alternative allocation for BSS (for W-HDTV) were made for Regions 2 and 3 in conjunction with a corresponding allocation to Region 1, and if a feeder-link band were allocated to or designated for this service, a worldwide solution would be achieved. There seems to be a tendency that transportable (or easy to move stations) were of more interest to certain countries in Regions 2 and 3 than to countries in Region 1.

Annex: 1

---

* In order to alleviate this burden one administration proposes to consider the band 27 - 31 GHz for up links to the W-BSS.

ANNEX 1

Climatic Zone C (light rain) e.g. FNL

Freq. (GHz)	Elev. (Deg.)	Total Attenuation (dB)						Atmospheric XPD (dB)					
		99%			99.9%			99%			99.9%		
		Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)
17	15°	2.4	2.5	2.2	6.3	6.8	5.9	26.9	38.7	40.0	16.6	28.1	29.4
20	15°	3.9	4.1	3.8	9.2	9.8	8.6	26.4	38.2	39.6	16.1	27.6	28.9
22	15°	6.0	6.3	5.9	12.4	13.1	11.6	25.8	37.7	39.0	15.6	27.1	28.4
25	15°	5.5	5.8	5.2	13.3	14.2	12.4	25.5	37.3	38.7	15.3	26.7	28.1
30	15°	5.9	6.3	5.6	16.5	17.7	15.3	24.9	36.8	38.1	14.7	26.2	27.5

Climatic Zone K (Moderate) e.g. SUI

Freq. (GHz)	Elev. (Deg.)	Total Attenuation (dB)						Atmospheric XPD (dB)					
		99%			99.9%			99%			99.9%		
		Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)
17	30°	4.1	4.4	3.8	12.7	13.6	11.8	22.0	33.9	35.1	11.9	23.4	24.6
20	30°	5.6	6.0	5.2	16.5	17.7	15.3	21.8	33.6	35.0	11.7	23.2	24.5
22	30°	7.3	7.8	6.9	20.3	21.8	18.9	21.4	33.2	34.6	11.3	22.8	24.1
25	30°	7.9	8.4	7.4	23.5	25.3	21.8	21.2	33.1	34.4	11.1	22.6	23.9
30	30°	9.6	10.2	9.0	30.0	32.2	28.0	20.9	32.8	34.1	10.9	22.4	23.6

Climatic Zone N (Tropical) e.g. ECU

Freq. (GHz)	Elev. (Deg.)	Total Attenuation (dB)						Atmospheric XPD (dB)					
		99%			99.9%			99%			99.9%		
		Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)	Circ	Lin (H)	Lin (V)
17	60°	5.5	5.6	5.3	17.6	18.1	17.1	27.2	39.4	39.8	16.8	28.8	29.3
20	60°	7.0	7.2	6.7	21.4	22.5	21.2	27.2	39.4	39.9	16.8	28.8	29.3
22	60°	8.6	8.8	8.4	26.1	26.8	25.4	26.8	39.1	39.6	16.5	28.5	28.9
25	60°	9.6	9.9	9.4	30.4	31.3	29.5	26.8	39.1	39.6	16.5	28.5	28.9
30	60°	11.9	12.2	11.6	38.3	39.3	37.3	26.8	39.1	39.5	16.5	28.4	28.9

(See attached assumptions pertaining to propagation table.)

Assumptions pertaining to propagation table

Test point latitude for:	Zone C; 55°
	Zone K; 45°
	Zone N; 0°
Test point height above mean sea level:	0 metre

Percentages are for worst-month statistics

Tilt angle for:

- Circular polarization = 45°
- Linear horizontal = 0°
- Linear vertical = 90°

Propagation and XPD models based on CCIR Reports 564-4, 563-4 and 721-3.

The satellite positions are such as to give the indicated angles of elevation at the test point.

- Water vapour density = 10 g/m^3
- Total attenuation includes attenuation due to gaseous absorption, clouds and rain.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/73-E
17 February 1992
Original: English

WORKING GROUP 4C

Note of the Chairman of Working Group 4C

Items 2.2.3a and 2.6 of the agenda of the Conference

The proposals on the above-mentioned agenda items are listed below and are summarized in DT/1A3 (Rev.1 + Corr.1,2). When they do not appear in the DT/1A3, page numbers of the related document have been included.

Documents	2.2.3a BSS (Sound) feeder links	2.6 Amendments to RR
URS/7(+Corr.1,2)	44, 45	
KEN/13	7 (page 2)	
KRE/15		3-8
EUR/20	50,51,54 (page 25)	
CAN/23 (+Add.2)	85,86	128, 137-141 (pages 56, 59)
E/25		13, 14 (pages 2, 3)
NZL/26		(page 5)
J/27 (+Corr.1)		65, 72-74 (page 27)
B/30		45-47
AUS/31	(page 6)	
MLI/39 (Rev.1)	8 (page 3)	
ALG/40	(page 2)	

Documents	2.2.3a BSS (Sound) feeder links	2.6 Amendments to RR
YEM/41		21-24
PAK/44	3	
LUX/64	2-4 (page 2)	
TUN/99	(page 2)	
BEN/111	4 (page 2)	
BGD/126	40, 41 (page 11)	
HNG/140		12-21

Other documents	2.2.3a BSS (Sound) feeder links	2.6 Amendments to RR
IFRB/4		(page 9)
CCIR/3	Section 6 (pages 6-13)	

H.G. KIMBALL
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/74-E
17 February 1992
Original: English

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP 4C

REPORT OF DRAFTING GROUP 1 TO WORKING GROUP 4C

1. Drafting Group 1 (DG 1) to WG 4C has held five meetings to examine proposals for frequency allocations to a general satellite service with the aim of reaching a consensus on the requirement for such a service and, if necessary, the most appropriate frequency for the allocation.

2. Proposals from Canada, Mexico and the United States as shown in Document DT/1A3 (Rev.1) were considered by DG 1. At the third meeting of the Drafting Group, Canada withdrew its proposals in Document CAN/23 and strongly supported the allocation of the GSS in the bands 19.7 - 20.2 GHz and 29.5 - 30 GHz. The Group was composed of representatives from the Administrations of Brazil, Canada, France, Holland, United Kingdom, Sweden, Israel, Japan, Mexico, Russian Federation, Spain, the United States and one international satellite organization.

3. The Group was supportive of the idea that allocations should have sufficient flexibility to allow a wide variety of satellite services. There was recognition that the introduction of a general satellite service may stimulate development of integrated mobile and fixed applications anticipated to be implemented in near-term systems. However, concern was expressed about the wide variation in technical parameters which could exist within the service and which may require large orbital separations, thereby reducing spectrum efficiency and the total number of systems that the orbit could support.

4. The Group could not reach a consensus on the question of frequency allocations to a GSS but it did agree that there were a number of options which should be considered by WG 4C when determining which frequencies might possibly be allocated. The options are shown in the annex to this report.

J.R. CONNOLLY
Chairman

Annex: 1

ANNEX

1. Summary of proposals from Canada, Mexico and the United States for GSS allocation

Requirements for an allocation to the GSS are:

- allocations to a general satellite service within the frequency range 17 - 30 GHz for fixed and mobile applications;
- no power flux-density limits on down-link emissions;
- exclusive allocations if possible;
- 500 MHz bandwidth for up- and down-link allocations;
- preferred frequency bands:

  19.7 - 20.2 GHz (space-to-Earth);

  29.5 - 30 GHz (Earth-to-space);
- Canada supports the allocation in the bands shown above for at least Region 2; Mexico and the United States support on a worldwide basis.

Full details of the proposals are contained in Document DT/1A3 (Rev.1) as modified by Document CAN/23 (Addendum ...).

2. Options for the introduction of a general satellite service

The following options together with the advantages and disadvantages of each should be considered by WG 4C (no hierarchy of priority is implied by the ordering of the options):

An allocation at 19.7 - 20.2 GHz (space-to-Earth) and 29.5 - 30 GHz (Earth-to-space) with either:

a) GSS co-primary with FSS;

Advantage: May ensure protection for conventional FSS applications.

Disadvantage: Concern over sharing with VSAT and other FSS applications, or

b) GSS in part of band only and sharing co-primary with FSS;

Advantage: May meet initial requirements for deployment of GSS.

Disadvantage: Reduces efficiency of spectrum usage. May not be sufficient spectrum to implement GSS networks, or

c) Regional allocation(s) to GSS either on an exclusive basis or as proposed in (1) above;

Advantage: Allows service to develop in region where immediate need for it is foreseen.

Disadvantage: There is a preference for worldwide allocations to new services. The impact of sharing with regional and interregional FSS is unclear, or

d) Add a footnote to RR Article 8 against the frequency bands 19.7 - 20.2 GHz and 29.5 - 30 GHz which would upgrade the MSS to primary status for systems incorporating fixed and/or mobile applications;

Advantage: Restricts use of MSS (Primary) to GSS-type applications thus encouraging investment.

Disadvantage: Mobile characteristics of the GSS-type systems may dominate coordination procedures. If GSS systems are implemented under FSS and MSS co-primary, coordination would be difficult. One international satellite organization expressed concern over the safety-of-life service priority included in the MSS service.

A draft Recommendation should be prepared inviting CCIR to study as a matter of urgency the technical characteristics of the GSS and sharing criteria necessary for compatibility with other services which may be affected by its implementation. This Recommendation would accompany any of the allocation options outlined above. [A draft Recommendation is attached.]

0INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/75-E
18 February 1992
Original: English

WORKING GROUP 4C

FINAL REPORT OF THE CHAIRMAN OF SUB-WORKING GROUP 4C1 TO WORKING GROUP 4C

1. Sub-Working Group 4C1 agreed to the following two main principles in its deliberations on proposals on Agenda item 2.2.3b regarding BSS-HDTV:

- to concentrate on a possible new allocation;
- to seek, as far as possible, a worldwide allocation.

2. The proposals dealing with Agenda item 2.2.3b are summarized in DT/19(Rev.3). Tables A and B included in this report are derived from DT/19(Rev.3) and reflect the current position concerning proposals on this agenda item. Delegates will no doubt find these tables useful and consideration should therefore be given by Working Group 4C to maintaining them as a current indicator of the developing situation.

3. As can be seen from Table A, three new frequency bands remain with continuing support, namely:

- 17 GHz (9 Administrations);
- 21 GHz (51 Administrations)
- 25 GHz (4 Administrations)

Some Administrations expressed support for accommodating BSS-HDTV into the existing 12 GHz bands. There was also support for further CCIR studies into how BSS-HDTV can be provided in the 12 GHz bands, with special emphasis on those countries which experience high rainfall rates. A note was thus prepared for consideration by Working Group 4C bringing this view, together with other elements, to the attention of Committee 5 (see Document DT/60(Rev.1)).

A report was prepared on the "Factors related to the choice of a frequency band for wide-RF band HDTV" in order to assist in working towards consensus on a new down-link band - see DT/41(Rev.1) and (Corr.1) - Working Group 4C may wish to consider maintaining this as a Working Group 4C document.

4. As can be seen from Table B, four frequency bands remain with continuing support, namely:

- 17 GHz (45 Administrations);
- 18 GHz (33 Administrations);
- 21 GHz (3 Administrations);
- 29 GHz (34 Administrations).

While some Administrations have indicated that the allocation or designation in a specific band would be premature, because of the limited number of stations to be expected to transmit wide-RF band HDTV in the near future (and these few stations should be coordinated as if they were FSS (Earth-to-space)), many Administrations have indicated that the allocation or designation in a specific band would be desirable.

A report was prepared on the "Factors related to the choice of a frequency band for the feeder links of the BSS intended for wide-RF band HDTV" in order to assist in working towards consensus on a feeder-link band - see DT/72 - Working Group 4C may wish to consider maintaining this as a Working Group 4C document.

5. It is clear that the feeder-link band cannot necessarily be considered independently from that of the corresponding down-link band. About 15% of frequency separation between the feeder link and down link is considered necessary to allow proper filtering in the satellite.

6. The attention of Sub-Working Group 4C1 is brought to the significant advantage, as far as atmospheric cross-polar decoupling is concerned, of the use of linear polarization, as can be seen from Annex 1 to DT/72.

7. The attention of Sub-Working Group 4C1 is also brought to the consideration that adopting digital techniques would reduce the need for a priori planning of feeder links and thus maintain the flexibility for implementing the service while maintaining equitable access to the geostationary-satellite orbit.

8. Taking into account the proposals of Administrations, as contained in Tables A and B, and noting the agreed principle of seeking, as far as possible, a worldwide allocation for wide-RF band BSS-HDTV, Working Group 4C are encouraged to continue with this aim with a view to Administrations working towards a consensus on this issue during WARC-92.

9. Regrettably, deliberations on the associated footnote proposals was not possible in the time available to Sub-Working Group 4C1. However, most of these proposals need to await the outcome of deliberations in Working Group 4C on both the down-link and feeder-link allocations.

10. Similarly, any deliberations on Resolution No. 521 of ORB-88 will need to await the outcome of these same deliberations.

11. The work of Sub-Working Group 4C1 was carried out by establishing two ad hoc Sub-Working Groups and their associated Drafting Groups as follows:

- ad hoc 1 to Sub-Working Group 4C1 (and its Drafting Group)
  Chairman: Mr. Barton (Australia)
- ad hoc 2 to Sub-Working Group 4C1 (and its Drafting Group)
  Chairman: Mr. Dosch (Germany (Federal Republic of))

12. With the help of many delegates and that of Mr. Leite, and his excellent secretarial support team, together with the cooperation of all delegates, the main tasks assigned to Sub-Working Group 4C1 were brought to their current status as given in this report.

13. The grateful thanks of both Mr. Stepanian and myself go to all involved in the work of Sub-Working Group 4C1.

K. WHITTINGHAM
Chairman of Sub-Working Group 4C1

V. STEPANIAN
Vice-Chairman of Sub-Working Group 4C1

TABLE A

Summary of Proposals for BSS (HDTV) Down-link Allocation

12 GHz	**17 GHz** (17.3 - 17.8 GHz)	**21 GHz** (21.4 - 22 GHz)	**25 GHz** (24.65 - 25.25 GHz)
NIG /9(+ expand 17 GHz) USA/12 + Add.7 (+ expand 24/25 GHz) PNG/16 (+ expand 21 GHz) NZL/26 EQA/45 (+ expand 24/25 GHz) LUX/64 GAB/128 (high rain rate)	NIG/9 CAN/23 B/30 INS/52 ZMB/91 BGD/126 SNG MEX CLM	URS/7 + Corr.1 PNG/16 EUR/20 (30 Adm's) AUS/31 IND/34 MLI/39(Rev.1) ALG/40 PAK/44 BFA/49 THA/56 CLN/62 TZA/74 SEN/75 IRN/98(Add.1) TUN/99 TUR/101 BEN/111 GAB/128 OMA TCD KEN SWZ	J/27 USA/12 + Add.7 EQA/45 (24.25 - 25.25 GHz) ISR/51(Add.3)
		LYB/131(Add.1) (above 20 GHz)	

TABLE B

Summary of Proposals for BSS (HDTV) Feeder-Link Allocation

Non-specified	**17 GHz** (17.3 - 18.1 GHz)	**18 GHz** (18.1 - 18.6 GHz)	**21 GHz** (21.4 - 22.2 GHz)	**29 GHz** (27 - 31 GHz)
NIG/9 USA/12 PNG/16 NZL/26 AUS/31 IND/34 PAK/44 EQA/45 CLN/62 LUX/64 IRN/98	EUR/20 (30 Adm's) (for high rain rates) J/27 (for Region 3) MLI/39(Rev.1) ALG/40 (for high rain rates) BFA/49 TZA/74 SEN/75 ZMB/91 BEN/111 (for high rain rates) GAB/128 OMA BEN NGR TCD KEN SWZ	EUR/20 (29 Adm's) F/54 THA/56 TUR/101 SNG	CAN/23 BGD/126 B/30	URS/7 + Corr.1 (28.5 - 29.5 GHz) EUR/20 (30 Adm's) (27.5 - 30 GHz) J/27 ALG/40 (28.5 - 29.5 GHz) TUN/99 (28.5 - 29.5 GHz)
	INS/52 (Below 23 GHz)			
				MEX (24.25 - 25.25 GHz)

UNION INTERNATIONALE DES TELECOMMUNICATIONS

CAMR-92 **CAMR CHARGEE D'ETUDIER LES ATTRIBUTIONS DE FREQUENCES DANS CERTAINES PARTIES DU SPECTRE**

Document DT/76-F/E/S
18 février 1992
Original: français
anglais
espagnol

MALAGA-TORREMOLINOS, FEVRIER/MARS 1992

GROUPE DE TRAVAIL 5B

Note du Président du Groupe de travail 5B

PROJET DE NOTE POUR LA SECTION II DE L'ARTICLE 11 DU RR

A titre provisoire, en attendant le résultat des études du CCIR, un satellite est considéré comme géostationnaire si son inclinaison est inférieure à 5° (comprise entre +5° et -5°).

WORKING GROUP 5B

Note from Chairman Working Group 5B

DRAFT NOTE FOR SECTION II OF ARTICLE 11 OF RR

As an interim measure, pending the result of CCIR studies, a satellite is considered as geostationary when its inclination is less than 5° (comprised between +5°and -5°).

GRUPO DE TRABAJO 5B

Nota del Presidente del Grupo de Trabajo 5B

PROYECTO DE NOTA PARA LA SECCION II DEL ARTICULO 11 DEL RR

De manera provisional, y a la espera del resultado de los estudios del CCIR, se considera que un satélite es geoestacionario cuando su inclinación es inferior a 5° (está comprendida entre +5° y -5°).

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/77-E
18 February 1992
Original: English

WORKING GROUP 4C

REPORT OF DRAFTING GROUP 2 TO WORKING GROUP 4C

Agenda item 2.2.5

1. Drafting Group 2 to Working Group 4C held one meeting on 18 February 1992 and was tasked to examine the feasibility of alternative approaches, to address the imbalance between up-link and down-link spectrum, allocated to the fixed-satellite service, including the analysis of the band 13.75 - 14 GHz. A Canadian proposal, provided to the Drafting Group under Document DT/68, was utilized as a basis for drafting an alternative approach.

2. After the introductory remarks which covered the difficulties experienced by numerous Administrations concerning the utilization of the band 14.5 - 14.8 GHz to address the imbalance between the up-link and down-link spectrum allocated to FSS, there was consensus that attention should be focussed on the issue of imbalance.

3. Document DT/68 was introduced and discussed extensively, reaching an agreement in principle concerning the three footnotes presented in the document.

4. There was consensus to combine Footnotes 855A and 855B into a single footnote which was modified to refer to a Resolution enclosed in this document. In addition, a maximum limit was introduced on the FSS e.i.r.p. and the radionavigation service was included in the e.i.r.p. limit.

5. The third footnote was modified to reflect the concern of one Administration concerned with projects presently underway and which have not yet been subject to notification.

6. Finally, the alternative proposal was supported and the Chairman, due to lack of time, suggested that he would draft the associated Resolution.

7. The text in question is set out in annex hereto.

M.J.L. DROLET
Chairman

Annex: 1

ANNEX

DRAFT RESOLUTION

Relating to the Allocation of Frequencies to the Fixed-Satellite Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that there is an imbalance in the present up-link and down-link allocations in the vicinity of 14/11 GHz which will need to be rectified by increasing the up-link allocations;

b) that this Conference has been unable to increase the frequency allocations to the fixed-satellite service, specifically in the band 14.5 - 14.8 GHz;

c) that this present Conference has made an additional allocation to the FSS in the band 13.75 - 14 GHz;

d) that this band is shared with the RLS and certain limitations have been placed on the FSS and RLS;

e) that the impact of the FSS allocation on the SRS and EES needs to be addressed,

f) that as a consequence of No. 22 of the Radio Regulations which defines the fixed-satellite service, the frequency bands allocated to this service may by used by feeder links of other services;

g) that the broadcasting-satellite service and the mobile-satellite service are among the other services requiring feeder links;

recognizing

h) that further studies should be made concerning the sharing criteria between the FSS and the other services in this band, in the context of WARC-92 allocations;

i) that this study should be undertaken by the CCIR and that a report on the outcome should be submitted in time for consideration and appropriate action by a future competent conference,

resolves

1. to invite the CCIR to conduct the necessary studies with respect to values given in the footnotes related to allocations in this band and to report the outcome at least one year before the next competent conference;

2. to invite Administrations and other organizations interested in these radio services to participate in the work of the CCIR;

3. to invite the Secretary-General to bring this Resolution to the attention of the Administrative Council and the next full Plenipotentiary Conference with a view to including the subject in the agenda of a future World Administrative Radio Conference.

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	~~13.4~~13.75 - 14	RADIOLOCATION FIXED SATELLITE (Earth-to-space) Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855 855A 855B	

ADD **855A** 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 a minimum antenna diameter of 4.5 metres. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation and radionavigation services toward the geostationary-satellite orbit shall not exceed 59 dBW. These values shall apply subject to review by the CCIR and until they are changed by a future competent World Administrative Radio Conference (see Res. ...).

ADD **855B** In the band 13.75 - 14 GHz [geostationary and non-geostationary] space stations in the space research service, [and in the earth exploration-satellite service] which have received advance publication prior to [31 January 1992,] shall operate on an equal basis with stations in the fixed-satellite service.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/78-E
18 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Chairman of GT-PLEN Ad-hoc

REPORT OF THE FIRST MEETING OF GT-PLEN AD-HOC

1. GT-PLEN Ad-hoc held the first meeting from 16.30-18.00 hours on 17 February 1992.

2. Agenda in Document WG PL Ad-hoc-1 was approved.

3. **Sharing considerations for LEO mobile-satellite service below 1 GHz (Doc. DT/5 (Rev. 2), § 3.7) and above 1 GHz (Doc. DT/5 (Rev. 2), § 3.8)**

In view of recent developments in Committees 4 and 5 concerning LEO mobile-satellite service, the US delegation withdrew Document DT/57 which contained the US proposals to be included in the output from GT-PLEN Ad-hoc. It was accepted by the meeting.

4. **EIRP limits for earth stations in the mobile-satellite service (Doc. DT/5 (Rev. 2), § 3.4)**

4.1 Proposal USA/12/200, MOD 2548A was considered by the meeting. RR 2548A specifies that the maximum EIRP density of RDSS earth stations in the band 1 610-1 626.5 MHz is -3 dB(W/4 kHz). USA/12/200 proposes that the same limit should apply to MSS earth stations in the same band.

4.2 The meeting considered the band 1 610-1 626.5 MHz simply because it was included in the US proposal. The meeting agreed that the frequency band allocation should be handled by Committee 4.

4.3 The meeting was informed that the existing RR 2548A was developed at the WARC Mob-87 after difficult and long discussions. Until that time, earth stations in space services had been controlled through coordination procedures such as Article 11 and Appendix 28. Although EIRP densities are specified for earth stations in RR 2591, RR 2548A specified lower EIRP density limits to assist the coordination procedure; thus simplifying the introduction of RDSS earth stations.

4.4 The meeting was informed that the limit of -3 dB(W/4 kHz) for the RDSS was agreed at the WARC Mob-87 as a compromise between satellite system design requirements and protection of the existing services such as the fixed service. Therefore, it is estimated that the limit will cause some constraints on earth stations communicating with GSO satellites and, at the same time, may not be necessarily adequate to protect the existing services. It was also noted that applying the same -3 dB(W/4 kHz) EIRP density limit to MSS earth stations would reduce inhomogeneity and assist in the coordination of RDSS and MSS satellite systems in the band. The limit is unique to the sharing situations in the band 1 610-1 626.5 MHz, and may not be applicable to other bands.

4.5 Several delegations expressed unwillingness at this time to accept the US proposal to apply the same limit to MSS earth stations.

4.6 This subject was taken up by GT-PLEN Ad-hoc at its own initiative. The meeting provisionally concluded that in order to further pursue the issue, more information was required from Committee 4 as for probable frequency allocations.

5. The Chairman announced that the next meeting will be held at 15.00 hours on 18 February 1992.

M. MUROTANI
Chairman, GT-PLEN Ad-hoc

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/79(Rev.1)-E
19 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Report of Drafting Group 7 of the Working Group of the Plenary

FURTHER WORK BY THE CCIR CONCERNING BSS (SOUND)

Agenda item 2.9.1

1. The WG PL set up Drafting Group 7 to review draft Resolution No. CCC given in proposal EUR/20/55 relating to further work by the CCIR concerning the broadcasting-satellite (sound) service.

2. The following Administrations participated in the work of the Drafting Group: Canada, France, Germany, Israel, Japan, the United Kingdom and the United States.

3. Drafting Group 7 met on 18 February 1992 and prepared the draft Resolution contained in the Annex. This Resolution is submitted for the approval of the WG PL.

H. MAZAR
Chairman

Annex: 1

ANNEX

RESOLUTION No. CCC

Relating to Further Work by the CCIR Concerning the Broadcasting-Satellite (Sound) Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has made frequency allocations for the BSS (Sound) down links and associated complementary terrestrial services in the band [(as specified in Article 8)], with an associated interim procedure to govern the introduction of this service;

b) that further technical development is necessary for the introduction of BSS (Sound) in the frequency band mentioned above;

c) that systems in the broadcasting-satellite (sound) service could employ satellites in the geostationary-satellite orbit (GSO) or in other, non-geostationary orbits (non-GSO);

d) that the most urgent guidance required will relate to the means to be employed for coordinating and avoiding mutual harmful interference between non-GSO, and between GSO and non-GSO systems of the broadcasting-satellite (sound) service, and between BSS (Sound) systems and other services,

noting

the provisions of No. 2674 in the Radio Regulations,

resolves

1. that the CCIR study this subject as a matter of urgency;

2. that CCIR studies should focus in particular on:

   i) the characteristics of GSO and non-GSO BSS (Sound) systems,

   ii) the appropriate sharing criteria;

3. to invite administrations and the IFRB to participate in the work of the CCIR on this subject;

4. to invite administrations which introduce broadcasting satellite (sound) systems to publish reports on their experience of such systems;

5. to invite the Secretary-General to bring this Resolution to the notice of the Administrative Council to ensure that the results of CCIR studies are taken into account when establishing the regulatory provisions that may be required for the BSS (Sound).

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/79-E
19 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Report of Drafting Group 7 of the Working Group of the Plenary

FURTHER WORK BY THE CCIR CONCERNING BSS (SOUND)

Agenda item 2.9.1

1. The WG PL set up Drafting Group 7 to review draft Resolution No. CCC given in proposal EUR/20/55 relating to further work by the CCIR concerning the broadcasting-satellite (sound) service.

2. The following Administrations participated in the work of the Drafting Group: Canada, France, Germany, Israel, Japan, the United Kingdom and the United States.

3. Drafting Group 7 met on 18 February 1992 and prepared the draft Resolution contained in the Annex. This Resolution is submitted for the approval of the WG PL.

H. MAZAR
Chairman

Annex: 1

ANNEX

RESOLUTION No. CCC

Relating to Further Work by the CCIR Concerning the Broadcasting-Satellite (Sound) Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has made frequency allocations for the BSS (Sound) down links and associated complementary terrestrial services in the band [(as specified in Article 8)], with an associated interim procedure to govern the introduction of this service;

b) that further technical development is necessary for the introduction of BSS (Sound) in the frequency band mentioned above;

c) that systems in the broadcasting-satellite (sound) service could employ satellites in the geostationary-satellite orbit (GSO) or in other, non-geostationary orbits (non-GSO);

d) that the most urgent guidance required will relate to the means to be employed for coordinating and avoiding mutual harmful interference between non-GSO, and between GSO and non-GSO systems of the broadcasting-satellite (sound) service, and between BSS (Sound) systems and other services,

resolves

1. that the CCIR study this subject as a matter of urgency;

2. that CCIR studies should focus in particular on:

   i) the characteristics of GSO and non-GSO BSS (Sound) systems,

   ii) the appropriate sharing criteria;

3. to invite administrations and the IFRB to participate in the work of the CCIR on this subject;

4. to invite administrations which introduce broadcasting satellite (sound) systems to publish reports on their experience of such systems;

5. to invite the Secretary-General to bring this Resolution to the notice of the Administrative Council with a view to the results of CCIR studies being taken into account when determining the process for establishing the regulatory provisions that may be required for the BSS (Sound).

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/80-E
18 February 1992
Original: English

WORKING GROUP 4A

Note by the Chairman of Working Group 4A

DRAFT SECOND REPORT TO COMMITTEE 4

Working Group 4A, after in-depth discussions of the subjects related to the extensions of the spectrum to the HF broadcasting service, came to the conclusion that several subjects are closely interrelated and that they have to be treated as a package. The package comprises the following elements:

1.1 Extensions of the bands

The proposals related to the extensions of the spectrum allocated to HF broadcasting are listed in Annex 1. These extensions are proposed under the following assumptions:

a) NOC in the conditions for use of the bands governed by RR 503 (Tropical Zone bands);

b) the extension bands will be subject to planning and will be reserved for SSB (new Footnote RR 4A1, Annex 2);

c) the new allocations for BC will be available on [1 April 2007] (new Footnote RR 4A2, Annex 2);

d) some bands will continue to be used for FX/MO, on a non-interference basis, even after 1 April 2007 (new Footnote RR 530A, Annex 2);

e) the next competent WARC is invited to consider advancing the date for the cessation of the DSB emissions presently specified in Resolution No. 517 (new Resolution, Annex 3);

f) the protection of the existing services will be assured also through the re-accommodation procedure (new Resolution, as prepared by Committee 5).

1.2 Consequential changes

[Due to the alignment of the allocations of the BC allocations in Region 2, in the 7 MHz band, appropriate alignment to the allocations of the amateur bands are proposed] [text to be prepared pending the decisions in 4A].

1.3 More efficient use of frequencies in the HFBC

Since the problem of congestion cannot be solved only through extension of the frequency bands, appropriate measures are proposed for alleviating these problems, as proposed in the new Recommendations (to be prepared on the basis of the discussions, see Document DT/82).

S. HESS
Chairman

Annexes: 3

ANNEX 1

Proposals concerning the extensions

Frequency band	Proposals for extension				Amount
18.2 - 21.0 MHz	18 900 - 19 300 kHz				400 kHz
17.4 - 17.9 MHz	Option 1	17 480 - 17 550 kHz			70 kHz
	Option 2	17 450 - 17 550 kHz			100 kHz
14.5 - 16.1 MHz	Option 1	15 600 - 15 980 kHz			380 kHz
	Option 2	15 600 - 15 700 kHz			100 kHz
13.5 - 14.0 MHz	Option 1	13 570 - 13 600 kHz and 13 800 - 13 900 kHz			130 kHz
	Option 2	NOC			nil
11.4 - 12.2 MHz	Above 12.05 MHz		Opt.1	NOC	nil
			Opt.2	12 050 - 12 120 kHz	70 kHz
	Below 11.65 MHz		Opt.1	NOC	nil
			Opt.2	11 500 - 11 650 kHz	150 kHz

ANNEX 2

Proposals concerning accompanying Footnotes in Article 8 of the RR

ADD **RR 4A1** Broadcasting stations in the bands [.....] shall be established in accordance with an associated Plan to be drawn up by the competent WARC. Nevertheless, the emissions of the broadcasting stations in these bands shall be limited to single-sideband with characteristics specified in Appendix 45 to the Radio Regulations.

ADD **RR 4A2** The bands [.....] are allocated to the fixed service on a primary basis up to 1 April 2007, subject to the procedure described in Resolution No. [Document 170].

ADD **530A** On condition that no harmful interference is caused to the broadcasting service, frequencies in the bands [...] may be used by stations in the fixed service communicating only within the boundary of the country in which they are located. In making frequency assignments to stations in the fixed services in these bands, the Administrations are urged to use the minimum power required and to take account of the seasonal use of frequencies by the broadcasting service published in accordance with the Radio Regulations.

ANNEX 3

DRAFT RECOMMENDATION [WG 4A-1]

Relating to the Introduction of Single-Sideband Emissions and Possible Advancement of the Date for Cessation of the Use of Double-Sideband Emissions in the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the WARC HFBC-87 in Resolution No. 517 called for the introduction of SSB transmissions in the HF bands allocated exclusively to the broadcasting service with the characteristics specified in Appendix 45 to the Radio Regulations;

b) that the use of single-sideband (SSB) instead of double-sideband (DSB) modulation techniques would lead to improved spectrum utilization;

c) that in accordance with Recommendation No. 515 (HFBC-87) new HF broadcasting transmitters installed after 31 December 1990 should as far as possible be capable of operating either in both modes, SSB and DSB, or in the SSB mode alone;

d) that the new extension bands allocated by WARC-92 for HF broadcasting should be reserved only for SSB emissions;

e) that Resolution No. 517 (HFBC-87) specifies the date of 31 December 2015 for the cessation of DSB emissions;

f) that in accordance with Resolution No. 517 (HFBC-87) there is a need, prior to the final confirmation of the date for the cessation of DSB transmissions in the HF broadcasting service, for a competent WARC to consider the worldwide distribution of SSB transmitters and synchronous demodulator receivers;

g) [USA/ARG],

recommends

1. that the next competent WARC should consider the possibility of advancing [.....] the date given in **considering** e) for the cessation of DSB emissions;

2. that the Administrative Council should be invited to place this Recommendation on the agenda for the next competent WARC.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/81-E
18 February 1992
Original: English

WORKING GROUP 4A

DRAFT THIRD REPORT TO COMMITTEE 4

The Working Group examined the proposals concerning the footnotes in Article 8 of the Radio Regulations and proposes action with respect to some of them, as indicated in Annex 1 to this report. One delegation (Russian Federation) was against the considerations of the footnotes which are not explicitly on the agenda.

S. HESS
Chairman of Working Group 4A

Annex: 1

ANNEX 1

Proposed action with respect to Footnotes in Article 8 of the Radio Regulations

MOD **446** Additional allocation: in Bulgaria, ~~Hungary,~~ Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the band 14 - 17 kHz is also allocated to the radionavigation service on a permitted basis.

MOD **447** The stations of services to which the bands 14 - 19.95 kHz and 20.05 - 70 kHz and in Region 1 also the bands 72 - 84 kHz and 86 - 90 kHz are allocated may transmit standard frequency and time signals. Such stations shall be afforded protection from harmful interference. In Bulgaria, ~~Hungary,~~ Mongolia, Poland, Czechoslovakia and the U.S.S.R., the frequencies 25 kHz and 50 kHz will be used for this purpose under the same conditions.

MOD **449** Additional allocation: in Bulgaria, ~~Hungary,~~ Poland, the German Democratic Republic, Czechoslovakia and the U.S.S.R., the band 67 - 70 kHz is also allocated to the radionavigation service on a permitted basis.

MOD **457** Additional allocation: in Bulgaria, ~~Hungary,~~ Mongolia, Poland, the German Democratic Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 130 - 148.5 kHz is also allocated to the radionavigation service on a secondary basis. Within and between these countries this service shall have an equal right to operate.

SUP **464A**

SUP **481**

SUP **551**

MOD **555** Additional allocation: in Angola, Cameroon, the Congo, Madagascar, Mozambique, Somalia, Sudan, Tanzania~~,~~ and Chad ~~and Yemen (P.D.R. of)~~, the band 47 - 68 MHz is also allocated to the fixed and mobile, except aeronautical mobile, services on a permitted basis.

SUP **569**

MOD **571** Additional allocation: in Bulgaria, China, ~~Hungary,~~ Mongolia, Poland, Czechoslovakia and the U.S.S.R., the bands 74.6 - 74.8 MHz and 75.2 - 75.4 MHz are also allocated to the aeronautical radionavigation service, on a primary basis, for ground-based transmitters only.

MOD **581** Additional allocation: in the Federal Republic of Germany, ~~Spain~~, France, Ireland, Italy, Liechtenstein, Monaco, the United Kingdom~~,~~ and Switzerland ~~and Yemen (P.D.R.)~~, the band 87.5 - 88 MHz is also allocated to the land mobile service on a permitted basis and subject to agreement obtained under the procedure set forth in Article 14.

MOD **587** **Mob-87** Additional allocation: in Austria, Bulgaria, ~~Hungary,~~ Israel, Kenya, Mongolia, Poland, Syria, the German Democratic Republic, the United Kingdom, Somalia, Czechoslovakia, Turkey, and the U.S.S.R., the band 104 - 108 MHz is also allocated to the mobile, except aeronautical mobile (R), service on a permitted basis until 31 December 1995 and, thereafter, on a secondary basis.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/82-E
18 February 1992
Original: English

WORKING GROUP 4A

Note from the Chairman of Working Group 4A

RESOLUTIONS AND RECOMMENDATIONS FOR CONSIDERATION BY WORKING GROUP 4A

1. Attached are the following proposals concerning Resolutions:

USA/12/170-177	Resolution No. 517
YEM/41/3-6	Resolution No. 517
CTR/SLV/NCG/14	Resolution No. AAA
NZL/26/2	Resolution No. AAA

2. Attached are the following proposals concerning Recommendations:

EUR/20/35	Recommendation No. WWW
EUR/20/36	Recommendation No. XXX
EUR/20/37	Recommendation No. YYY
EUR/20/38	Recommendation No. ZZZ
IND/34/45	Recommendation No. ZZZ
IND/34/46	Recommendation No. YYY

3. The attention of Working Group 4A is drawn to the proposal E/25/12 concerning the deletion of Recommendation No. 511.

S. HESS
Chairman

USA/12/170
MOD

RESOLUTION No. 517 ~~(HFBC-87)~~(WARC-92)

NOC

Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

USA/12/171
MOD

The World Administrative Radio Conference ~~for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987),~~for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

USA/12/172
MOD

ANNEX TO RESOLUTION No. 517 ~~(HFBC-87)~~(WARC-92)

NOC

Procedure for the Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

USA/12/173
MOD

1. The immediate introduction of SSB emissions is encouraged. ~~, i.e., the transition period starts immediately.~~

USA/12/174
MOD

2. All DSB emissions shall cease not later than ~~31 December 2015~~30 June 2007, at 2359 hours UTC (see also resolves 2 in the body of the Resolution).

NOC

3. SSB emissions shall comply with the characteristics specified in Appendix 45 to the Radio Regulations.

USA/12/175
MOD

4. Until ~~31 December 2015~~30 June 2007, 2359 UTC, SSB emissions intended for reception by DSB receivers with envelope demodulation, as well as by SSB receivers with synchronous demodulation, shall have a carrier reduction of 6 dB relative to peak envelope power.

USA/12/176
MOD

5. After ~~31 December 2015~~30 June 2007, 2359 hours UTC, only SSB emissions with a carrier reduction of 12 dB relative to peak envelope power shall be used.

USA/12/177
MOD

6. Until ~~31 December 2015~~30 June 2007, 2359 hours UTC, whenever an administration replaces its DSB emission by an SSB emission, it shall ensure that the level of interference is not greater than that caused by its original DSB emission (see also Appendix 45 to the Radio Regulations and Recommendation No. 517 (HFBC-87)).

YEM/41/3
MOD

RESOLUTION No. 517 ~~(HFBC-87)~~(Rev. WARC-92)

Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

YEM/41/4
MOD

The World Administrative Radio Conference ~~for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987),~~for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

YEM/41/5
MOD

ANNEX TO RESOLUTION No. 517 ~~(HFBC-87)~~(Rev. WARC-92)

Procedure for the Transition from Double-Sideband (DSB) to Single-Sideband (SSB) Emissions in the HF Bands Allocated Exclusively to the Broadcasting Service

YEM/41/6
NOC

1. to 6.

CTR/SLV/NCG/14/1
ADD

RESOLUTION No. AAA

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that WARC-92 will be examining proposals relating to the extension of allocations for HF broadcasting, which may entail reallocations to other services;

b) that the amateur service is a valuable source of public services, especially in emergency situations arising from natural disasters, and that the band 7 - 7.3 MHz is particularly necessary for amateurs in our country, by whom it is used intensively;

c) that our Administration wishes to safeguard the ability of the amateur service to offer emergency communications in the above-mentioned part of the spectrum;

d) that in Region 2 the band 7 - 7.3 MHz is currently allocated to the amateur service on an exclusive primary basis;

e) that the CCIR has recommended against frequency sharing between the amateur and broadcasting services,

resolves

1. that a band of 300 kHz in the vicinity of 7 - 7.3 MHz shall be allocated to the amateur service on a worldwide exclusive primary basis;

2. that a 15-year transitional period up to 1 January 2007 shall be adopted in respect of this worldwide allocation of 300 kHz.

NZL/26/2
ADD

RESOLUTION No. [AAA]

The Need for Improved Efficiency in the Spectrum Allocated to HF Broadcasting and the Advantages of Improved Technology in the HF Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that extensive work by two HFBC Conferences and considerable intersessional activity by the IFRB and administrations have not yet been instrumental in establishing workable planning procedures;

b) that allocating additional HF spectrum to the broadcasting service will not alone overcome the difficulties brought about by congestion;

c) that the HF-bands allocated exclusively to the broadcasting service are congested, and this congestion is increasing;

d) that any additional allocation to HFBC will place burdens on the fixed, mobile and amateur services which will increase the difficulties of frequency selection and service operations;

e) that Recommendation No. 515 (HFBC-87) encourages the accelerated design and manufacture of reduced carrier single-sideband transmitters and receivers;

f) that Resolution No. 517 (HFBC-87) and Annex set out some transitional procedures for the introduction of reduced carrier single-sideband emissions in the HF broadcasting service;

g) that **resolves** 2 of Resolution No. 517 (HFBC-87) requires a periodic review of cessation dates for double-sideband full carrier emissions,

noting

a) that fixed and mobile services have progressively implemented the use of reduced carrier single-sideband emissions with a view to maximizing efficient use of their existing spectrum allocations;

b) that the use of reduced carrier single-sideband emissions offers a number of advantages in addition to decreased bandwidth requirements;

c) that these advantages accrue both to the transmission and reception of such emissions,

resolves

that users of the HF broadcasting spectrum take advantage of modern technology and concepts of improved spectrum efficiency for better utilization of spectrum currently allocated to the HF broadcasting service,

urges Administrations

1) to make every effort to improve on the deadlines set for the cessation of double-sideband and encourage the use of compatible reduced carrier single-sideband;

2) to facilitate and encourage manufacturers to promulgate the use of technically suitable receivers with appropriate band coverage;

3) to use the concept of single frequencies to specific target areas consistent with propagation and other known circuit parameters,

invites the IFRB

to continue with its spectrum planning exercises and to encourage administrations to provide realistic and attainable requirements, and to apply its technical standards in the most effective manner,

invites the CCIR

to continue its investigations into receiver design, antenna design and propagation prediction methods to ensure that appropriate technical parameters are available for use,

instructs the Secretary-General

to bring the contents of this Resolution to the attention of administrations and to submit the intent of **resolves** to the next competent [Radiocommunication Conference].

EUR/20/35
ADD

RECOMMENDATION No. WWW

Relating to the Elimination of HF Broadcasting on Frequencies Outside the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that as a result of the inadequate amount of HF spectrum allocated to the broadcasting service there is a consequential and increasing number of HF broadcasting transmitters operating on frequencies outside the bands allocated to the broadcasting service;

b) that the unregulated sharing of HF bands by broadcasting and other services generally does not represent an efficient use of the frequency spectrum;

c) that such unregulated sharing has led to harmful interference;

d) that this present Conference has allocated additional spectrum for the broadcasting service in the HF bands,

recommends

that administrations should take all practicable steps to eliminate HF broadcasting outside the HF bands allocated to the broadcasting service.

EUR/20/36
ADD

RECOMMENDATION No. XXX

Relating to the Use of the Minimum Number of Frequencies for a Requirement of the Broadcasting Service in the High Frequency Bands

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that almost all of the HF bands allocated exclusively to the broadcasting service are severely congested;

b) that the levels of congestion in these HF bands is increasing;

c) that it is therefore necessary to make efficient use of the HF bands allocated to the broadcasting service;

d) that Recommendation No. 516 (HFBC-87) considered "that the use of synchronized transmitters, where technically appropriate, is an efficient means of economizing frequency spectrum",

recognizing

e) that there are cases in which the reliability of a service needs to be improved by the addition of one or two frequencies in separate bands because the service involves:

1) difficult propagation paths, for example, those which are very long, those which pass through the auroral zone or those for which the propagation conditions change very rapidly;

2) a service area which extends radially from the transmitter for too large a distance to permit a satisfactory service to be achieved by the use of a single frequency;

3) the use of highly directional antennas to maintain satisfactory signal-to-noise ratios, thereby limiting the geographical area covered by the station concerned,

recommends

1. that for a given broadcasting requirement, wherever possible, only one frequency should be used in accordance with Nos. 339 and 1743 of the Radio Regulations;

2. that the use of more than one frequency in a given band should, wherever possible, be avoided.

EUR/20/37
ADD

RECOMMENDATION No. YYY

Relating to the Use of the Minimum Radiated Power Necessary to Achieve the Desired Standard of Service for a Given Broadcasting Requirement in the HF Bands

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the radiated power of a station is a function of both the transmitter power and the transmitting antenna characteristics;

b) that the use of a transmitting antenna with suitable main lobe radiation characteristics provides optimum coverage of the required service area;

c) that the use of a transmitting antenna having low levels of radiation outside the main lobe reduces interference to other services;

d) that the use of an antenna achieving the objectives of b) and c) above may avoid the need for excessive transmitter power while achieving the desired standard of service for a given broadcasting requirement in the appropriate HF bands,

recommends

the use for the broadcasting service in the HF bands of the optimum antenna and the minimum practicable transmitter power which together provide the desired standard of service throughout the required service area.

EUR/20/38
ADD

RECOMMENDATION No. ZZZ

Relating to the Accelerated Introduction of Single-Sideband Emissions and Possible Advancement of the Date for Cessation of the Use of Double-Sideband Emissions in the HF Bands Allocated to the Broadcasting Service

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the use of single sideband (SSB) instead of double sideband (DSB) modulation techniques would lead to improved spectrum utilization but would not alone overcome the present severe congestion of the HF bands allocated to the broadcasting service;

b) that the WARC HFBC-87 in Resolution No. 517 called for the introduction of SSB transmissions in the HF bands allocated exclusively to the broadcasting service with the characteristics specified in Appendix 45 to the Radio Regulations;

c) that in accordance with Recommendation No. 515 (HFBC-87) new HF broadcasting transmitters installed after 31 December 1990 should as far as possible be capable of operating either in both modes, SSB and DSB, or in the SSB mode alone;

d) that in accordance with Recommendation No. 517 (HFBC-87) there is a need, prior to the final confirmation of the date for the cessation of DSB transmissions in the HF broadcasting service, for a competent WARC to consider the worldwide distribution of SSB transmitters and synchronous demodulator receivers;

e) that the new extension bands allocated by this present WARC for HF broadcasting should be reserved only for SSB operations,

recommends

1. that administrations should encourage the substitution of SSB for DSB in all the HF bands allocated exclusively to the broadcasting service so that the next competent WARC may be able to advance the date of 31 December 2015 for the cessation of DSB emissions;

2. that the Administrative Council should be invited to place this Recommendation on the agenda for the next competent WARC.

IND/34/45
ADD

RECOMMENDATION No. ZZZ

Relating to the Use of Optimum Antenna System for a Given Requirement of HF Broadcasting

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the use of an optimum antenna reduces transmitter power requirement for achieving desired service quality;

b) that a transmitting antenna with optimum technical characteristics, while providing optimum coverage of the required service area, minimizes interference potentiality;

c) that the use of optimum antenna can improve spectrum efficiency,

noting

that there is considerable congestion in the HF bands allocated exclusively to the broadcasting service,

recommends

that administrations use the optimum antenna system for the broadcasting service in HF bands to achieve desired service quality in the required service area.

IND/34/46
ADD

RECOMMENDATION No. YYY

Relating to the Use of the Minimum Number of Frequencies for a Requirement in HF Broadcasting

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that there is severe congestion in the HF bands allocated exclusively to the broadcasting service;

b) that the economical and efficient use of the HF bands allocated exclusively to the broadcasting service is necessary;

c) that the frequency bands can be economized by the use of synchronized transmitters, as appropriate,

recognizing

that the use of more than one frequency in separate bands may be necessary to improve the reliability of service in certain cases involving:

- difficult propagation paths;
- large radial service areas;
- service area limitations of highly directional antennas,

recommends

1. that only one frequency, wherever possible, should be used in accordance with Nos. 339 and 1743 for a given requirement;

2. that the use of more than one frequency in a given band should be avoided as far as possible;

3. that synchronized transmitters should be used as appropriate.

INTERNATIONAL1. TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/83-E
18 February 1992
Original: English

WORKING GROUP 4A

REPORT OF SUB-WORKING GROUP 4A-1 TO WG 4A

1. Sub-Working Group 4A-1 considered all the aspects of the frequency allocations to the HF broadcasting and propose the following compromise proposal, as an element of the package solution:

18.2 - 21.0 MHz	18 900 - 19 020 kHz	120 kHz
17.4 - 17.9 MHz	17 480 - 17 550 kHz	70 kHz
14.5 - 16.1 MHz	15 600 - 15 800 kHz	200 kHz
13.5 - 14.0 MHz	13 570 - 13 600 kHz and 13 800 - 13 870 kHz	100 kHz
11.4 - 12.2 MHz	12 050 - 12 100 kHz and 11 600 - 11 650 kHz	100 kHz
9 MHz	9 400 - 9 500 kHz	100 kHz
7 MHz	7 300 - 7 350 kHz	50 kHz
6 MHz	5 900 - 5 950 kHz	50 kHz

2. All allocations are worldwide and available for broadcasting in 2007.

S. HESS
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/84(Rev.1)-E
19 February 1992
Original: French

PLENARY MEETING

Note by the Secretary-General

FINAL ACTS OF WARC-92

DRAFT PREAMBLE

I have the honour to submit to the Plenary Meeting the text of the draft Preamble to the Final Acts of this Conference.

PEKKA TARJANNE
Secretary-General

FINAL ACTS

of the
World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (WARC-92) Malaga-Torremolinos 1992

[Draft]

PREAMBLE

Taking into account the relevant Resolutions and Recommendations adopted by the World Administrative Radio Conference for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987) (HFBC-87), particularly Resolution No. 511 which recommended that a world administrative radio conference for HF broadcasting should be convened not later than 1992; in view of the fact that the World Administrative Radio Conference for the Mobile Services (Geneva, 1987) (MOB-87) concluded that a number of questions needed further study by future administrative radio conferences; and having regard to the relevant Resolutions and Recommendations of the World Administrative Radio Conference on the Use of the Geostationary Orbit and the Planning of Space Services Using it, Geneva, 1988 (ORB-88), the Plenipotentiary Conference of the International Telecommunication Union (Nice, 1989) decided, in its Resolution No. 1, to convene a World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, in Spain, for a period of four weeks and two days, in the first quarter of 1992.

On the basis of this decision, the Administrative Council of the Union, at its 45th session in 1990, adopted Resolution No. 995 making the necessary arrangements for convening such a world administrative radio conference. In Resolution No. 995, the Administrative Council decided that the Conference would be held in Spain for a period of four weeks and two days from 3 February 1992. When establishing the agenda for the Conference, the Administrative Council took full account of Resolutions Nos. 1, 7 and 9 of the Plenipotentiary Conference (Nice, 1989).

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, accordingly convened on the appointed date, considered and adopted a partial revision of the Radio Regulations in accordance with its agenda. Details of this partial revision and of the related action taken by the Conference are given in the Annex hereto.

In accordance with its agenda, the Conference also reviewed and, where necessary, revised or abrogated certain existing Resolutions and Recommendations and adopted a number of new Resolutions and Recommendations.

The partial revision of the Radio Regulations, as adopted by the Conference, shall form an integral part of those Regulations and shall enter into force on [..... 199. at ..... hours UTC], [except for those elements of the partial revision for which a different date of entry into force is specifically stipulated therein].

The delegates signing the partial revision of the Radio Regulations contained in the present Final Acts hereby declare that, should a Member of the Union make reservations concerning the application of one or more of the provisions of the revised Radio Regulations, no other Member shall be obliged to observe that provision or those provisions in its relations with that particular Member.

In accordance with No. 172 of the International Telecommunication Convention (Nairobi, 1982), Members of the Union shall inform the Secretary-General of their approval of the partial revision of the Radio Regulations by the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992). The Secretary-General shall inform Members promptly regarding receipt of such notifications of approval.

IN WITNESS WHEREOF, the delegates of the Members of the International Telecommunication Union named below have, on behalf of their respective competent authorities, signed one copy of the present Final Acts in the Arabic, Chinese, English, French, Russian and Spanish languages. This copy shall remain in the archives of the Union. The Secretary-General shall forward one certified copy to each Member of the International Telecommunication Union.

Done at Malaga-Torremolinos, [3] March 1992

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/84-E
19 February 1992
Original: French

PLENARY MEETING

Note by the Secretary-General

FINAL ACTS OF WARC-92

DRAFT PREAMBLE

I have the honour to submit to the Plenary Meeting the text of the draft Preamble to the Final Acts of this Conference prepared by the Legal Service of the ITU.

PEKKA TARJANNE
Secretary-General

FINAL ACTS

of the
World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (WARC-92)
Malaga-Torremolinos 1992

[Draft]

PREAMBLE

Considering that Resolution No. 511 adopted by the World Administrative Radio Conference for the Planning of the HF Bands Allocated to the Broadcasting Service (Geneva, 1987) (HFBC-87) recommended that a world administrative radio conference for HF broadcasting should be convened not later than 1992 and in view of the fact that the World Administrative Radio Conference for the Mobile Services (Geneva, 1987) (MOB-87) concluded that a number of questions needed further study by future administrative radio conferences, the Plenipotentiary Conference of the International Telecommunication Union (Nice, 1989) decided, in its Resolution No. 1, to convene a World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, in Spain, for a period of four weeks and two days, in the first quarter of 1992.

On the basis of this decision, the Administrative Council of the Union, at its 45th session in 1990, adopted Resolution No. 995 making the necessary arrangements for convening such a world administrative radio conference. When establishing the agenda for the Conference, the Administrative Council took full account of Resolutions Nos. 1, 7 and 9 of the Plenipotentiary Conference (Nice, 1989). In Resolution No. 995, the Administrative Council decided that the Conference would be held in Spain for a period of four weeks and two days from 3 February 1992.

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, accordingly convened on the appointed date, considered and adopted a partial revision of the Radio Regulations in accordance with its agenda. Details of this partial revision and of the related action taken by the Conference are given in the Annex hereto.

In accordance with its agenda, the Conference also reviewed and, where necessary, revised certain existing Resolutions and Recommendations and adopted a number of new Resolutions and Recommendations.

The partial revision of the Radio Regulations, as adopted by the Conference, shall form an integral part of those Regulations and shall enter into force on [..... 199. at ..... hours UTC], [except for those elements of the partial revision for which a different date of entry into force is specifically stipulated therein].

The delegates signing the partial revision of the Radio Regulations contained in the present Final Acts hereby declare that, should a Member of the Union make reservations concerning the application of one or more of the provisions of the revised Radio Regulations, no other Member shall be obliged to observe that provision or those provisions in its relations with that particular Member.

In accordance with No. 172 of the International Telecommunication Convention (Nairobi, 1982), Members of the Union shall inform the Secretary-General of their approval of the partial revision of the Radio Regulations by the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992). The Secretary-General shall inform Members promptly regarding receipt of such notifications of approval.

IN WITNESS WHEREOF, the delegates of the Members of the International Telecommunication Union named below have, on behalf of their respective competent authorities, signed one copy of the present Final Acts in the Arabic, Chinese, English, French, Russian and Spanish languages. This copy shall remain in the archives of the Union. The Secretary-General shall forward one certified copy to each Member of the International Telecommunication Union.

Done at Malaga-Torremolinos, [3] March 1992

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/85-E
19 February 1992
Original: English

WORKING GROUP 5B

Source: Document DL/25

Sub-Working Group 5B4

Draft

RESOLUTION COM5/[5B4-1]

Relating to the Introduction of HDTV Systems of the Broadcasting-Satellite Service (BSS) in the Band [21.4 - 22.0] GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has reallocated the band [21.4 - 22.0] GHz to the broadcasting-satellite service to be implemented after [1 April 2005] and that by [ADD 873A] it is intended for use by the BSS for wide RF-band high-definition television (HDTV);

b) that until [1 April 2005] the existing services operating in the band [21.4 - 22.0] GHz in accordance with the Table of Frequency Allocations are therefore entitled to continue in operation without harmful interference from other services;

c) that nevertheless it is desirable to facilitate the introduction of experimental HDTV systems into this band before the year [2005] without affecting the continued operation of existing services;

d) that it also may be possible to introduce operational HDTV systems into this band before the year [2005] without affecting the continued operation of existing services;

e) that after [1 April 2005] the introduction of HDTV systems into this band must be regulated in a flexible and equitable manner until such time as a future competent WARC has adopted definitive provisions for this purpose in accordance with Resolution No. 507;

f) that procedures are required for the three sets of circumstances envisaged in **considerings** c), d) and e) above,

resolves

to adopt the interim procedures contained in the annex hereto with effect from [1 April 1992],

invites

all Administrations to comply with the procedures,

instructs

the IFRB to apply the procedures.

ANNEX TO RESOLUTION COM5/[5B4]

Interim Procedures for the Introduction of BSS (HDTV) Systems in the Band [21.4 - 22.0] GHz

Section I. General Provisions

1. It shall be understood that prior to [1 April 2005] all existing services in the band [21.4 - 22.0] GHz operating in accordance with the Table of Frequency Allocations shall be entitled to continue to operate. After that date they may continue to operate but only on the basis of [No. 873A] of the Radio Regulations; they shall neither cause harmful interference to BSS (HDTV) systems nor be entitled to claim protection from such systems. It shall be understood that the introduction of an operational BSS (HDTV) system into the band [21.4 - 22.0] GHz should be regulated by an interim procedure in a flexible and equitable manner until the date to be decided by a future competent conference.

Section II. Interim Procedure Relating to Experimental BSS (HDTV) Systems Introduced Before [1 April 2005]

2. For the purpose of introducing experimental BSS (HDTV) systems in the band [21.4 - 22.0] GHz before [1 April 2005] under the provisions of Article 34 of the Radio Regulations, the procedures contained in Resolution No. 33 shall be applied.

Section III. Interim Procedure Relating to Operational BSS (HDTV) Systems Introduced Before [1 April 2005]

3. For the purpose of introducing operational BSS (HDTV) systems in the band [21.4 - 22.0] GHz before [1 April 2005] the procedure contained in Resolution No. 33 shall be applied, if the power flux-density at the Earth's surface produced by emissions from a space station, on the territory of any other country, exceeds:

- [-115] dB(W/m^2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane; or
- [-105] dB(W/m^2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane; or
- values to be derived by linear interpolation between these limits for angles of arrival between 5 and 25 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

4. If the power flux-density at the Earth's surface produced by emissions from a space station does not exceed these limits, the procedure in Sections B and C of Resolution No. 33 only shall be applied.

Section IV. Interim Procedure Relating to BSS (HDTV) Systems Introduced After [1 April 2005]

5. For the purpose of introducing and operating BSS (HDTV) systems in the band [21.4 - 22.0] GHz after [1 April 2005], and before a future Conference has taken decisions on definitive procedures, the procedure in Sections B and C of Resolution No. 33 shall be applied.

6. For the purpose of this Section, BSS (HDTV) systems introduced under provisions of Sections II and III of this Resolution shall be taken into account.

7. Administrations shall to the maximum extent possible seek to ensure that operational BSS (HDTV) systems introduced into the band [21.4 - 22.0] GHz under Sections III or IV of this Resolution have characteristics which take into account the studies of the CCIR for the preparation of a future competent WARC.

T.G. JEACOCK
Chairman, Sub-Working Group 5B4

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/86-E
19 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

FIRST REPORT OF DRAFTING GROUP 6 OF THE WORKING GROUP TO THE PLENARY

Item 3.3 of Document DT/5 (Rev. 2)

Control of interference to geostationary satellite systems from geostationary space stations in the inter-satellite service above 20 GHz

1. The Working Group to the Plenary set up Drafting Group 6 to review the two proposals contained in USA/12/144. The material used as a basis for the Drafting Group's work may be found in Document DT/21 and the CCIR Report, section 4.1.1. Participants in the work of the Drafting Group included Japan, France, Canada, Russian Federation, Israel, Australia, Italy, China, United Kingdom, Kenya and the United States.

2. With respect to the first proposal of USA/12/144, the 120° limit on angular separation between communicating geostationary satellites would unnecessarily limit the length of inter-satellite links and restrict the flexibility of satellite system implementation. As an alternative, the 120° value could be considered as a coordination trigger value. That is, coordination would be required with other systems which may be affected operating in the inter-satellite service whenever the angular separation is greater than 120°.

3. With respect to the second proposal of USA/12/144, the 15° pointing restriction appears sufficient to protect geostationary satellites.

4. The limits in both proposals should be considered provisional until such time as the CCIR has made a Recommendation.

Alan RINKER
Chairman of Drafting Group 6 of WG/PL

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/87-E
19 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

SECOND REPORT OF DRAFTING GROUP 6 OF THE WORKING GROUP TO THE PLENARY

Item 3.2 of Document DT/5 (Rev. 2)

EIRP limits of the terrestrial systems to protect the inter-satellite service above 20 GHz

1. The Working Group to the Plenary set up Drafting Group 6 to review the two proposals contained in Annex III of DT/21 and Document 46 concerning EIRP limits of the terrestrial systems to protect the inter-satellite service above 20 GHz. The material used as a basis for the Drafting Group's work may be found in Document DT/21. Participants in the work of the Drafting Group included Japan, France, Canada, Russian Federation, Israel, Australia, Italy, China, United Kingdom, Kenya and the United States.

2. A draft text for e.i.r.p. limits in the bands is attached.

Alan RINKER
Chairman of Drafting Group 6 of WG/PL

ARTICLE 27

Terrestrial Radiocommunications Services Sharing Frequency Bands with Space Radiocommunications Services Above 1 GHz

MOD **2504** (3) In the frequency bands above 15 GHz there shall be no restriction[1] as to the direction of maximum radiation for stations in the fixed or mobile service, except as noted in No. 2512.

MOD **2511** (7) The limits given in Nos 2505 and 2508 apply in the following frequency bands allocated to the fixed-satellite service and the inter-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

17.7 - 18.1 GHz
[25.25 –29.5 GHz
~~27.0 - 27.5 GHz[2]~~ ~~(for Regions 2 and 3)~~
~~27.5 - 29.5 GHz]~~

SUP **2511.2**

ADD **2512** A far as practicable, sites for transmitting stations, in the fixed or mobile service, employing maximum values of equivalent isotropic radiated power (e.i.r.p.) density exceeding 24 dBW in any 1 MHz band in the frequency band [25.25 - 27.5] GHz should be selected so that the direction of maximum radiation of any antenna will be at least 2° away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction[1,2].

ADD **2512.1** [1] The provisions of No. 2512 shall apply until such time as the CCIR has made a recommendation on the e.i.r.p. limits which should apply in the band.

ADD **2512.2** [2] Information on this subject is given in the most recent version of CCIR Recommendation [4/53-9/84].

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT\88-E
19 February 1992
Original: English

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Source: Document 20

WORKING GROUP 5B

Sub-Working Group 5B4

Second Report of Sub-Working Group 5B4 to Working Group 5B

RESOLUTION NO. COM 5/[5B4-2]

Relating to the Future Adoption of Procedures to Ensure Flexibility in the Use of the Frequency Band Allocated to the Broadcasting-Satellite Service for Wide RF-Band High-Definition Television

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has added an allocation to the broadcasting-satellite service in the band [ ] GHz for use by wide RF-band high-definition television (HDTV);

b) that considerable further technological development of wide RF-band HDTV is expected before such services can be introduced for general operational use;

c) that this conference has made interim provisions to be applied during the period before the year [2005] to regulate the introduction of BSS (HDTV) systems of an experimental and operational character;

d) that in the longer term regulatory provisions designed to ensure flexibility in the use of the BSS (HDTV) and associateed feeder link allocations will be necessary to replace these interim provisions,

resolves to urge

all administrations to study the design of future regulatory provisions for BSS (HDTV) to ensure flexibility in the use of the [ ] GHz band, having regard to the interests of all countries, and the state of technical development of this new service;

instructs the Secretary-General

to bring this Resolution to the attention of the Administrative Council with a view to the inclusion of an appropriate item in the agenda of a future world administrative radio conference.

T.G. JEACOCK

Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/89-E
19 February 1992
Original: English

AD HOC 1-PLEN

Note by the Chairman of the Conference

TERMS OF REFERENCE AND COMPOSITION OF THE AD HOC GROUP

The Ad Hoc Group of the Plenary, as set up by the Plenary at its 4th meeting, will be composed of 8 countries under the chairmanship of Mr. E. George (Federal Republic of Germany). It will have the following terms of reference as agreed by the Plenary :

TERMS OF REFERENCE

1. To consider alternative solutions for the implementation of Res. 9 (PP- Nice, 1989) including means to designate on a provisional or definitive manner allotments for countries not having allotments in Appendix 26 and to accommodate, to the extent possible, additional allotments for those countries having already allotments in Appendix 26.

2. Should the conclusions of Committee 5 be retained, consider means to take account of requirements of countries not included in Appendix 26 and to resolve cases of incompatibilities.

COMPOSITION

Countries : F, MRC, SYR, NIG, MEX, USA, SNG, NZL

J. BARRIONUEVO PEÑA
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/90(Rev.1)-E
20 February 1992
Original: English

SUB-WORKING GROUP 5B5

DRAFT REPORT FROM SUB-WORKING GROUP 5B5
TO WORKING GROUP 5B

CONSOLIDATED ARTICLE 27 TEXT

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section I. Choice of Sites and Frequencies

NOC 2501 to 2504

Section II. Power Limits

MOD 2509 (5) — The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service[, the space research service, the space operation service, the earth exploration-satellite service] and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

[*~~1 626.5~~1 610] - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
[*1 765 - 1 775 MHz	
*1 960 - 1 990 MHz	
*2 025 - 2 110 MHz	
*2 200 - 2 290 MHz]	
[*2 638.5~~2 655~~] - 2 690 MHz[1]	

5 725	- 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755	- 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850	- 7 075 MHz	
7 900	- 8 400 MHz	

ADD **2509A**

In the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz the mobile service shall comply with the following additional limitations:

a) Maximum e.i.r.p. *28 dBW;

b) Minimum transmitting antenna gain *24 dBi.

MOD **2511**
Orb-88

(7) The limits given in Nos. 2505 and 2508 apply in the following frequency bands allocated to the fixed-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

17.7 - 18.1 GHz

*21.4 - 22.2 GHz

*25.25 - 29.5 GHz

~~27.0 - 27.5 GHz[2]~~ ~~(for Regions 2 and 3)~~

~~27.5 - 29.5 GHz~~

ADD **2512**

For the protection of the satellites operating in the inter-satellite service in the 25.25 - 27.50 GHz band, e.i.r.p. density of a terrestrial system should not exceed -36 dBW/Hz in any 1 MHz bandwidth.

ADD **2512**

Sites for transmitting stations, in the fixed or mobile service, employing maximum values of equivalent isotropic power (e.i.r.p.) exceeding +45 dBW in the frequency band 25.25 - 27.5 GHz should be selected so that the direction of maximum radiation of any antenna will be at least 1.5 degrees away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction.

CONSOLIDATED ARTICLE 28 TEXT

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

NOC **Section I. Choice of Sites and Frequencies**

NOC **2539**

NOC **Section II. Power Limits**

NOC **2540 to 2548A**

MOD 2548A Mob-87 [(10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service [or the mobile-satellite service] in the band 1 610 - 1 626.5 MHz shall not exceed *-3 dBW in any 4 kHz band.]

NOC **Section III. Minimum Angle of Elevation**

NOC 2549 to 2551

NOC **Section IV. Limits of Power Flux-Density from Space Stations**

NOC 2552 to 2555

NOC 2556

MOD 2556 (2) Power flux-density limits between 1 525 MHz and [~~2 500~~2 300] MHz.

NOC 2557

MOD 2558 Mob-87 b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) [(space-to-space);]
- space operation service (space-to-Earth) [(space-to-space);]

[- earth exploration-satellite service (space-to-Earth) (space-to-space);]

[- mobile-satellite service]

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service~~[, and to the~~

- [~~radiodetermination-satellite service (space-to-Earth)~~].]

MOD 2559 Mob-87

[*1 515 - 1 525 MHz]		
1 525	- 1 530 MHz[1]	(for Regions 1 and 3)
[~~1 530~~	~~- 1 535 MHz~~[1]]	~~(for Regions 1 and 3, up to 1st January 1990)~~]
[1 530	1 535 MHz]	(for Regions 1 and 3, ~~up to 1st January 1990~~)
1 670	- 1 690 MHz	
1 690	- 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700	- 1 710 MHz	
[*2 025	- 2 110 MHz]	

[*2 200~~2 290~~] - 2 300 MHz

[~~2 483.5 - 2 500 MHz~~]

MOD **2561** (3) Power flux-density limits between [~~2 500~~2 300] MHz and 2 690 MHz.

MOD **2562** **Mob-87** a) The power flux-density at the Earth's surface produced by emissions from a space station in ~~the [broadcasting satellite service or],~~ the fixed-satellite service or the [~~radiodetermination~~ mobile-]satellite service for all conditions and for all methods of modulation shall not exceed the following values:

*-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

-152 + 0.75(δ - 5) dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **2563** **Mob-87** b) The limits given in No. 2562 apply in the frequency bands:

[2 483.5 - 2 500 MHz]

2 500 - 2 690 MHz

which [~~is~~are] shared by the ~~[broadcasting satellite service or the]~~ fixed-satellite service [or the mobile-satellite service] with the fixed or mobile service[~~; and in the frequency band 2500 - 2516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination satellite service~~].

(MOD) **2564** c) The power flux-density values given in No. 2562 are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the [bands] mentioned in No. 2563 and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

MOD **2581** (8) Power flux-density limits between [~~31.0~~21.7 25.25] GHz and 40.5 GHz.

MOD **2583** b) The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service, the inter-satellite service, the earth exploration-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

MOD **2584**

[21.7 - 22 GHz]	
*22.55 - 23.55 GHz	
*25.25 - 27.501 GHz	
31.0 - 31.3 GHz	
[~~34.2~~34.7] - 35.2 GHz	(for space-to-Earth transmissions under Nos. [895 and] 896 on the territory of countries mentioned in No. 894)
*~~37.5~~37.0 - 40.5 GHz	

(MOD) **2585** (9) The limits given in Nos. 2553, 2557, [MOD] 2562, 2566, 2570, 2574, 2578, 2582 and 2582.1 may be exceeded on the territory of any country the administration of which has so agreed.

---

* = Parameters marked with an asterisk have been forwarded to the ad hoc Working Group of the Plenary for validation.

[ ] = Items shown in square brackets are approved pending action by Committee 4.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/90-E
20 February 1992
Original: English

SUB-WORKING GROUP 5B5

Note from the Chairman

PART B

CHAPTER VIII

Provisions Relating to Groups of Services and to Specific Services and Stations*

ARTICLE 27

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section I. Choice of Sites and Frequencies

NOC **2501 to 2504**

Section II. Power Limits

MOD **2509** (5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service[, the space research service, the space operation service, the earth exploration-satellite service] and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

[~~1 626.5~~1 610] - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
[1 765 - 1 775 MHz	
1 960 - 1 990 MHz	
2 025 - 2 110 MHz	
2 200 - 2 290 MHz]	
2 638.5~~2 655~~ - 2 690 MHz[1]	

5 725	- 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755	- 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850	- 7 075 MHz	
7 900	- 8 400 MHz	

ADD **2509A**

In the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz the mobile service shall comply with the following additional limitations:

a) Maximum e.i.r.p. 28 dBW;

b) Minimum transmitting antenna gain 24 dBi.

CONSOLIDATED ARTICLE 28 TEXT

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

NOC **Section I. Choice of Sites and Frequencies**

NOC **2539**

NOC **Section II. Power Limits**

NOC **2540 to 2548A**

MOD **2548A Mob-87**

(10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service [or the mobile-satellite service] in the band 1 610 - 1 626.5 MHz shall not exceed -3 dBW in any 4 kHz band.

NOC **Section III. Minimum Angle of Elevation**

NOC **2549 to 2551**

NOC **Section IV. Limits of Power Flux-Density from Space Stations**

NOC **2552 to 2555**

NOC **2556**

MOD **2556** (2) Power flux-density limits between 1 525 MHz and [~~2 500~~2 300] MHz.

NOC **2557**

MOD **2558**
Mob-87 b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) [(space-to-space);]
- space operation service (space-to-Earth) [(space-to-space);]

[- earth exploration-satellite service (space-to-Earth) (space-to-space);]

[- mobile-satellite service]

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service[~~, and to the~~

- ~~radiodetermination-satellite service (space-to-Earth)~~].

MOD **2559**
Mob-87

[1 515 - 1 525 MHz]		
1 525	- 1 530 MHz[1]	(for Regions 1 and 3)
[~~1 530~~	~~1 535 MHz~~[1]]	~~(for Regions 1 and 3, up to 1st January 1990)~~]
1 670	- 1 690 MHz	
1 690	- 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700	- 1 710 MHz	
[2 025	- 2 110 MHz]	
[2 200~~2 290~~]	- 2 300 MHz	
[~~2 483.5~~	~~2 500 MHz~~]	

MOD **2561** (3) Power flux-density limits between [~~2 500~~2 300] MHz and 2 690 MHz.

MOD **2562**
Mob-87 a) The power flux-density at the Earth's surface produced by emissions from a space station in the [broadcasting-satellite service or], the fixed-satellite service or the [~~radiodetermination~~ mobile-]satellite service for all conditions and for all methods of modulation shall not exceed the following values:

-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

-152 + 0.75(δ - 5) dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **2563 Mob-87** b) The limits given in No. 2562 apply in the frequency bands:

2 483.5 - 2 500 MHz

2 500 - 2 690 MHz

which ~~is~~are shared by the ~~[broadcasting satellite service or the]~~ fixed-satellite service [or the mobile-satellite service] with the fixed or mobile service[~~; and in the frequency band 2500 - 2516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination-satellite service~~].

(MOD) **2564** c) The power flux-density values given in No. 2562 are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the [bands] mentioned in No. 2563 and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

MOD **2577** (7) Power flux-density limits between 17.7 GHz and [~~19.7~~27.5] GHz [and between 25.25 GHz and 29.5 GHz].

MOD **2579** b) The limits given in No. 2578 apply in the frequency bands listed in No. 2580 which ~~is~~are allocated to the following space radiocommunication services:

- fixed-satellite service (space-to-Earth)
- earth exploration-satellite including meteorological-satellite service (space-to-Earth)

[- space-communications service]

[- multipurpose-satellite service]

[- inter-satellite service]

for transmission by space stations where [~~this~~these bands ~~is~~are] shared with equal rights with the fixed or mobile service.

MOD **2580** 17.7 - 19.7 GHz[1]

[22.55 - 23.55 GHz]

[25.25 - 27.5 GHz]

ADD **2580.2** [[2] No. 2578 does not apply to the space-communications service in the 27.0 - 27.5 GHz band. Instead, for this service in this band the limit of No. 881A applies.]

MOD **2581** (8) Power flux-density limits between [~~31.0~~21.7 25.25] GHz and 40.5 GHz.

MOD **2583** b) The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service[, the inter-satellite service, the earth exploration-satellite service] and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

MOD **2584**

21.7 - 22 GHz	
[22.55 - 23.55 GHz]	
[25.25 - 27.50 [2] GHz]	
31.0 - 31.3 GHz	
[~~34.2~~34.7] - 35.2 GHz	(for space-to-Earth transmissions under Nos. [895 and] 896 on the territory of countries mentioned in No. 894)
[~~37.5~~37.0] - 40.5 GHz	

(MOD) **2585** (9) The limits given in Nos. 2553, 2557, [MOD] 2562, 2566, 2570, 2574, 2578, 2582 and 2582.1 may be exceeded on the territory of any country the administration of which has so agreed.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/91(Rev.1)-E
21 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Note by the Chairman of Sub-Working Group 5B5 to the Chairman of the Working Group of the Plenary

Working Group 5B requests the technical advice of the Working Group of the Plenary concerning the proposed changes to Articles 27 and 28 appearing in Document DT/90.

Questions concerning these proposals as shown in Annex of Document DT/98 are as follows:

(* Indicates current allocation or allocation approved in 4.)

1. Are the limits given in Nos. 2502, 2505, 2506 and 2507 appropriate for the following frequency bands as proposed for the following services in No. 2509.

1 610	-	1 626.5	MHz	Mobile-satellite service
1 670	-	1 690	MHz	Mobile-satellite service
1 765	-	1 775	MHz	
1 960	-	1 990	MHz	
2 025	-	2 110	MHz	Space operations, space research, earth exploration-satellite
2 200	-	2 290	MHz	Space operations, space reseach, earth exploration-satellite
2 638.5	-	2 655	MHz	Mobile-satellite service

2. Are the power limits given in No. 2509A appropriate for the 2 025 - 2 110 MHz and 2 200 - 2 290 MHz bands proposed for the space operations, space research and earth exploration-satellite services.

3. Are the limits given in Nos. 2505 and 2508 appropriate for the following frequency bands and services proposed for No. 2511:

21.4	-	22.2	GHz	Inter-satellite service
*25.25	-	27.5	GHz	Inter-satellite service

4. Are the power limits given in No. 2548A appropriate for the mobile-satellite service in the band 1 610 - 1 626.5 MHz.

5. Are the limits given in No. 2557 appropriate to the following proposed frequency bands and services:

1 475	-	1 525	MHz	Mobile-satellite service
1 515	-	1 525	MHz	Mobile-satellite service
2 025	-	2 110	MHz	Space research, space operations, earth exploration-satellite (all space-to-space)
2 200	-	2 290	MHz	Space research, space operations, earth exploration-satellite (all space-to-space).

6. Are the limits given in No. 2562 appropriate to the 2 483.5 - 2 500 MHz proposed for the mobile service.

7. Are the limits given in No. 2578 appropriate to the followin proposed bands and services:

*22.55	-	23.55	GHz	Inter-satellite service
*25.25	-	27.502	GHz	Inter-satellite service and
37.0	-	37.5	GHz	Space research (space-to-Earth).

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

Document DT/91-E
20 February 1992
Original: English

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP OF THE PLENARY

Note by the Chairman of Sub-Working Group 5B5 to the Chairman of the Working Group of the Plenary

Working Group 5B requests the technical advice of the Working Group of the Plenary concerning the proposed changes to Articles 27 and 28 appearing in Document DT/90.

Questions concerning these proposals as shown in Document DT/90 are as follows:

(* Indicates current allocation or allocation approved in 4.)

1. Are the limits given in Nos. 2502, 2505, 2506 and 2507 appropriate for the following frequency bands as proposed for the following services in No. 2509.

1 610	-	1 626.5	MHz	Mobile-satellite service
1 765	-	1 775	MHz	
1 960	-	1 990	MHz	
2 025	-	2 110	MHz	Space operations, space research, earth exploration-satellite
2 200	-	2 290	MHz	Space operations, space reseach, earth exploration-satellite
2 638.5	-	2 655	MHz	Mobile-satellite service

2. Are the power limits given in No. 2509A appropriate for the 2 025 - 2 110 MHz and 2 200 - 2 290 MHz bands proposed for the space operations, space research and earth exploration-satellite services.

3. Are the limits given in Nos. 2505 and 2508 appropriate for the following frequency bands and services proposed for No. 2511:

21.4	-	22.2	GHz	Inter-satellite service
*25.25	-	29.5	GHz	Inter-satellite service
~~*31.8 - 32.3 GHz~~				~~Space research (Deep space)~~
~~*34.2 - 34.7~~				~~Space research (Deep space only), (Earth to space)~~

4. Are the power limits given in No. 2548A appropriate for the mobile-satellite service in the band 2548A.

5. Are the limits given in No. 2557 appropriate to the following proposed frequency bands and services:

1 515	-	1 525	MHz	Mobile-satellite service
2 025	-	2 110	MHz	Space research, space operations, earth exploration-satellite (all space-to-space)
2 200	-	2 290	MHz	Space research, space operations, earth exploration-satellite (all space-to-space).

6. Are the limits given in No. 2562 appropriate to the 2 483.5 - 2 500 MHz proposed for the mobile service.

7. Are the limits given in No. 2578 appropriate to the following proposed bands and services:

*22.55	-	23.55	GHz	Inter-satellite service
*25.25	-	27.502	GHz	~~Inter-satellite service and~~
37.0	-	37.5	GHz	Space research (space-to-Earth).

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/92-E
20 February 1992
Original: English

SUB-WORKING GROUP 5B5

REPORT OF THE SECOND MEETING OF SUB-WORKING GROUP 5B5

PROPOSALS CONCERNING ARTICLE 27 AND ARTICLE 28 IN DOCUMENT DT/90(Rev.1)

Working Group 5B set up Sub-Working Group 5 to monitor the progress of relevant allocation proposals in Committee 4 and, where appropriate, recommend action to Working Group 5B regarding Articles 27 and 28. The material used as a basis for the Working Group's work may be found in Document DT/90(Rev.1). Participants in the Working Group included representatives from the Administrations of Japan, the Russian Federation, France, Canada, the United States, Australia, Mexico and the representative of the European Space Agency.

The Chairperson reported that a note has been sent to the Chairman of the ad hoc Group of the Plenary (Document DT/91) requesting review of the technical aspects of the proposals to modify Articles 27 and 28. Consensus was reached on consolidation of the proposals as contained in Document DT/90(Rev.1). Several associated issues arose which require further consideration. These are as follows:

1) Revision of RR 2563 as proposed would require consequential revision of Footnote 797A and the proposed deletion of Footnote 754A in RR 2563 may require consequential review of Footnote 754A.

2) Document 85 proposes power flux-density limits for the 21.4 - 22 GHz band in an interim procedure. If Committee 4 adopts this band and these procedures for HDTV, then no further action is required by Committee 5.

K. IRION
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/93(Rev.2)-E
22 February 1992
Original: English

Source: Document DL/30

WORKING GROUP 4B

REPORT OF THE CHAIRMAN OF AD HOC GROUP 4B5 TO THE CHAIRMAN OF WORKING GROUP 4B

1. The terms of reference of ad hoc Group 4B5 included the space operations, space research and earth exploration-satellite services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz; consequential changes to Articles 27 and 28; Resolution No. EEE (Document EUR/20); Recommendation No. JJ (Document J/27); and the space research service (space-to-Earth) (deep space) at 2 110 - 2 120 MHz.

2. The following Administrations participated in the work of ad hoc Group 4B5: Germany, Brazil, Australia, Canada, New Zealand, the United States, the United Kingdom, France, Spain, China, Japan, Pakistan, the Russian Federation and ESA.

3. The ad hoc Group met on 19, 20 and 21 February 1992.

4. The ad hoc Group agreed to the establishment of a Drafting Group, under the chairmanship of Mr. J. Miller (United States) to examine:

a) a possible Resolution on sharing between the mobile and space services in the 2 GHz range;

b) a Resolution or Recommendation relating to the possible transfer of space services to bands above 20 GHz.

The Drafting Group met on 20 and 21 February and produced two Resolutions (see Annexes 4 and 5).

5. Annexes 1 to 5 are presented to Working Group 4B.

6. The delegation of Canada requested that the issue of sharing conditions for the space services for non-geostationary orbit space systems be drawn to the attention of Committee 5.

7. The delegation of Canada requested that their proposed ADD 747A (CAN/23/63) be referred to Working Group 4B. Several other delegations indicated that they saw no value in the proposed ADD 747A.

J.G. ROLSTON
Chairman

Annexes: 5

ANNEX 1

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) [MOBILE] ~~722 [743A] 744 746 748 750~~ 750A [747A]	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) ~~722 744 745 746 747 748 749 750~~ 750A [747A]	
MOD	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth, space-to-space) SPACE OPERATION space-to-Earth, space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth, space-to-space) [MOBILE] ~~722 [743A] 744 746 747 748~~ 750A [747A]	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth, space-to-space) SPACE OPERATION (space-to-Earth, space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth, space-to-space) MOBILE ~~722 744 745 746 747 748 749~~ 750A [747A]	

SUP 747

ADD **747A** In making assignments in the mobile service in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz, administrations shall take into account Resolution No. [XYZ].

SUP **750**

ADD **750A** Administrations are urged to take all practicable measures to ensure that space-to-space transmissions between two or more non-geostationary satellites, in the space research, space operations and earth exploration-satellite services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz shall not impose any constraints on Earth to-space, space-to-Earth and other space-to-space transmissions between geostationary satellites and non-geostationary satellites in those services and bands.

MHz
2 110 - 2 120

MOD

Allocation to Services		
Region 1	Region 2	Region 3
~~1 710~~2 110 - ~~2 290~~2 120	~~1 710~~2 110 - ~~2 290~~2 120	
FIXED	FIXED	
[MOBILE]	MOBILE	
SPACE RESEARCH (deep space) (Earth-to-space)	SPACE RESEARCH (deep space) (Earth-to-space)	
~~722 [743A] 744 746 747 748 750~~	~~722 744 745 746 747 748 749 750~~	

SUP **748**

SUP **749**

ANNEX 2

ARTICLE 27

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section II. Power Limits

MOD **2509** (5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service and the mobile-satellite service, the space operations service, the space research service and the earth exploration-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

1 626.5 - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
2 025 - 2 110 MHz	
2 200 - 2 290 MHz	
2 665 - 2 690 MHz[1]	(for Regions 2 and 3)
5 725 - 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755 - 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850 - 7 075 MHz	
7 900 - 8 400 MHz	

ADD **2509.2** Troposcatter systems may exceed the limits given in Nos. 2505, 2506 and 2507. Considering the difficult sharing conditions with other services, administrations are urged to keep the number of troposcatter systems to a minimum.

ANNEX 3

ARTICLE 28

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

Section IV. Limits of Power Flux-Density from Space Stations

MOD **2558** **Mob-87** b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth and space-to-space);
- space operation service (space-to-Earth and space-to-space);
- earth exploration-satellite service (space-to-Earth and space-to-space);

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service, and to the

- radiodetermination-satellite service (space-to-Earth).

MOD **2559** **Mob-87**

1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
1 530 - 1 535 MHz[1]	(for Regions 1 and 3 up to 1st January 1990)
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700 - 1 710 MHz	
2 025 - 2 110 MHz	
2 200~~2 290~~ - 2 300 MHz	
2 483.5 - 2 500 MHz	

ANNEX 4

RESOLUTION No. [XYZ]

Relating to the Usage by the Mobile Service of the Frequency Bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) the changes in the Table of Allocations to the space services made by this Conference in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz;

b) the changes in the allocations to the mobile service in Region 1 and the existing co-primary allocation to the mobile service in Regions 2 and 3;

c) the expected rapid growth of mobile systems in bands near 2 GHz;

d) that the CCIR Report on the Technical and Operational Bases for the World Administrative Radio Conference 1992 concluded that the introduction of Future Public Land Mobile Telecommunication Systems (FPLMTS) or conventional land mobile systems into the frequency bands used by the space services would cause unacceptable interference to the space services;

e) that in some countries the space services have successfully shared with low density mobile electronic news gathering (ENG) systems for many years;

f) that the introduction into Article 27 of suitable limits on the characteristics of mobile systems may be an appropriate way to facilitate the expansion of mobile systems in these bands without harmful interference to the space services;

g) that the CCIR is currently studying such sharing criteria and preliminary results are available,

noting

that these preliminary results indicate that low density mobile systems (e.g., ENG) using either highly directive antennas (typically in excess of 24 dBi) or alternatively very low e.i.r.p. densities (typically below -12 dBW/MHz) can share,

resolves

1. to invite the CCIR to urgently continue studying appropriate provisions to protect the space services operating in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz from harmful interference from emissions by stations of the mobile service;

2. to recommend that administrations do not introduce high density or conventional type land mobile systems into the 2 025 - 2 110 MHz and 2 200 - 2 290 MHz bands;

3. that administrations, when considering in the near future the introduction of mobile systems into the above bands, should only permit low density mobile systems;

4. that until the CCIR develops appropriate Recommendations, the protection criteria for space services as given in CCIR Recommendation 609 (Space research), Recommendation 363 (Space operations) and Recommendation 514 (Earth exploration-satellite) be used as guidance;

5. that the next competent conference should consider reviewing Article 27 to define the conditions under which sharing between the mobile and the space services is possible in these bands,

invites the CCIR

1. to develop the appropriate provisions mentioned in **resolves** 1;

2. to report the results of its studies to the next competent conference,

invites the Secretary-General

to bring this Resolution to the attention of the next ordinary Plenipotentiary Conference with a view to include this subject in the agenda of the next competent conference.

ANNEX 5

RESOLUTION No. [DGI-1]

Relating to Possible Relocation of Certain Space Missions from the 2 GHz Bands to Bands above 20 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) the changes in the allocations to space services made by this Conference in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz;

b the possibility of technical improvements in the space services concerned which could lead to more efficient usage of the spectrum,

c) the possibility that some space services could be relocated in bands above 20 GHz,

resolves

1. that it is desirable to review the present and planned usage of the frequency bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz, with the idea, when practicable, of assigning some space missions in bands above 20 GHz and possibly reducing the allocations to the space services in the 2 GHz band;

2. that the next competent WARC should consider this matter, taking into account the results of the relevant CCIR studies, from which it may be possible to revise the Radio Regulations; so that no new 2 GHz assignments would be permitted after a date in the near future to be determined by that Conference for those space missions which could be accommodated in the bands above 20 GHz; so that if appropriate, to accommodate, in an equitable manner, the spectrum needs of the mobile and space service in the 2 GHz band,

invites the CCIR

1. to carry out the review mentioned in **resolves** 1 above;

2. to conduct the necessary studies on the evolution of space research, space operations and earth exploration-satellite and the mobile services in the bands available to each service near 2 GHz and on the compatibility between these services in the 2 GHz bands;

3. to report to the next competent conference the amount of spectrum required by each service in the bands mentioned in 2 above, and where necessary, the sharing criteria between these services,

urges Administrations

to participate actively in these studies,

invites the Secretary-General

to bring this Resolution to the attention of the next ordinary Plenipotentiary Conference with a view to including this subject in the agenda of the next competent conference.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/93(Rev.1)-E
21 February 1992
Original: English

Source: Document DL/30

WORKING GROUP 4B

REPORT OF THE CHAIRMAN OF AD HOC GROUP 4B5 TO THE CHAIRMAN OF WORKING GROUP 4B

1. The terms of reference of ad hoc Group 4B5 included the space operations, space research and earth exploration-satellite services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz; consequential changes to Articles 27 and 28; Resolution No. EEE (Document EUR/20); Recommendation No. JJ (Document J/27); and the space research service (space-to-Earth) (deep space) at 2 110 - 2 120 MHz.

2. The following Administrations participated in the work of ad hoc Group 4B5: Germany, Brazil, Australia, Canada, New Zealand, the United States, the United Kingdom, France, Spain, China, Japan, Pakistan, the Russian Federation and ESA.

3. The ad hoc Group met on 19, 20 and 21 February 1992.

4. The ad hoc Group agreed to the establishment of a Drafting Group, under the chairmanship of Mr. J. Miller (United States) to examine:

a) a possible Resolution on sharing between the mobile and space services in the 2 GHz range;

b) a Resolution or Recommendation relating to the possible transfer of space services to bands above 20 GHz.

5. Annexes 1 to 5 are presented to Working Group 4B.

6. The delegation of Canada requested that the issue of sharing conditions for the space services for non-geostationary orbit space systems be drawn to the attention of Committee 5.

7. The delegation of Canada requested that their proposed ADD 747A (CAN/23/63) be referred to Working Group 4B. Several other delegations indicated that they saw no value in the proposed ADD 747A.

The Drafting Group met on 20 and 21 February and produced two Resolutions (see Annexes 4 and 5).

J.G. ROLSTON
Chairman

Annexes: 5

ANNEX 1

MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) Mobile 722 743A 744 746 ~~748 750~~ 750A [747A]	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) 722 744 745 746 ~~747 748 749 750~~ 750A [747A]
MOD	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth, space-to-space) SPACE OPERATION (space-to-Earth, space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth, space-to-space) Mobile 722 743A 744 746 ~~747 748~~ 750A	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth, space-to-space) SPACE OPERATION (space-to-Earth, space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth, space-to-space) MOBILE 722 744 745 746 ~~747 748 749~~ 750A

SUP **747**

SUP **749**

SUP **750**

ADD **750A** Administrations are urged to take all practicable measures to ensure that transmissions in the space research, space operations and earth exploration-satellite services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz between two or more non-geostationary satellites, shall not impose any constraints on Earth-to-space, space-to-Earth and other space-to-space transmissions in those services and bands.

MHz
2 110 - 2 120

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	~~1 710~~2 110 - ~~2 290~~2 120	~~1 710~~2 110 - ~~2 290~~2 120	
	FIXED	FIXED	
	Mobile	MOBILE	
	SPACE RESEARCH (deep space) (Earth-to-space)	SPACE RESEARCH (deep space) (Earth-to-space)	
	722 743A 744 746 ~~747 748 750~~	722 744 745 746 ~~747 748 749 750~~	

SUP **748**

ANNEX 2

ARTICLE 27

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section II. Power Limits

MOD **2509** (5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service and the mobile-satellite service, the space operations service, the space research service and the earth exploration-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

1 626.5 - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
2 025 - 2 110 MHz	
2 200 - 2 290 MHz	
2 665 - 2 690 MHz[1]	(for Regions 2 and 3)
5 725 - 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755 - 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850 - 7 075 MHz	
7 900 - 8 400 MHz	

ANNEX 3

ARTICLE 28

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

Section IV. Limits of Power Flux-Density from Space Stations

MOD **2558** **Mob-87**

b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth and space-to-space);
- space operation service (space-to-Earth and space-to-space);
- earth exploration-satellite service (space-to-Earth and space-to-space);

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service, and to the

- radiodetermination-satellite service (space-to-Earth).

MOD **2559** **Mob-87**

1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
1 530 - 1 535 MHz[1]	(for Regions 1 and 3 up to 1st January 1990)
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700 - 1 710 MHz	
2 025 - 2 110 MHz	
2 200~~2 290~~ - 2 300 MHz	
2 483.5 - 2 500 MHz	

ANNEX 4

RESOLUTION No. [XYZ]

Relating to the Usage by the Mobile Service of the Frequency Bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) the changes in the Table of Allocations to the space services made by this Conference in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz;

b) the changes in the allocations to the mobile service in Region 1 and the existing co-primary allocation to the mobile service in Regions 2 and 3;

c) the expected rapid growth of mobile systems in bands near 2 GHz;

d) that the CCIR Report on the Technical and Operational Bases for the World Administrative Radio Conference 1992 concluded that the introduction of Future Public Land Mobile Telecommunication Systems (FPLMTS) or conventional land mobile systems into the frequency bands used by the space services would cause unacceptable interference to the space services;

e) that in some countries the space services have successfully shared with low density mobile electronic news gathering (ENG) systems for many years;

f) that the introduction into Article 27 of suitable limits on the characteristics of mobile systems may be an appropriate way to facilitate the expansion of mobile systems in these bands without harmful interference to the space services;

g) that the CCIR is currently studying such sharing criteria and preliminary results are available,

noting

that these preliminary results indicate that low density mobile systems (e.g., ENG) using either highly directive antennas (typically in excess of 24 dBi) or alternatively very low e.i.r.p. densities (typically below -12 dBW/MHz) can share,

resolves

1. to invite the CCIR to urgently continue studying appropriate provisions to protect the space services operating in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz from harmful interference from emissions by stations of the mobile service;

2. to recommend that administrations do not introduce high density or conventional type land mobile systems into the 2 025 - 2 110 MHz and 2 200 - 2 290 MHz bands;

3. that administrations, when considering in the near future the introduction of mobile systems into the above bands, should only permit low density mobile systems;

4. that until the CCIR develops appropriate Recommendations, the protection criteria for space services as given in CCIR Recommendation 609 (Space research), Recommendation 363 (Space operations) and Recommendation 514 (Earth exploration-satellite) be used as guidance;

5. that the next competent conference should consider reviewing Article 27 to define the conditions under which sharing between the mobile and the space services is possible in these bands,

invites the CCIR

1. to develop the appropriate provisions mentioned in **resolves** 1;

2. to report the results of its studies to the next competent conference,

invites the Secretary-General

to bring this Resolution to the attention of the next ordinary Plenipotentiary Conference with a view to include this subject in the agenda of the next competent conference.

ANNEX 5

RESOLUTION No. [DGI-1]

Relating to Possible Relocation of Certain Space Missions from the 2 GHz Bands to Bands above 20 GHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) the changes in the allocations to space services made by this Conference in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz;

b the possibility of technical improvements in the space services concerned which could lead to more efficient usage of the spectrum,

c) the possibility that some space services could be relocated in bands above 20 GHz,

resolves

1. that it is desirable to review the present and planned usage of the frequency bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz, when the idea, when practicable, of assigning some space missions in bands above 20 GHz and possibly reducing the allocations to the space services in the 2 GHz band;

2. that the next competent WARC should consider this matter, taking into account the results of the relevant CCIR studies, from which it may be possible to revise the Radio Regulations; so that no new 2 GHz assignments would be permitted after a date in the near future to be determined by that Conference for those space missions which could be accommodated in the bands above 20 GHz; so that if appropriate, to accommodate, in an equitable manner, the spectrum needs of the mobile and space service in the 2 GHz band,

invites the CCIR

1. to carry out the review mentioned in **resolves** 1 above;

2. to conduct the necessary studies on the evolution of space research, space operations and earth exploration-satellite and mobile services in the bands available to each service near 2 GHz and on the compatibility between these services in the 2 GHz bands;

3. to report to the next competent conference the amount of spectrum required by each service in the bands mentioned in 2 above, and where necessary, the sharing criteria between these services,

urges Administrations

to participate actively in these studies,

invites the Secretary-General

to bring this Resolution to the attention of the next ordinary Plenipotentiary Conference with a view to including this subject in the agenda of the next competent conference.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/93-E
20 February 1992
Original: English

Source: Document DL/30

WORKING GROUP 4B

REPORT OF THE CHAIRMAN OF AD HOC GROUP 4B5 TO THE CHAIRMAN OF WORKING GROUP 4B

1. The terms of reference of ad hoc Group 4B5 included the space operations, space research and earth exploration-satellite services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz; consequential changes to Articles 27 and 28; Resolution No. EEE (Document EUR/20); Recommendation No. JJ (Document J/27); and the space research service (space-to-Earth) (deep space) at 2 110 - 2 120 MHz.

2. The following Administrations participated in the work of ad hoc Group 4B5: Germany, Brazil, Australia, Canada, New Zealand, the United States, the United Kingdom, France, Spain, China, Japan, Pakistan, the Russian Federation and ESA.

3. The ad hoc Group met on 19-20 February 1992.

4. Annexes 1 to 3 are presented to Working Group 4B.

5. The delegation of Canada requested that the issue of sharing conditions for the space services for non-geostationary orbit space systems be drawn to the attention of Committee 5.

6. The delegation of Canada requested that their proposed ADD 747A (CAN/23/63) be referred to Working Group 4B. Several other delegations indicated that they saw no value in the proposed ADD 747A.

7. The ad hoc Group agreed to the establishment of a Drafting Group, under the chairmanship of Mr. J. Miller (United States) to examine:

a) a possible Resolution on sharing between the mobile and space services in the 2 GHz range;

b) a Resolution or Recommendation relating to the possible transfer of space services to bands above 20 GHz.

J.G. ROLSTON
Chairman

Annexes: 3

ANNEX 1

MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) Mobile 722 743A 744 746 ~~748 750~~ 750A [747A]	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) 722 744 745 746 ~~747 748 749 750~~ 750A [747A]
MOD	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth, space-to-space) SPACE OPERATION space-to-Earth, space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth, space-to-space) Mobile 722 743A 744 746 ~~747 748~~ 750A [747A]	~~1 710~~2 200 - 2 290 FIXED SPACE RESEARCH (space-to-Earth, space-to-space) SPACE OPERATION (space-to-Earth, space-to-space) EARTH EXPLORATION-SATELLITE (space-to-Earth, space-to-space) MOBILE 722 744 745 746 ~~747 748 749~~ 750A [747A]

SUP **747**

ADD **747A** (Possible reference to Resolution No. ...)

SUP **749**

SUP **750**

ADD **750A** Administrations are urged to take all practicable measures to ensure that transmissions in the space research, space operations and earth exploration-satellite services in the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz between two or more non-geostationary satellites, shall not impose any constraints on Earth-to-space, space-to-Earth and other space-to-space transmissions in those services and bands.

MHz
2 110 - 2 120

Allocation to Services		
Region 1	Region 2	Region 3
MOD		
~~1 710~~2 110 - ~~2 290~~2 120	~~1 710~~2 110 - ~~2 290~~2 120	
FIXED	FIXED	
Mobile	MOBILE	
SPACE RESEARCH (deep space) (Earth-to-space)	SPACE RESEARCH (deep space) (Earth-to-space)	
722 743A 744 746 ~~747 748 750~~	722 744 745 746 ~~747 748 749 750~~	

SUP **748**

ANNEX 2

ARTICLE 27

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section II. Power Limits

MOD **2509** (5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service and the mobile-satellite service, the space operations service, the space research service and the Earth exploration satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

1 626.5 - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
2 025 - 2 110 MHz	
2 200 - 2 290 MHz	
2 665 - 2 690 MHz[1]	(for Regions 2 and 3)
5 725 - 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755 - 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850 - 7 075 MHz	
7 900 - 8 400 MHz	

ANNEX 3

ARTICLE 28

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

Section IV. Limits of Power Flux-Density from Space Stations

MOD **2558** **Mob-87**

b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth and space-to-space);
- space operation service (space-to-Earth and space-to-space);
- earth exploration-satellite service (space-to-Earth and space-to-space);

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service, and to the

- radiodetermination-satellite service (space-to-Earth).

MOD **2559** **Mob-87**

1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
1 530 - 1 535 MHz[1]	(for Regions 1 and 3)
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700 - 1 710 MHz	
2 025 - 2 110 MHz	
2 200~~2 290~~ - 2 300 MHz	
2 483.5 - 2 500 MHz	

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/95-E
21 February 1992
Original: English

WORKING GROUP 5B

Sub-Working Group 5B4

Third Report of Sub-Working Group 5B4 to Working Group 5B

Agenda item 2.2.3

1. Sub Working Group 5B4 was tasked to prepare Resolutions for the regulatory procedures associated with the introduction of the Broadcasting-Satellite Service (BSS) and associated feeder links:

   a. for BSS(sound),

   b. for wide RF-band high definition television, BSS(HDTV).

2. The SWG had 6 meetings, the first on 18th February 1992. At least 20 countries participated in the work.

3. The SWG recognised that its work was dependant upon the decisions of Committee 4 on the frequency bands to be allocated to these services and the dates for implementation. It was agreed that all references to frequency bands, dates and footnotes should be in "square brackets".

4. For BSS(HDTV), the output of SWG 5B4 is contained in documents DT/85 (interim procedures) and DT/88 which requests the Secretary General to place the subject of longer term regulatory procedures on the agenda of a future world administrative radio conference. The key elements contained in document DT/85 are:

- the protection of existing services until the frequency band allocated by this conference for BSS(HDTV) becomes fully available (at a date to be decided by Committee 4);
- provision of flexible interim procedures for experimental systems prior to that date;
- provision of flexible interim procedures for operational systems prior to that date;
- provision of flexible procedures after that date but before a future conference has taken decisions on definitive procedures.

The interim procedures are based on application of the procedure contained in Resolution 33 and, additionally for experimental systems, the provisions of Article 34.

5. Attention is drawn to the power flux-density limits given in Section III and shown in "square brackets". The Plenary Working Group advised that these values are valid for a certain frequency range. The square brackets have been used to indicate only the possible need for change should a frequency band be allocated outside of this range.

6. For BSS(sound), the output of SWG 5B4 is contained in document DT/96. The provisions developed have similar key elements to those for BSS(HDTV). That is the protection of existing services until the band allocated becomes fully available, while providing the necessary procedures for the early introduction of systems prior to that date.

7. The frequency bands and dates are given in square brackets awaiting the decisions of Committee 4. However, square brackets appear for other text where the SWG could not reach a consensus or considered a wider debate was necessary in Working Group 5B. The areas of concern are:

- There was some confusion with the meaning of Resolves 4. This envisages that existing services may retain their primary status after the date that the band becomes fully available for BSS(sound) and until operational BSS(sound) systems are implemented. The delegate from the Russian Federation pointed out that this could give procedural problems and asked for IFRB advice. He also noted that Committee 4 could decide to allocate a frequency band on a co-primary basis with existing services, although the delegate from Italy, representing 20 countries thought this unlikely.
- in Considering (b) and elsewhere, agreement could not be reached on a term for systems introduced before the BSS(sound) allocation became fully available. Australia and a number of other countries considered the term "experimental" unacceptable. An alternative "preliminary" was suggested. Working Group 5B is therefore asked to decide between experimental, preliminary or to avoid placing any "label" on such systems.
- Resolution 6 takes account of concerns from India that in the band 2500 - 2690 MHz, there are existing and planned BSS systems for television. If Committee 4 allocates a frequency band for BSS(sound) somewhere in the range 2500- 2690 Mhz, existing and planned BSS(TV) systems will require protection, at least for a certain period of time. Of course, if this band is not allocated for BSS(sound), Resolves 6 may be deleted.
- Australia considered Resolution 33 to be a complicated procedure which could, perhaps, cause unnecessary delay in the implementation of BSS(sound) systems. However, no suitable alternative could be proposed.

8. Sub Working Group 5B4 has completed its task. However, it is recognised that the documents produced may need to be reviewed in the light of decisions reached by Committee 4. In this case, SWG 5B4 could reconvene to undertake any necessary revision.

T.G. JEACOCK

Chairman, Sub-Working Group 5B4

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/96-E
21 February 1992
Original: English

Source : Document 20

WORKING GROUP 5B

Sub-Working Group 5B4

Fourth Report of Sub-Working Group 5B4 to Working Group 5B

RESOLUTION No. COM 5/ [5B4-3]

Relating to the Introduction of Systems

in the Broadcasting-Satellite Service (Sound) , BSS (Sound)

in the Band [ ]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this conference has made frequency allocations to the BSS (Sound) , for the complementary terrestrial broadcasting and for the associated feeder links [that will become available for use from 1 January 2005];

b) that some administrations or groups of administrations may wish to take a lead in an early introduction of BSS (Sound) systems of [an experimental / a preliminary] nature without affecting the continued operation of existing services in other countries prior to [the date referred to in considering (a)];

c) that it will be necessary to ensure that introduction of BSS (Sound) systems into this band proceeds in a flexible and equitable manner.

resolves

1. that , although the frequency band [ ] will not be available for general use by the BSS (Sound) service until [1 January 2005] , some countries may make available all or parts of the band for [experimental / preliminary] systems before [1 January 2005] ;

2. that, systems introduced before [1 January 2005] shall operate in accordance with Article 34 of the Radio Regulations, and the procedure contained in Resolution No. 33 shall be applied;

3. that , for operational systems introduced after [1 January 2005] the procedure in [Sections B and C of] Resolution No. 33 [only] shall be applied;

[4. that up to the date of implementation of operational BSS (Sound) systems after [1 January 2005] the existing services in the above mentioned band shall remain with primary status, and after this event their allocation shall become secondary ;]

5. to urge administrations to ensure, to the maximum extent possible, that operational systems of the BSS (Sound) service introduced into the band [ ] have technical characteristics which take into account the relevant studies of the CCIR and with the understanding that these characteristics shall not limit a future Conference in establishing a flexible plan and associated procedures.

[6. that existing and planned BSS systems in the band 2500 - 2690 MHz may continue to operate after [1 January 2005]. Any BSS (Sound) systems introduced in accordance with the provisions of this Resolution in the band [ ] must be co-ordinated with the existing and planned BSS systems in the band 2500 - 2690 MHz .]

T. G. JEACOCK

Chairman, Sub-Working Group 5B4

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/97(Rev.1)-E/S
24 February 1992
Original : English

WORKING GROUP 5B

FIRST AND FINAL REPORT OF SUB-WORKING GROUP 5B3 TO WORKING GROUP 5B

No change in the English text.

No hay cambios en el texto español.

UNION INTERNATIONALE DES TELECOMMUNICATIONS

CAMR-92 **CAMR CHARGEE D'ETUDIER LES ATTRIBUTIONS DE FREQUENCES DANS CERTAINES PARTIES DU SPECTRE**

MALAGA-TORREMOLINOS, FEVRIER/MARS 1992

Corrigendum 1 au
Document DT/97-F/E/S
22 février 1992
Original : français
anglais
espagnol

GROUPE DE TRAVAIL 5B

PREMIER ET DERNIER RAPPORT DU SOUS-GROUPE DE TRAVAIL 5B3 AU GROUPE DE TRAVAIL 5B

Remplacer la page 17 du document par la page ci-jointe.

Replace page 16 of the document by the annexed page.

Sustitúyase la página 16 del documento por la página adjunta.

Section V. Notification of Frequency Assignments

Notification of Assignments to Space Stations and Earth Stations

5.1 An administration shall, for the purpose of notifying an assignment to the Board, apply the provisions of Article **13.** When applying the provisions of Article **13** to frequency assignment notices relating to space stations and earth stations covered by this Resolution the Board shall:

5.1.1 in application of No. **1504**, examine the notice with respect to its conformity with the provisions of paragraphs **2.1** or **2.2** relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.1.2 in application of No. **1505**, examine the notice with respect to its conformity with the provisions of paragraph **3.1** relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.1.3 in application of No. **1506**, examine the notice with respect to the probability of harmful interference when the coordination under paragraph **2.1** or **2.2** has not been successfully effected;

5.1.4 in application of No. **1509**, examine the notice with respect to the probability of harmful interference when the coordination under paragraph **3.1** has not been successfully effected;

5.1.5 not apply Nos. **1515** and **1516**.

5.2 The examination under 5.1.3 or 5.1.4 shall take into account the frequency assignments for transmission or reception already recorded in the Master Register. [In addition notices relating to terrestrial stations received in accordance with 3.7 shall be examined at the same time as the relevant typical earth stations are examined under No. **1509** and will have the same date entered in Column 2d.]

Notification of Assignments to Terrestrial Stations

5.3 An administration shall, for the purpose of notifying an assignment to the Board, apply the provisions of Article **12**. When applying the provisions of Article **12** the Board shall, in application of No. **1353**, examine frequency assignment notices relating to terrestrial stations covered by this Resolution with respect to their conformity with the provisions of paragraphs **4.1** to **4.1.3** relating to coordination of the use of the frequency assignment with the other administrations concerned.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/97-E
21 February 1992
Original: English

WORKING GROUP 5B

FIRST AND FINAL REPORT OF SUB-WORKING GROUP 5B3
TO WORKING GROUP 5B

1. Introduction

1.1 Sub-Working Group 5B3 undertook two tasks:

i) consideration of proposals on possible regulatory provisions to govern the coordination of non-geostationary-satellite networks; and,

ii) consideration of a method to describe a non-geostationary satellite, essentially for the application of these interim procedures.

1.2 The Sub-Working Group met four times and considered proposals from Documents USA/12, CAN/23, EUR/46, LBN-MRC/93, and NIG/97, as well as Document DT/50. In addition to the formally announced participation by delegates from the Kingdom of Morocco, the United Kingdom, the United States, the People's Republic of China, and Canada, the Sub-Working Group had the advantage of the assistance of the IFRB, as well as advice from Algeria, Brazil, France, India, Italy, Japan, and the Russian Federation.

2. Regulatory provisions for the non-geostationary-satellite networks

2.1 The Sub-Working Group has agreed to propose a new Resolution covering the interim procedures for the coordination of frequency assignments of non-geostationary-satellite networks in certain space services and other services allocated in the same frequency band (see attachment).

2.2 In developing this draft Resolution, the Sub-Working Group recognized that Section II of Article 11 does not currently require the coordination of non-geostationary-satellite networks, and that there is a lack of inter-service and intra-service coordination methodology and criteria which might be used as a basis for a permanent regulatory structure. This interim procedure will allow an administration to coordinate such non-geostationary-satellite networks while safeguarding the interests of other services. An essential new element in this process is the right of an administration to comment and request coordination based on its existing or planned terrestrial stations[1].

2.3 The coordination cases covered by this procedure are:

1) non-geostationary-satellite network -> geostationary-satellite network;

2) non-geostationary-satellite network -> non-geostationary-satellite network;

3) geostationary-satellite network -> non-geostationary-satellite network;

4) non-geostationary space station -> terrestrial stations[1];

---

[1] Without aceptable power flux-density values being agreed by this Conference, the coordination of space stations with terrestrial stations is required in the interim. Should power flux-density be adopted, it might be possible to delete this coordination requirement (see case 4).

5) earth station in a non-geostationary-satellite network -> terrestrial stations;

6) terrestrial stations -> earth station in a non-geostationary-satellite network.

2.4 In cases 1) to 3) above, the criteria and methodologies which would permit the identification of potentially affected stations have not been developed by the CCIR, and the existing procedures of Appendix 29 do not apply. Likewise, in cases 5) and 6), the Appendix 28 methodology is not appropriate. Furthermore, in cases involving terrestrial services, the IFRB does not have and would have difficulty in acquiring a complete data base to permit the identification of potentially affected terrestrial stations. For this reason, under these procedures, an administration has the right to identify the stations it considers to be potentially affected by the non-geostationary-satellite network seeking coordination.

2.5 It is important to note that there appears to be no practical way of addressing the coordination of potential interference from terrestrial stations into the non-geostationary space station receiver.

2.6 It should also be noted that the time periods associated with the advance publication stage of this interim procedure have been aligned with those of Article 11 to overcome potential problems where a geostationary-satellite network must apply both the procedures of this Resolution and those of Article 11.

2.7 Two items have been referred to WG/PL for advice:

i) the coordination distance of 500 km surrounding the service area of a typical earth station or surrounding the location of a fixed earth station, operating with a non-geostationary satellite; and,

ii) the need for additional orbital characteristics to supplement those of Appendices 3 and 4 to allow the evaluation of potential interference to and from non-geostationary-satellite networks.

2.8 A footnote is propose to be added to the titles of Articles 11, 12 and 13 (as given in the attachment, p.2) to reference this Resolution at the appropriate points in the body of the Regulations.

2.9 Finally, the bands and services to be covered by this Resolution have been left blank until the results of Committee 4 deliberations are known.

3. Provisional range of applicability of this Resolution in light of possible inclined geostationary-satellite operation

3.1 The Sub-Working Group examined various alternatives which, amongst other things, would determine when a space station might be considered as non-geostationary for the purposes of these procedures. Given the studies currently under way in the CCIR, and the important regulatory significance of such a determination, the Sub-Working Group decided to recommend that the Conference adopt a statement of the applicability of these interim procedures as a sufficient interim regulatory basis for the IFRB's findings on such matters.

3.2 This proposal is given as Footnote 1 to the title of the Resolution.

R.G. AMERO
Chairman

RESOLUTION COM 5/[ ]

Relating to Interim Procedures for the Coordination and Notification of Assignments of Non-Geostationary-satellite[1] Networks in Certain Space Services and the Other Services to Which the Bands are Allocated[2]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that in several different space radiocommunication services there is increasing interest in the use of space systems using non-geostationary-satellite networks;

b) that, in order to ensure the satisfactory operation of such networks, other networks and other radio services sharing the same frequency bands taking into account the relevant allocations, there is a need for procedures to regulate the frequency assignments of non-geostationary-satellite networks;

c) that the coordination methods for non-geostationary networks require specific criteria and calculation methods which are not yet available;

d) that, consequently, there is a need for interim procedures to be applied until such time as a future conference, with the benefit of further studies by the CCIR and taking account of the experience gained in practice, will be able to adopt a more permanent procedure,

considering also

e) that the Plenipotentiary Conference, Nice, 1989, initiated the formation of a Voluntary Group of Experts, one of whose tasks is to simplify the procedures of the Radio Regulations;

f) that any new procedures adopted by this present Conference must therefore be as simple as possible and should where appropriate make use of the existing procedures of the Radio Regulations;

g) that any interim procedures must take full account of the status of the allocations to services, both terrestrial and space, in frequency bands which may be used by non-geostationary-satellite networks ;

h) that any interim procedures must also take full account of the interests of all countries including the state of development of their terrestrial and space radiocommunication services,

---

1 For the purpose of application of these interim procedures a non-geostationary satellite is one which is either non-geosynchronous or is geosynchronous with an inclination exceeding 15 degrees.

2 This Resolution shall be applied only to the frequency bands [MHz]. This footnote is to be reviewed when the decisions of Committee 4 concerning allocations to mobile-satellite services are known.

considering further

i) that the provisions of No. 2613 of the Radio Regulations, while necessary to safeguard geostationary-satellite networks in the fixed-satellite service from interference which might be caused by non-geostationary-satellite networks, would, if more widely applied, prejudice the development of such systems in other space radiocommunication services,

resolves

1. that pending the adoption of a more permanent procedure by a future competent conference, the use of frequency assignments by:

   a) non-geostationary-satellite systems in the space services in relation to other non-geostationary-satellite systems, geostationary-satellite systems [and terrestrial systems];

   b) geostationary-satellite systems in relation to non-geostationary-satellite systems; and,

   c) terrestrial systems in relation to the earth stations of non-geostationary-satellite networks,

to which this Resolution applies shall be regulated in accordance with the interim procedures and the associated provisions in the annex hereto;

2. that the interim procedures annexed to this Resolution shall replace those of Article 11 for non-geostationary-satellite networks;

3 that the interim procedures annexed to this Resolution shall come into force on [4 March 1992];

4. to invite all administrations concerned in or by the introduction and operation of non-geostationary-satellite systems in the relevant space services to cooperate in the application of these interim procedures;

5. to invite the IFRB to apply these procedures and to provide the necessary assistance to administrations;

6. to invite all those administrations which acquire experience in the application of the annexed interim procedures to contribute to the studies of the CCIR;

7. to invite the CCIR to study and develop Recommendations on the coordination methods, the necessary orbital data relating to non-geostationary systems, and the sharing criteria;

8. to invite the Secretary-General to bring this Resolution, at an appropriate stage, to the attention of the Administrative Council with a view to inclusion of this subject in the agenda of a future conference.

Note - To give this Resolution status, a reference to it should be added as a footnote to the titles of Articles 11, [12] and 13 as follows:

Text of Footnote:

See Resolution COM5/[ ] relating to interim procedures for the coordination of frequency assignments of non-geostationary-satellite networks in certain space services and the other services to which the bands are allocated.

ANNEX TO RESOLUTION COM5/[ ]

Interim Procedures for the Coordination and Notification of Assignments of Non-Geostationary-satellite Networks in Certain Space Services and the Other Services to Which the Bands are Allocated

Section A. General Information

A.1 The assistance of the IFRB can be requested in the application of the provisions of this annex.

A.2 In the absence of specific provisions relating to the evaluation of the interference, the calculation methods and the criteria should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution No. 703 or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

A.3 When applying the provisions of this Resolution for non-geostationary-satellite networks, administrations should provide the following information in addition to that of Appendix **3** or Appendix **4:** [i) semimajor axis (*a*) and eccentricity (*e*), or apogee and perigee (as already in AP3);

ii) inclination (*i*) (as already in AP3);

iii) right ascension (Ω) (as in EUR/46);

iv) argument of perigee (ω) (as in EUR/46).]

Section I. Procedures for the Advance Publication of Information on Planned Satellite Networks

Publication of Information

1.1 An administration (or one acting on behalf of a group of named administrations) which intends to bring into use a satellite network within a satellite system shall, prior to the coordination procedure described in paragraphs **2.1** and **2.2**, send to the International Frequency Registration Board, not earlier than six years[1] and preferably not later than two years before the date of bringing into service of each satellite network, the information listed in Appendix **4**.

[M 1042]

1.2 Amendments to the information sent in accordance with the provisions of paragraph **1.1** shall also be sent to the Board as soon as they become available. Modifications which are of such a nature as to significantly change the character of the network may require recommencing the advance publication procedure.

[M 1043]

1.3 On receipt of the complete information sent under paragraphs **1.1** and **1.2**, the Board shall publish it in a special section of its weekly circular within three months. When the Board 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.

[M 1044]

Comments on Published Information

1.4 If, after studying the information published under paragraph **1.3**, any administration is of the opinion that interference which may be unacceptable may be caused to assignments of its existing or planned satellite networks [or to assignments to its existing or planned terrestrial radiocommunication stations], it shall, within four months after the date of the weekly circular containing the complete information listed in Appendix **4**, send the administration concerned its comments on the particulars of the interference to its existing or planned satellite systems [or to its existing or planned terrestrial stations]. A copy of these comments shall also be sent to the Board. If no such comments are received from an administration within the period mentioned above, it may be assumed that the administration has no basic objections to the planned satellite network(s) of that system on which details have been published.

[M 1047]

1.4A An administration sending information under paragraphs 1.1 and 1.2 shall provide, if requested by an administration receiving information published under paragraph 1.4, the technical methods and criteria it proposes to use for the evaluation of the interference.

1.4B An administration receiving information published under paragraph 1.4, may provide to the administration sending information under paragraphs 1.1 and 1.2 the technical methods and criteria it proposes to use for the evaluation of the interference.

---

[1] See also No. **1550**.

Resolution of Difficulties

1.5 An administration receiving comments sent in accordance with paragraph **1.4** and administrations sending such comments shall endeavour to resolve any difficulties that may arise and shall provide any additional information that may be available.

[M 1049]

1.5A In case of difficulties arising the administration responsible for the planned network shall first explore all possible means of meeting its requirements without considering the possibility of adjustment to networks of other administrations. If no such means can be found, the administration concerned may then request other administrations, either bilaterally or multilaterally, to mutually help resolve these difficulties.

[M 1050/1051]

1.5B An administration receiving a request under paragraph 1.5A shall, in consultation with the requesting administration, explore all possible means of meeting the requirements of that administration,

[M 1052]

1.5C If, after following the procedure described in paragraphs 1.5A and 1.5B, there are unresolved difficulties, the administrations concerned shall together make every possible effort to resolve these difficulties by means of mutually acceptable adjustments.

[M 1053]

Results of Advance Publication

1.6 An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of paragraphs **1.1** to **1.3** shall, after the period of four months specified in paragraph **1.4**, inform the Board whether or not comments provided for in paragraph **1.4** have been received and of the progress made in resolving any difficulties. Additional information on the progress made in resolving any remaining difficulties shall be sent to the Board at intervals not exceeding six months prior to the commencement of coordination or the sending of the notices to the Board. The Board shall publish this information in the special section of its weekly circular.

[M 1056]

1.7 When, upon expiry of a period of six years plus the extension provided for in No. **1550** after the date of the publication of the special section referred to in paragraph **1.3**, the administration responsible for the network has not submitted the Appendix **3** information for coordination under paragraph **2.1** or paragraph **2.2** [or notification under No. 1488, as appropriate,] the information published under paragraph **1.3** shall be cancelled after the administration concerned had been informed.

[M 1056A]

Commencement of Coordination [or Notification] Procedures

1.8 When communicating to the Board the information referred to in paragraph **1.1**, an administration may, at the same time or at a later time, communicate:

[M 1058A]

1.8A the information required for the network coordination of a frequency assignment to a station in a satellite network in accordance with the provisions of paragraph **2.6,** or

[M 1058B]

[1.8B the information required for notification of a frequency assignment to a station of a satellite network when coordination for that assignment is not required.]

[M 1058C]

1.8C Such coordination [or notification] information,[as the case may be,] shall be considered as having been received by the Board not earlier than six months after the date of receipt of the information referred to in paragraph **1.1**.

[M1058E]

Section II. Coordination of Frequency Assignments to a Station in a Satellite Network

Requirement for Coordination

2.1 Before an administration (or one acting on behalf of one or more named administrations) notifies to the Board or brings into use any frequency assignment to a station in a non-geostationary-satellite network, it shall effect coordination of the assignment with any other administration whose assignment, to a station in a geostationary-satellite network, or whose assignment to a station in a non-geostationary-satellite network, [or whose assignment to a terrestrial station,] might be affected.

[M 1060]

2.2 Before an administration (or one acting on behalf of one or more named administrations) notifies to the Board or brings into use any frequency assignment to a station in a geostationary-satellite network, it shall effect coordination of the assignment with any other administration whose assignment to a station in a non-geostationary-satellite network, might be affected.

[M 1060]

2.3 Coordination under paragraphs **2.1** and **2.2** may be effected for a satellite network using the information relating to the space station, including its service area, and the parameters of one or more typical earth stations which may be located in all or part of the space station service area.

[M 1060A]

2.4 If a frequency assignment is brought into use before the commencement of the coordination procedure of paragraphs **2.1** or **2.2**, when this coordination is required, the operation in advance of the receipt by the Board of the Appendix **3** information shall in no way afford any priority of the date.

[M 1060B]

2.5 Frequency assignments to be taken into account in the application of paragraphs **2.1** and **2.2** are those with a frequency overlap with the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights, [or a higher category of allocation (see Nos. **420-425** and **435**),] and which:

[M 1061]

for space services, are:

2.5.1 in conformity with No. **1503**, and

[1062]

2.5.2 either recorded in the Master Register, or coordinated under the provisions of this Section or of Section II of Article **11**; or

[M 1063]

2.5.3 included in the coordination procedure with effect from the date of receipt by the Board, in accordance with paragraph **2.6** or No. **1074** or **1074A** of Article **11**, of the relevant information as specified in Appendix **3**;

[M 1064]

[or, for terrestrial services, are:

2.5.4 in conformity with No. **1240**, and

2.5.5 either recorded in the Master Register, *or*

2.5.6 not notified but in use or planned to be brought into use within the next three years.]

Coordination Data

2.6 The administration seeking coordination shall send to the Board the information listed in Appendix **3**.

[M 1073]

2.7 On the receipt of the complete information referred to in paragraph **2.6**, the Board shall:

[M 1075]

2.7.1 examine this information with respect to its conformity with No. **1503**; the date of receipt of the information shall be considered as the date from which the assignment will be taken into account for coordination;

[M 1076]

2.7.2 publish in the special section of its weekly circular, within three months, the information received under paragraph **2.6** and the result of the examination under paragraph **2.7.1**.[1] When the Board is not in a position to comply with the time limit referred to above, it shall periodically so inform the administrations giving the reasons therefor.

[M 1078]

---

1 In order to assist administrations in the identification of services that may be affected the Board shall also publish a list of administrations whose assignments comply with paragraphs **2.5** and **2.5.1** to **2.5.3** or paragraphs **2.5**, **2.5.4** and **2.5.5**.

Examination of Coordination Data and Agreement Between Administrations

2.8 On receipt of the special section referred to in paragraph **2.7.2**, an administration shall promptly examine the matter with regard to interference which would be caused to the frequency assignments of its network [or terrestrial stations,] or caused by these assignments. In so doing, it shall have regard to the proposed date of bringing into use of the assignment for which coordination was sought. It shall then, within six months from the date of the relevant weekly circular, notify the administration seeking coordination of its agreement. If, however, the administration with which coordination is sought does not agree, it shall, within the same period, send to the administration seeking coordination the technical details of the networks or stations concerned upon which its disagreement is based, including those characteristics contained in [Appendix **1** or] Appendix **3** which have not previously been notified to the Board, and make such suggestions as it is able to offer with a view to a satisfactory solution of the problem. A copy of these comments shall also be sent to the Board. Any administration not providing technical details of the basis of its disagreement within the six month period shall be considered as not being affected by the proposed network. The Board shall consider as notifications in accordance with Section I of Article **12** only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three months.

[M 1084]

Results of Coordination

2.9 An administration which has initiated a coordination procedure under the provisions of paragraphs **2.1** to **2.6** shall communicate to the Board the names of the administrations with which agreement has been reached. The Board shall publish this information in the special section of its weekly circular.

[M 1087]

2.10 An administration which sought the coordination, as well as any administration which responded in accordance with paragraph **2.8**, shall communicate to the Board any modifications to the published characteristics of their respective networks or stations that were required to reach agreement on the coordination. The Board shall publish this information in accordance with paragraph **2.7.2**, indicating that these modifications resulted from the joint effort of the administrations concerned to reach agreement on coordination.

[M 1087A]

Notification of Frequency Assignments in the Event of Continuing Disagreement

2.11 In the event of continuing disagreement between an administration seeking to effect coordination and any administration with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by eight months from the date of publication of the special section referred to in paragraph **2.7.2**, taking into account the provisions of No. **1496**. When the assistance of the Board has been requested the submission of the notice is to be deferred for a further three months.

Section III. Coordination of Frequency Assignments to Earth Stations in a Non-Geostationary-satellite Network in Relation to Terrestrial Stations

Requirement for Coordination

3.1 Before an administration notifies to the Board or brings into use any frequency assignment to a fixed earth station or to typical earth stations in a particular band allocated to space and terrestrial radiocommunication services, it shall effect coordination of the assignment with each administration whose territory lies wholly or partly within the coordination area[1] . The request for coordination may specify all or some of the frequency assignments of the associated space station, but thereafter each assignment shall be dealt with individually.

[M 1107]

Coordination Data

3.2 For the purpose of effecting coordination, the administration requesting coordination shall send to each administration concerned under paragraph **3.1** all pertinent information concerning the proposed frequency assignment as listed in Appendix **3**, and an indication of the approximate date on which it is planned to begin operations. A copy of this information with the date of dispatch of the request for coordination shall also be sent for the information of the Board.

[M 1113]

Acknowledgement of Receipt of Coordination Data

3.3 An administration with which coordination is sought under paragraph **3.1** shall immediately acknowledge receipt of the coordination data.

[M 1115]

Examination of Coordination Data and Agreement Between Administrations

3.4 On receipt of the coordination data an administration shall, having regard to the proposed date of bringing into use of the assignment for which coordination was requested, promptly examine the matter with regard to both:

[1117]

3.4.1 interference which would affect the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer; and

[1118]

---

1 The coordination area is defined as the service area in which it is intended to operate the typical earth stations or the coordinates of the fixed earth station, extended in either case in all directions by a coordination distance of [500] km.

3.4.2 interference which would be caused to reception at an earth station by the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer.

[1119]

3.5 The administration with which coordination is sought shall, within four months from dispatch of the coordination data:

[1121]

3.5.1 notify the administration requesting coordination of its agreement with a copy to the Board, indicating, where appropriate, the part of the allocated frequency band containing the coordinated frequency assignments; or

[1122]

3.5.2 notify that administration of its disagreement.

[1124]

3.6 In the cases mentioned in paragraph **3.5.2**, the administration with which coordination is sought shall send to the administration requesting coordination a copy of a diagram drawn to an appropriate scale indicating the location of those terrestrial radiocommunication stations which are or will be within the coordination area together with all other relevant basic characteristics using Appendix **1** and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

[M 1125]

3.7 When the administration with which coordination is sought sends to the administration seeking coordination the information required in the case of paragraph **3.5.2**, a copy thereof shall also be sent to the Board. The Board shall consider as notifications in accordance with Section I of Article **12** only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three months.

[M 1126]

Notification of Frequency Assignments in the Event of Continuing Disagreement

3.8 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of the request for coordination, taking into account the provisions of No. **1496**. When the assistance of the Board has been requested the submission of the notice is to be deferred for a further three months.

Section IV. Coordination of Frequency Assignments to Terrestrial Stations for Transmission in Relation to Earth Stations in a Non-Geostationary-Satellite Network

Requirement for Coordination

4.1 Before an administration notifies to the Board, or brings into use any frequency assignment to a terrestrial station for transmission within the coordination area[1] of the earth station of a non-geostationary-satellite network, in a band allocated to terrestrial radiocommunication services and space radiocommunication services (space-to-Earth), it shall effect coordination of the proposed assignment with the administration responsible for the earth stations with respect to the frequency assignments which are:

[M 1148]

4.1.1 in conformity with No. **1503**; and

[1149]

4.1.2 for which coordination has been agreed under 3.5.1.

Coordination Data

4.2 For the purpose of effecting coordination the administration requesting coordination shall send to any administration concerned under paragraph **4.1** all pertinent information. The request for coordination may specify all or some of the frequency assignments expected to be used within the next three years by stations of a terrestrial network wholly or partly within the coordination area of the earth stations. Thereafter each assignment shall be dealt with individually.

[M 1160]

Acknowledgement of Receipt of Coordination Data

4.3 An administration with which coordination is sought under paragraph **4.1** shall immediately acknowledge receipt of the coordination data.

[M 1162]

---

[1] The coordination area is defined as the service area in which it is intended to operate the typical earth stations or the coordinates of the fixed earth station, extended in either case in all directions by a coordination distance of [500] km.

Examination of Coordination Data and Agreement Between Administrations

4.4 On receipt of the coordination data, the administration with which coordination is sought shall promptly examine the matter with regard to interference which would affect the services rendered by its earth stations covered by paragraph **4.1**, which are operating, or are to be operated, within the next three years.

[M 1164]

4.5 The administration with which coordination is sought shall, within an overall period of four months from dispatch of the coordination data, either notify the administration requesting coordination of its agreement to the proposed assignment or, if this is not possible, indicate the reasons for its objection and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

[1166]

Notification of Frequency Assignments in the Event of Continuing Disagreement

4.6 In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of the request for coordination, taking into account the provisions of Nos. **1230** and **1496**. When the assistance of the Board has been requested the submission of the notice is to be deferred for a further three months.

[M 1183]

Section V. Notification of Frequency Assignments

Notification of Assignments to Space Stations and Earth Stations

5.1 An administration shall, for the purpose of notifying an assignment to the Board, apply the provisions of Article **13** except Nos. **1515** and **1516.** When applying the provisions of Article **13** to frequency assignment notices relating to space stations and earth stations covered by this Resolution the Board shall:

5.1.1 in application of No. **1504**, examine the notice with respect to its conformity with the provisions of paragraphs **2.1** or **2.2** relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.1.2 in application of No. **1505**, examine the notice with respect to its conformity with the provisions of paragraph **3.1** relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.1.3 in application of No. **1506**, examine the notice with respect to the probability of harmful interference when the coordination under paragraph **2.1** or **2.2** has not been successfully effected;

5.1.4 in application of No. **1509**, examine the notice with respect to the probability of harmful interference when the coordination under paragraph **3.1** has not been successfully effected.

5.2 The examination under 5.1.3 or 5.1.4 shall take into account the frequency assignments for transmission or reception already recorded in the Master Register. [In addition notices relating to terrestrial stations received in accordance with 3.7 shall be examined at the same time as the relevant typical earth stations are examined under No. **1509** and will have the same date entered in Column 2d.]

Notification of Assignments to Terrestrial Stations

5.3 An administration shall, for the purpose of notifying an assignment to the Board, apply the provisions of Article **12**. When applying the provisions of Article **12** the Board shall, in application of No. **1353**, examine frequency assignment notices relating to terrestrial stations covered by this Resolution with respect to their conformity with the provisions of paragraphs **4.1** to **4.1.3** relating to coordination of the use of the frequency assignment with the other administrations concerned.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/98-E
21 February 1991
Original: English

WORKING GROUP 5B

FINAL REPORT OF SUB-WORKING GROUP 5B5

PROPOSALS CONCERNING ARTICLE 27 AND ARTICLE 28 IN THE ANNEX

Working Group 5B set up Sub-Working Group 5B5 to monitor the progress of relevant allocation proposals in Committee 4 and, where appropriate, recommend action to Working Group 5B regarding Articles 27 and 28. The material used as a basis for the Working Group's work may be found in the Annex. Participants in the Working Group included representatives from the Administrations of Japan, the Russian Federation, France, Canada, the United States, Australia, Mexico, Germany, the United Kingdom, Turkey and the representative of the European Space Agency and INMARSAT. For the first and final meetings of 5B5, interpretation was not available. The French Administration reserved their right to return to these issues in WG 5B on that basis.

The Chairperson reported that a note has been sent to the Chairman of the ad hoc Group of the Plenary (Document DT/91) requesting review of the technical aspects of the proposals to modify Articles 27 and 28. Consensus was reached on consolidation of the proposals as contained in the Annex. Several associated issues arose which require further consideration. These are as follows:

1) Revision of RR 2563 as proposed would require consequential revision of Footnote 797A and the proposed deletion of Footnote 754A in RR 2563 may require consequential review of Footnote 754A.

2) Document 85 proposes power flux-density limits for the 21.4 - 22 GHz band in an interim procedure. If Committee 4 adopts this band and these procedures for HDTV, then no further action is required by Committee 5.

The addition of the band 1 670 - 1 690 MHz to MOD 2509 reflects the Canadian proposal in Document 221.

K. IRION
Chairman

Annex: 1

ANNEX

CONSOLIDATED ARTICLE 27 TEXT

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section I. Choice of Sites and Frequencies

NOC 2501 to 2504

Section II. Power Limits

MOD 2509

(5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service[, the space research service, the space operation service, the earth exploration-satellite service] and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

[*~~1 626.5~~1 610] - 1 645.5 MHz	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
[1 670 - 1 690 MHz]	
*1 765 - 1 775 MHz	
*1 960 - 1 990 MHz	
*2 025 - 2 110 MHz	
*2 200 - 2 290 MHz	
[*2 638.5~~2 655~~] - 2 690 MHz[1]	
5 725 - 5 755 MHz[1]	(for countries of Region 1 mentioned in Nos. 803 and 805)
5 755 - 5 850 MHz[1]	(for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850 - 7 075 MHz	
7 900 - 8 400 MHz	

ADD 2509A

In the bands 2 025 - 2 110 MHz and 2 200 - 2 290 MHz the mobile service shall comply with the following additional limitations:

a) Maximum e.i.r.p. *28 dBW;

b) Minimum transmitting antenna gain *24 dBi.

MOD **2511** **Orb-88** (7) The limits given in Nos. 2505 and 2508 apply in the following frequency bands allocated to the fixed-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

17.7 - 18.1 GHz

[*21.4 - 22.2 GHz]

*25.25 - 27.5 GHz

~~27.0 - 27.5 GHz[2]~~ ~~(for Regions 2 and 3)~~

~~27.5 - 29.5 GHz~~

ADD **2512** For the protection of the satellites operating in the inter-satellite service in the 25.25 - 27.50 GHz band, e.i.r.p. density of a terrestrial system should not exceed -36 dBW/Hz in any 1 MHz bandwidth.

ADD **2512** Sites for transmitting stations, in the fixed or mobile service, employing maximum values of equivalent isotropic power (e.i.r.p.) exceeding +45 dBW in the frequency band 25.25 - 27.5 GHz should be selected so that the direction of maximum radiation of any antenna will be at least 1.5 degrees away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction.

CONSOLIDATED ARTICLE 28 TEXT

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

NOC **Section I. Choice of Sites and Frequencies**

NOC **2539**

NOC **Section II. Power Limits**

NOC **2540 to 2548A**

MOD **2548A** **Mob-87** (10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service [or the mobile-satellite service] in the band 1 610 - 1 626.5 MHz shall not exceed *-3 dBW in any 4 kHz band.

NOC **Section III. Minimum Angle of Elevation**

NOC 2549 to 2551

NOC **Section IV. Limits of Power Flux-Density from Space Stations**

NOC 2552 to 2555

NOC 2556

MOD 2556 (2) Power flux-density limits between 1 475 MHz and [~~2 500~~2 300] MHz.

NOC 2557

MOD 2558 Mob-87 b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) [(space-to-space);]
- space operation service (space-to-Earth) [(space-to-space);]

[- earth exploration-satellite service (space-to-Earth) (space-to-space);]

[- mobile-satellite service (space-to-Earth)]

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service[~~, and to the~~

- [~~radiodetermination-satellite service (space-to-Earth)~~].]

MOD 2559 Mob-87

[1 475	- 1 525 MHz]	
[*1 515	- 1 525 MHz]	
1 525	- 1 530 MHz[1]	(for Regions 1 and 3)
[~~1 530~~	~~1 535 MHz~~[1]]	~~(for Regions 1 and 3, up to 1st January 1990)~~]
1 670	- 1 690 MHz	
1 690	- 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)
1 700	- 1 710 MHz	
[*2 025	- 2 110 MHz]	
[*2 200~~2 290~~]	- 2 300 MHz	
[~~2 483.5~~	~~2 500 MHz~~]	

MOD **2561** (3) Power flux-density limits between [~~2 500~~2 300] MHz and 2 690 MHz.

MOD **2562** **Mob-87** a) The power flux-density at the Earth's surface produced by emissions from a space station in ~~the [broadcasting satellite service or],~~ the fixed-satellite service or the [~~radiodetermination~~ mobile-]satellite service for all conditions and for all methods of modulation shall not exceed the following values:

*-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

-152 + 0.75(δ - 5) dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **2563** **Mob-87** b) The limits given in No. 2557 apply in the frequency bands:

[2 483.5 - 2 500 MHz]

2 500 - 2 690 MHz

which [~~is~~are] shared by the ~~[broadcasting satellite service or the]~~ fixed-satellite service [or the mobile-satellite service] with the fixed or mobile service[~~; and in the frequency band 2500 - 2516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination satellite service~~].

(MOD) **2564** c) The power flux-density values given in No. 2562 are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the [bands] mentioned in No. 2563 and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

MOD **2581** (8) Power flux-density limits between [~~31.0~~21.7 25.25] GHz and 40.5 GHz.

MOD **2583** b) The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service, the inter-satellite service, the earth exploration-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

MOD **2584**

[21.7 - 22 GHz]

*22.55 - 23.55 GHz

*25.25 - 27.501 GHz

31.0 - 31.3 GHz

[~~34.2~~34.7] - 35.2 GHz (for space-to-Earth transmissions under Nos. [895 and] 896 on the territory of countries mentioned in No. 894)

~~37.5~~37.0 - 40.5 GHz

(MOD) **2585** (9) The limits given in Nos. 2553, 2557, [MOD] 2562, 2566, 2570, 2574, 2578, 2582 and 2582.1 may be exceeded on the territory of any country the administration of which has so agreed.

---

* = Parameters marked with an asterisk have been forwarded to the ad hoc Working Group of the Plenary for validation.

[ ] = Items shown in square brackets are under consideration for approval by Committee 4.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/99(Rev.1)-E
22 February 1992
Original: English

Source: Documents DT/59 and 190

WORKING GROUP 4B

REPORT OF THE CHAIRMAN OF AD HOC GROUP 4B8 TO THE CHAIRMAN OF WORKING GROUP 4B

1. The terms of reference of ad hoc Group 4B8 was to:
   a) determine the amount of spectrum required for FPLMTS;
   b) identification of the overall band limits to be designated for FPLMTS in the long term;
   c) time-scales for availability of spectrum;
   d) consideration of space techniques for FPLMTS;
   e) consideration of impacts on fixed services;
   f) method of FPLMTS spectrum designation in the ITU Radio Regulations;
   g) drafting of text for [regulatory] footnote in Article 8 of the Radio Regulations and associated Resolution;
   h) drafting of an appropriate Resolution.

2. The ad hoc Group held three meetings in which a number of administrations participated.

3. The ad hoc Group considered the overall band limits to be designated for FPLMTS in the range 1 850 - 2 025 MHz and 2 110 - 2 200 MHz and possible dates by which these bands could be made available.

4. All participating administrations supported the idea of designating the band for FPLMTS at some future date.

5. There was general agreement to make available the designated bands 1 885 - 2 025 MHz and 2 110 - 2 200 MHz by the year 2010.

6. (Qatar and Tanzania indicated that these bands could be available by the year 2020.)*

7. There was a general agreement to make available the designated band 1 850 - 1 885 MHz by the year 2020 except Germany requested to put this date in square brackets.

8. There was general agreement that the band 1 910 - 1 990 MHz could be made available from the year 2000 except by Administrations of Japan, Canada, Brazil and Israel. However, these Administrations thought that the bands could be available at a later date.

9. (Also the following Administrations thought that the band 1 910 - 1 990 MHz could be available at a later date: Morocco, Lebanon, Tunisia, Qatar, India, the Islamic Republic of Iran, Kenya, Pakistan, Gabon, Yemen, Oman, Saudi Arabia, Gambia, Egypt, Tanzania, Ghana, the Philippines, Ethiopia, Benin, Argentina, Cuba, Cameroon, Ecuador and Niger.)*

---

* Views expressed after introducing DT/99 in the 16th meeting of Working Group 4B.

10. The Group felt that there was a need to draft a Resolution and associated footnote designating the bands of FPLMTS and time-scales. Therefore a Drafting Group was formed and chaired by Mr. R.P. Searle from the United Kingdom.

11. The Drafting Group presented a Resolution and footnote to the ad hoc Group. The Resolution was accepted with minor modifications and appears as Annex 1 to this document. The footnote was also discussed but there were differing views on the principle and contents. Therefore the wish of the Group was to present the whole text in square brackets as it appears in Annex 2.

12. While discussing the footnote, the United States delegation requested that this report should include their comment, that any proposed footnote shall take into account the following "All bands allocated to the mobile-satellite service are also authorized either independently or in connection with FPLMTS".

13. The impact of FPLMTS on the fixed services was also considered. There was a general wish to develop either a Recommendation or Resolution inviting the CCIR to develop proper sharing and radio-frequency channel arrangements to ensure an acceptance transition for displaced fixed services. The Group was unable to develop the appropriate text in the time available. However, several administrations offered to participate in a small Drafting Group that would take into account suitable text, if it is the wish of Working Group 4B.

14. (Spain and Argentina suggested that the word **recognizing** should be replaced by the word **resolves** in Annex 1.)*

15. (Morocco felt that the proposed draft Resolution requires some modifications.)*

16. (Finland does not support the designation of only one block of frequencies (1 910 - 1 990 MHz) for FPLMTS, but they could support the designation of two suitable blocks of frequencies, one of them to be in the band 2 110 - 2 200 MHz and the other to be in the band [1 885] - 2 025 MHz with the same date of availability.)*

ABDULLAH A. AL-DARRAB
Chairman

Annex: 1

---

* Views expressed after introducing DT/99 in the 16th meeting of Working Group 4B.

ANNEX 1

Proposed Article 8 footnote for FPLMTS and associated space techniques

746A The frequency band [- MHz] is designated and [shall/should] be made available from [ ], as required for [terrestrial components of the] future public land mobile telecommunication systems (FPLMTS) in accordance with the Recommendations of CCIR and CCITT. The frequency band [- MHz] is also designated for this purpose and [shall/should] be made available from [ ], as required for the development and operation of the FPLMTS. The frequency band [- MHz] is also designated for this purpose and [shall/should] be made available from [ ], as required for the development and operation of FPLMTS.

The designation does not preclude the use of these bands for services to which these bands are allocated. [Use of these bands by FPLMTS has priority over other mobile applications in these bands.]

In the bands designated for FPLMTS, a combination of terrestrial and space techniques may also be used in accordance with the relevant Recommendation of the CCIR and the CCITT to ensure efficient use of the radio spectrum.

See also Resolution No. OOO.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/99-E
20 February 1992
Original: English

Source: Documents DT/59 and 190

WORKING GROUP 4B

REPORT OF THE CHAIRMAN OF AD HOC GROUP 4B8 TO THE CHAIRMAN OF WORKING GROUP 4B

1. The terms of reference and ad hoc Group 4B8 was to:
   a) determine the amount of spectrum required for FPLMTS;
   b) identification of the overall band limits to be designated for FPLMTS in the long term;
   c) time-scales for availability of spectrum;
   d) consideration of space techniques for FPLMTS;
   e) consideration of impacts on fixed services;
   f) method of FPLMTS spectrum designation in the ITU Radio Regulations;
   g) drafting of text for [regulatory] footnote in Article 8 of the Radio Regulations and associated Resolution;
   h) drafting of an appropriate Resolution.

2. The ad hoc Group held three meetings in which a number of administrations participated.

3. The ad hoc Group considered the overall band limits to be designated for FPLMTS in the range 1 850 - 2 025 MHz and 2 110 - 2 200 MHz and possible dates by which these bands could be made available.

4. All participating administrations supported the idea of designating the total band for FPLMTS at some future date.

5. There was general agreement to make available the designated bands 1 885 - 2 025 MHz and 2 110 - 2 200 MHz by the year 2010.

6. There was general agreement that the band 1 910 - 1 990 MHz could be made available from the year 2000 except by Administrations of Japan, Brazil and Israel. However, these Administrations thought that the bands could be available at a later date.

7. The Group felt that there was a need to draft a Resolution and associated footnote designating the bands of FPLMTS and time-scales. Therefore a Drafting Group was formed and chaired by Mr. R.P. Searle from the United Kingdom.

8. The Drafting Group presented a Resolution and footnote to the ad hoc Group. The Resolution was accepted with minor modifications and appears as Annex 1 to this document. The footnote was also discussed but there were differing views on the principle and contents. Therefore the wish of the Group was to present the whole text in square brackets as it appears in Annex 2.

9. While discussing the footnote, the United States delegation requested that this report should include their comment, that any proposed footnote shall take into account the following "All bands allocated to the mobile-satellite service are also authorized either independently or in connection with FPLMTS".

10. The impact of FPLMTS on the fixed services was also considered. There was a general wish to develop either a Recommendation or Resolution inviting the CCIR to develop proper sharing and radio-frequency channel arrangements to ensure an acceptance transition for displaced fixed services. The Group was unable to develop the appropriate text in the time available. However, several administrations offered to participate in a small Drafting Group that would take into account suitable text, it is the wish of Working Group 4B.

ABDULLAH A. AL-DARRAB
Chairman

Annexes: 2

ANNEX 1

RESOLUTION No. OOO

Relating to the Designation of the Frequency Bands for the Future Public Land Mobile Telecommunication Systems (FPLMTS) and the Need for Future Studies

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this Conference has designated the frequency band(s) [ ] for FPLMTS;

b) that the CCIR and the CCITT are developing Recommendations for FPLMTS;

c) that the fixed service is used extensively in the bands designated for FPLMTS and will be in future;

d) that the CCIR has identified the use of space techniques in connection with the FPLMTS;

e) that the CCIR has identified a minimum required spectrum amount of 230 MHz for the terrestrial component of FPLMTS,

resolves

that there is an urgent need for further studies related to the FPLMTS including the use of space techniques,

urges Administrations

to actively participate in these studies,

invites the CCIR and the CCITT

1. to continue their studies for the development of Recommendations on specific technologies, including space techniques for FPLMTS and ensure that FPLMTS can also meet the telecommunication needs of the developing countries and rural areas;

2. to develop Recommendations for the implementation of FPLMTS on a worldwide basis, well in advance of [ ];

3. to identify and develop sharing arrangements between FPLMTS and the fixed service which could include the need for new radio-frequency channel arrangements for the fixed-service [see [Resolution/Recommendation] No. FFF];

4. to provide Recommendations on the combined use of terrestrial and space techniques for FPLMTS, that ensure efficient use of the radio spectrum;

ANNEX 2

Proposed Article 8 footnote for FPLMTS and associated space techniques

746A The frequency band [- MHz] is designated and [shall/should] be made available from [ ], as required for [terrestrial components of the] future public land mobile telecommunication systems (FPLMTS) in accordance with the Recommendations of CCIR and CCITT. The frequency band [- MHz] is also designated for this purpose and [shall/should] be made available from [ ], as required for the development and operation of the FPLMTS. The frequency band [- MHz] is also designated for this purpose and [shall/should] be made available from [ ], as required for the development and operation of FPLMTS.

The designation does not preclude the use of these bands for services to which these bands are allocated. [Use of these bands by FPLMTS has priority over other mobile applications in these bands.]

In the bands designated for FPLMTS, a combination of terrestrial and space techniques may also be used in accordance with the relevant Recommendation of the CCIR and the CCITT to ensure efficient use of the radio spectrum.

See also Resolution No. OOO.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/100-E
22 February 1992
Original: English

Source: DL/26, DL/29(Rev.1), DL/32(Rev.1), DL/33, DL/34

WORKING GROUP 4B

REPORT OF AD HOC 6 TO WORKING GROUP 4B

CONSIDERATION OF AGENDA ITEM 2.2.3a

1. Introduction

The ad hoc Group held five meetings spanning six sessions and had very wide participation from administrations. Part of one session was devoted to coordinated views of administrations having proposals generally aligned in respect of each of the three frequency bands which have emerged, around 1.5 GHz, 2.3 GHz and 2.5 GHz, respectively.

2. Terms of reference

The terms of reference were confirmed at the first meeting and are given in Annex I.

3. Consideration of the proposals

The various aspects of the proposals from administrations were considered under three segments and Drafting Groups were formed to prepare concise reports on each segment:

a) Drafting Group I, chaired by Mrs. Giovachini (France), prepared the report regarding technical feasibility and service objectives, which is Annex II to this report;

b) Drafting Group II, chaired by Dr. Messer (United States) prepared the report regarding sharing, which is Annex III;

c) Drafting Group III, chaired by Dr. Ratliff (United Kingdom) prepared the report on bandwidth requirements, timing and orbit options, which is Annex IV.

4. Current views of administrations

During the considerations, the ad hoc Group noted the variations in the views of administrations as to their preference to each of the three candidate bands and modified the tables of the input Document DT/51(Rev.1) to record the status of opinions. The current positions are recorded in Annex V.

5. Possibilities for consensus

At the second meeting I requested that the delegates consider possible options which could be followed to achieve consensus on the choice of frequency bands and offered to present them as Chairman's suggestions without attribution if so desired, but encouraged the preferred course of administrations putting forward the possibilities themselves. As this matter was left open at the last moment, the outcome is reported in a separate part of this document as Annex V, together with the Chairman's final summary. It is to be emphasized that Annex V has not been considered by the ad hoc Group and thus does not necessarily represent the Group's view, only that of the Chairman.

6. Summary

Although there has been some movement in the positions of administrations during the two days allocated to the work of the Group, there remains a clear polarization of views. While these can be divided between preference for around 1.5 GHz and around 2.5 GHz, the latter contains the views of a small number of administrations whose specific preference is firmly for an allocation between 2.3 and 2.4 GHz. The majority of that Group with preference around 2.5 GHz is for the range 2.5 - 2.64 GHz.

Despite this polarization, there is a unity of opinion regarding major points of substance.

1) That there is a need to introduce the new BSS (Sound) and complementary service in the near term. For developed countries to provide a new quality of service with expanded broadcasting capacity, and for developing countries to also provide for rural broadcasting development and multi-channel capacity.
2) That spectrum of at least 50 MHz and preferably at least 65 MHz must be identified by this Conference. One administration considers that 74 MHz is essential to meet the full demand for sound broadcasting.
3) That technically around 1.5 GHz is the best solution and this will also be the better solution economically, both points addressing the implications for the broadcasting services only.
4) That the major difficulties in deciding the spectrum choice are related to the sharing implications. As the planning of the relevant bands for other services varies widely between countries, it is that reason which currently dominates the preferences of countries.

For the majority of administrations the major sharing issue is related to fixed service planning, while for others it relates to land mobile or aeronautical telemetry. For a significant group of administrations in the African and Asian areas, a major determinant is the use of the 2.5 GHz band for television broadcasting and distribution.

As determined by the Working Group, the ad hoc Group did not specifically address the issue of planning although some of the discussions touched on implications for planning and several of the points covered in the annexes will be relevant for that subject.

Acknowledgements

The Group worked with considerable harmony and my first appreciation is expressed to all participants for their cooperation and hard work over quite long hours. Particular thanks are due to the Chairpersons of the Drafting Groups, Mrs. Giovachini, Dr. Messer and Dr. Ratliff who all worked virtually non-stop through a very long day to progress the first stage of the considerations and to prepare the attached Annexes.

R.M. BARTON
Chairman of ad hoc 6
to Working Group 4B

Annexes: 5

ANNEX 1

Draft terms of reference

Broadcasting-Satellite Service (Sound) and Complimentary

1. Consideration of the frequency bands proposed for BSS (Sound) and complimentary terrestrial broadcasting
2. Bandwidth requirement
3. Identification of a preferred band, preferably on a worldwide basis
4. Methods for protection or accommodation of existing services in the bands considered
5. Proposals for timed introduction
6. Consideration of geostationary and non-geostationary orbit possibilities
7. Implications for planning

ANNEX 2

Technical Considerations on Broadcasting-Satellite Service (Sound) and Complementary Terrestrial Broadcasting Service

1. Terms of reference

To summarize technical considerations for those bands under consideration in Working Group 4B and also service objectives. This summary is based heavily on the CCIR Report to WARC-92 (Document 3), on proposals made by administrations and on comments made both within the ad hoc 4B6 discussion and the Drafting Group.

2. Service objectives

The service objectives for satellite sound broadcasting play an important role in determining the type of system to be used and the overall system design and cost.

Administrations have expressed their quality objectives. Those ranged from grade 3 on the 5 point CCIR scale for a simple monophonic system to grade 4.5 for an advanced digital system whose objective is to provide a high quality stereophonic service, comparable to compact disc quality. Other aspects of service objectives such as the reliability have not been discussed.

3. Summary

Some administrations' delegates noted their belief that BSS (Sound), using modern digital techniques is technically and economically feasible throughout the frequency range from approximately 1 400 MHz to approximately 2 700 MHz. Other administrations' delegates believe that technical feasibility, and particularly costs, become increasingly difficult above 2 GHz, and even prohibitive for BSS (Sound).

The accompanying table summarizes the advantages and disadvantages, as compiled by the Drafting Group, of 1.5 GHz, 2.3 GHz and 2.5 GHz frequency utilization. This table strictly refers to technical aspects of BSS (Sound) independently of other considerations, and must be considered with the other parts of the report. As far as the 2.3 GHz is concerned, the Drafting Group believes it is close enough to 2.5 GHz so that the 2.5 GHz tabular entries apply to it.

This table indicates that from a technical viewpoint, 1.5 GHz is preferable.

FREQUENCY BANDS	ADVANTAGES	DISADVANTAGES

1.5 GHz	- Less satellite power required to provide the same coverage area (see disadvantages at 2.5 GHz).
	- The same as above for complementary terrestrial coverage.
	- Given present and foreseeable technical limitations in satellite technology:
	  - a wider range of service coverage is achievable;
	  - an earlier implementation is feasible.
	- With all other factors held constant, the space segment cost per channel may be up to five times lower than at 2.5 GHz.
	- The mixed satellite/terrestrial approach provides for a wider receiver market and hence a lower cost per unit.
	- 1.5 GHz provides more flexibility in implementing the services:
	  - there is experimental evidence for this band which confirms the feasibility of implementing a mixed satellite/terrestrial service where the same frequency band is used for both services with a common receiver;
	  - less Doppler effects constraints (see disadvantages at 2.5 GHz)
	- Greater spectrum efficiency through a more flexible implementation co-frequency terrestrial retransmitters (i.e., gap-fillers and coverage extenders) which enables a better frequency reuse for both the satellite and terrestrial service.
		- Larger on-board satellite antenna is required for the same beam size.

FREQUENCY BANDS	ADVANTAGES	DISADVANTAGES
2.3 GHz	Closer to 2.5 GHz	Closer to 2.5 GHz

2.5 GHz	- For the same coverage area size, a physically smaller antenna is required.
	- Narrower beamwidths are feasible for the coverage of geographically small countries
		- To overcome propagation effects, four to six times more satellite power is required for the same service coverage area, in comparison to 1.5 GHz
		- For complementary terrestrial coverage, up to six times more radiated power is required for the same coverage area size, in comparison to 1.5 GHz.
		- With all other factors held constant the space segment cost per channel may be up to five times greater than at 1.5 GHz.
		- To provide identical coverage to that achieved at 1.5 GHz would require more terrestrial gap-fillers. This applies equally to the satellite and terrestrial service.
		- Provides less flexibility in implementing the service:
		  - due to Doppler effects; there would be more constraints on the use of co-frequency terrestrial retransmitters (i.e., gap-fillers or coverage extenders), which would make it more difficult to implement mixed satellite/terrestrial service or the hybrid system concept;
		  - the range of achievable satellite beamwidths is significantly more limited for geographically large countries.

ANNEX 3

Sharing Considerations for BSS (Sound)

1. Terms of reference

To summarize sharing considerations - problems and possible solutions - for those bands under consideration in Working Group 4B. This summary is based upon ad hoc 4B6 discussion, discussion within the Drafting Group, CCIR documentation and official input documents to this Conference.

2. Sharing problems

1) Radio astronomy: The IUCAF representative provided computations and conclusions on two bands of interest to radio astronomy: below 1 427 MHz and above 2 690 MHz. His conclusions were:

   a) considering Advanced Digital System II characteristics as specified in the CCIR JIWP WARC-92 Document (Document 3), a frequency separation between the band edges of approximately 18 MHz would be required to protect the radio astronomy service in the 1 400 - 1 427 MHz primary passive band; and

   b) that a similar frequency separation should be considered below 2 690 MHz (roughly 30 MHz would be ample).

   For terrestrial broadcasting, it was noted by one delegate that a narrower frequency separation would be possible.

2) Fixed: The Drafting Group unanimously agreed that broadcast channel frequencies could not realistically be shared in the same geographic area with fixed services. This conforms to CCIR documentation. Realistic BSS (Sound) spectral power flux-densities for high quality broadcast services are too high for co-frequency use within a satellite beam or within the coverage area of complementary terrestrial transmitters.

3) Mobile: The Drafting Group had the same unanimous opinion on BSS (Sound) sharing with mobile services as it did with fixed services.

4) Broadcasting satellite: Note was taken of the comments in the 4B6 meeting by ARABSAT users for television services in the 2 500 to 2 690 MHz band, and also after the meeting regarding India's INSAT for the same type of service. As with fixed and mobile services, it was agreed that co-frequency sharing between BSS (Sound) and BSS (TV) in the same geographic area is not realistic.

5) Other: Delegates noted that at 2.3 GHz and between 2.5 - 2.69 GHz, MDS (multipoint distribution systems) bands are used in a number of countries. Also ENG (electronic news gathering) links, featuring transportable equipment and low margins, use the 2.6 GHz band. As stated in 2.2) co-frequency use in a BSS (Sound) area is not realistic.

3. Specific problems by band

During the 4B6 meetings, a number of administrations expressed total rejection of the use for their administrations of one or more of the 1.5 GHz, 2.3 GHz, or 2.6 GHz bands. This was not discussed further in the Drafting Group; it was just noted as a major problem in reaching a conclusion on a BSS (Sound) allocation at this Conference.

1) 1 429 - 1 515 MHz: Radio astronomy's problem, up to approximately 1 445 MHz as noted in 2.1) above. Two administrations have formally introduced no change proposals. Also, it was noted that some administrations use this band for long distance "over the horizon" links, which could cause additional sharing problems. It was also noted that this use occurs at the higher frequencies, but that the effective ranges would be less, perhaps causing less of an interference problem.

2) 2 310 - 2 360 MHz: During discussions in the 4B6 meetings and in the Drafting Group, special fixed service use was mentioned, and is noted in 2.5) above.

3) 2 500 - 2 690 MHz: Radio astronomy's need for a frequency separation is noted in 2.1) above. ARABSAT's and INSAT's concerns are noted in 2.4) above. Special fixed service use, such as MDS, is noted in 2.5) above.

4. Miscellaneous comments

In a 4B6 meeting, two administrations suggested that the new technology - BSS (Sound) - should be placed in the highest frequencies, i.e., 2 500 - 2 690 MHz, and let the existing fixed and mobile services below 2 GHz, which is already crowded, remain as they are.

5. Suggested solutions

No one had "the solution". A few "partial solutions" were mentioned in the 4B6 meeting, and expanded upon in the Drafting Group.

1) "Mixed approach", i.e., satellite and local terrestrial delivery: The spectral efficiency of using the same frequency band for satellite and local terrestrial broadcasting was noted. Since satellite frequency requirements within a single beam will always be a small fraction of the total allocation, local broadcasting using the same signal modulation techniques can make very efficient use of a combined BSS (Sound) and BS allocation.

2) Mid-band "gaps": Three administrations noted the frequency gap between some terrestrial services that could permit inserting BSS (Sound) frequencies in the gap. One delegate noted this might work for low density areas, but that its administration "interleaved" these gaps with more links of the same type of service.

3) Long lead times: It was agreed in the Drafting Group that planning, designing, launching and getting satellite systems to become operational take many years to accomplish. Therefore, there will be a natural, long time transition period that will minimize the effect on existing services. It was also agreed that terrestrial DAB in the allocated band could begin service earlier than satellite, and that they, being more localized, might have a lesser impact on some of the affected existing services.

4) Satellite channel bandwidth requirements: It was noted that the spectrum required per spot beam will be a small fraction of a total allocation, that satellite antenna beams will be narrow, and that "off-beam" frequency sharing within the total allocation could limit the impact on some of the existing services.

6. Major conclusions

1) It is unrealistic to consider frequency sharing of broadcast channels with other services at the same frequencies within a BSS (Sound) allocation in the same geographic area.

2) Long lead times to bring communication satellite systems into operation allow reasonable transition periods. Existing services could continue to use the worldwide BSS (Sound) allocation for predictable time periods if either or both of the following apply:

   - the allocation segments were phased;
   - BSS (Sound) would be introduced in a given area at a specified future date, at which time existing services are to be phased out.

ANNEX 4

Bandwidths, Timings and Orbits for the BSS (Sound)

This report summarizes the requirements and possibilities expressed by administrations and in CCIR Report to WARC-92 on bandwidth for the service, timing of bringing into operation and satellite orbits to be used.

1. Bandwidth for the service

The bandwidth requirements for the BSS (Sound) lie in the range from 30 MHz to 100 MHz. Details are given in Document [DT/51(Rev.2)] and can be broadly summarized as follows:

Bandwidth requested	< 48 MHz	48 - 50 MHz	60 - 65 MHz	> 65 MHz
Number of countries	5	34	8	3

In discussion, several administrations thought that in order to reduce the impact on existing services, a lesser bandwidth could be made available to the BSS (Sound) in the early years, in the range 12* - 40 MHz. However, this would be only with the certain knowledge that the full bandwidths required would become available later. Nevertheless, such reduced bandwidths are mainly based on requirements of individual countries and have not been fully evaluated across any given region. In addition, several administrations cautioned against starting with the lower bandwidth values because the economics of BSS (Sound) systems are highly dependent on the amount of bandwidth utilized (i.e. economy of scale in a system).

2. Timing of bringing into operation

Some administrations, notably in Region 2, wish to make a start as soon as possible, within the next 2 to 5 years, initially providing protection to other existing services. Others, particularly in Region 1, believe that the start of the BSS (Sound) should be in 8 to 10 years time, but the general consensus was the need to maintain maximum flexibility on timing over the introduction period. Overall, the full bandwidth would probably be required in 10 to 15 years time.

3. Satellite orbits to be used

CCIR studies on BSS (Sound) (see Document 3) envisage the potential use of satellites in both geostationary and non-geostationary, highly-inclined elliptical orbits, as appropriate to the service area, in order to minimize satellite powers required and thus to maximize the efficient use of the frequency band.

---

* For monophonic services in some developing countries.

Several administrations in the lower latitude regions felt that the geostationary-satellite orbit should preferably be used, but accepted that the special needs of the higher latitude countries should also be taken into account, where use of highly-inclined elliptical orbits would be of benefit, particularly for spectrum sharing. However, the use of low-Earth orbit satellites which traverse the service arc very rapidly were thought to be unsuitable for the BSS (Sound).

It was generally accepted that no special regulatory provisions would be required to use non-geostationary orbits of the highly-inclined elliptical type, already much used by at least one administration. Normal provisions for the geostationary-satellite orbit would be applied with calculations on sharing criteria undertaken using the worst-case service arc position. There was strong support for requesting further CCIR studies on the use of highly-inclined elliptical orbits in the BSS (Sound) including shared use with satellites in the geostationary-satellite orbit.

ANNEX 5

Two compromise proposals were suggested by delegates and presented by the Chairman. Both were seen to lack balance. The Chairman prepared the compromise package given below as a basis for continued discussion and refinement. While many delegations indicated support, a large number were unable to consider it without substantial shift in emphasis. No delegation offered an alternative. It was then considered that no form of consensus could be achieved by the Group.

Some delegations indicated that they had some concerns with the other texts prepared by the Group and they would wish to bring them to the attention of Working Group 4B. The Chair indicated all delegations represented should, as a consequence of not reaching concensus, have the right to comment on the contents of the report to which this document is annexed.

1) 50 MHz - 1 445 to 1 495 be equal primary with existing allocations for terrestrial digital sound broadcasting with constraint against harmful interference to services in other countries until [2000].
2) 20 MHz of that band be also allocated primary to BSS with power flux-density constraints on other countries until [2000].
3) The remaining 30 MHz within 1 445 - 1 495 be secondary for BSS, becoming primary from [2010].
4) The band 2 580 - 2 600 be released from the constraints of Footnote 757 and given the same conditions as 2) above.
5) That a conference be requested no later than [2010] to assess the spectrum allocations above and to determine the requirements for planning.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/101-E
24 February 1992
Original: English

Source: Document 209

COMMITTEE 5

Note by the Chairman of Sub-Working Group 5B1
to the Chairman of Committee 5

In response to the note from the Chairman of Committee 4 on the subject of HDTV and the problems associated with high rainfall climatic zones, appearing in Document 209, I have, as requested, prepared some draft text which attempts to cover the points raised, for inclusion in Resolution COM5/3, which appears in Document 212.

1. Add new **considering** d)

"d) that improvements in the utilization of the 12 GHz planned band may enable countries, in particular those which have high rainfall climatic zones, to accommodate their BSS (HDTV) needs, or part of their needs in that band,"

2. Modify **invites the CCIR** as follows:

... below, "and to study the particular needs of high rainfall rate climatic zones for HDTV and the technical methods which could be used to implement this service in the 12 GHz band,"

J.O.N. SPURLING
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/102-E
24 February 1992
Original: French

COMMITTEE 2

Draft

REPORT BY COMMITTEE 2 TO THE PLENARY MEETING

(CREDENTIALS)

1. Terms of reference

The terms of reference of the Committee are described in Document 66.

2. Meetings

The Committee met twice, on 6 and 26 February 1992.

At its first meeting, it set up a Working Group comprised of the Chairman and Vice-Chairman of the Committee and a delegate from each of the following countries: Italy, the Philippines, Poland and Senegal, to verify the credentials of delegations in accordance with Article 67 of the International Telecommunication Convention (Nairobi, 1982).

3. Transfer of powers

In accordance with the provisions of No. 391 of the International Telecommunication Convention (Nairobi, 1982), transfers of powers were approved at the first meeting of Committee 2 and at the meetings of Working Groups.

4. Conclusions

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

5. Closing remarks

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

J.A. PADILLA LONGORIA
Chairman

Annex: 1

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

Algeria (People's Democratic Republic of)
Germany (Federal Republic of)
Saudi Arabia (Kingdom of)
Argentine Republic
Australia
Austria
Bahamas (Commonwealth of the)
Bahrain (State of)
Belarus (Republic of)
Belgium
Benin (Republic of)
Bhutan (Kingdom of)
Botswana (Republic of)
Brazil (Federative Republic of)
Brunei Darussalam
Bulgaria (Republic of)
Burkina Faso
Burundi (Republic of)
Cameroon (Republic of)
Canada
Cape Verde (Republic of)*
Central African Republic
Chile
China (People's Republic of)
Cyprus (Republic of)
Vatican City State
Colombia (Republic of)
Korea (Republic of)
Côte d'Ivoire (Republic of)
Denmark
United Arab Emirates
Ecuador
Spain
United States of America
Ethiopia (People's Democratic Republic of)*

---

* Transfer of powers to the Republic of Senegal with effect from 18 February 1992.

Russian Federation
Finland
France
Gabonese Republic
Gambia (Republic of the)
Ghana
Greece
Guinea (Republic of)
Honduras (Republic of)
Hungary (Republic of)
India (Republic of)
Indonesia (Republic of)
Iran (Islamic Republic of)
Ireland
Iceland
Israel (State of)
Italy
Japan
Jordan (Hashemite Kingdom of)
Kenya (Republic of)
Kuwait (State of)
Lebanon
Lithuania (Republic of)
Luxembourg
Madagascar (Democratic Republic of)
Malaysia
Mali (Republic of)
Malta (Republic of)
Morocco (Kingdom of)
Mexico (Provisional accreditation in accordance with No. 383 of the Nairobi Convention)
Monaco
Mongolia
Mozambique (Republic of)
Niger (Republic of)
Nigeria (Federal Republic of)
Norway
New Zealand
Oman (Sultanate of)
Panama (Republic of)
Papua New Guinea

Netherlands (Kingdom of the)
Philippines (Republic of the)
Poland
Portugal
Qatar (State of)
Syrian Arab Republic
Democratic People's Republic of Korea
Romania
United Kingdom of Great Britain and Northern Ireland
San Marino (Republic of)
Senegal (Republic of)
Singapore (Republic of)
Sri Lanka (Democratic Socialist Republic of)
Sweden
Switzerland (Confederation of)
Suriname (Republic of)
Swaziland (Kingdom of)
Tanzania (United Republic of)
Czech and Slovak Federal Republic
Thailand
Togolese Republic
Tunisia
Turkey
Ukraine
Uruguay (Eastern Republic of)
Venezuela (Republic of)
Yemen (Republic of)
Yugoslavia (Socialist Federal Republic of)
Zimbabwe (Republic of)

Conclusion

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

2. Credentials deposited by the delegations of countries without the right to vote and found to be in order (see Document 60(Rev.3))

Cuba
Guatemala (Republic of)
Libya (Socialists People's Libyan Arab Jamahiriya)
Nicaragua
Uganda (Republic of)
Chad (Republic of)

Conclusion

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

3. Transfer of powers deposited by countries unable to send their own delegations to the Conference (No. 391 of the Convention), found to be in order

Column 1 (FROM)	Column 2 (TO)
Liechtenstein (Principality of)	Switzerland (Confederation of)
Latvia (Republic of)	Lithuania (Republic of)
Belize	Bahamas (Commonwealth of the)

Conclusion

The delegations of the countries mentioned in column 2 above are entitled to vote and to sign on behalf of the countries listed in column 1, as detailed in Conference Documents 114, 125 and 155.

4. Delegations participating in the Conference which have not deposited credentials

Angola (People's Republic of)
Bangladesh (People's Republic of)
Congo (Republic of the)
Djibouti (Republic of)
Egypt (Arab Republic of)
Malawi
Mauritania (Islamic Republic of)*
Pakistan (Islamic Republic of)
Paraguay (Republic of)
Tonga (Kingdom of)
Zambia (Republic of)

Conclusion

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

---

* Included in the list of countries which have lost their right to vote (see Document 60(Rev.3)).

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/103-E
24 February 1992
Original: English

AD HOC 1 C4

Note from the Chairman of ad hoc 1 to Committee 4

The attached draft tables are the consequential modifications to Article 8 of the Radio Regulations for the allocation of the BSS (HDTV) and associated feeder links.

The tables relating to the 27 - 30 GHz band reflect the decisions already taken in Committee 4 (see Document 215) with the addition of Footnote 881Y.

R.A. BEDFORD
Chairman of ad hoc 1 C4

GHz
17.3 - 18.1

Allocation to Services		
Region 1	Region 2	Region 3
17.3 - 17.7 FIXED-SATELLITE (Earth-to-space) 869 Radiolocation 868	**17.3 - 17.7** FIXED-SATELLITE (Earth-to-space) 869 BROADCASTING-SATELLITE 869A Radiolocation 868	**17.3 - 17.7** FIXED-SATELLITE (Earth-to-space) 869 Radiolocation 868
17.7 - 18.1 FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 MOBILE	**17.7 - 17.8~~18.1~~** FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 ~~MOBILE~~ BROADCASTING-SATELLITE 869A 869B Mobile	**17.7 - 18.1** FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 869 MOBILE
	17.8 - 18.1 FIXED-SATELLITE (space-to-Earth) ~~(Earth-to-space) 869~~ FIXED MOBILE	

ADD **869A** In Region 2, the allocation to the broadcasting-satellite service in the 17.3 - 17.8 GHz band shall be effective from 1 April 2005.

ADD **869B** Broadcasting-satellite service receiving stations in this band shall not claim protection from interference from the operations of stations in the fixed service. Broadcasting-satellite service space stations operating in the 17.7 - 17.8 GHz band shall not exceed the power flux-density limits at the surface of the Earth specified in No. 2578.

GHz
18.1 - 18.6

Allocation to Services		
Region 1	Region 2	Region 3
18.1 - 18.4~~18.6~~	FIXED FIXED-SATELLITE (space-to-Earth) (Earth-to-space) 870A MOBILE 870	
~~18.1~~18.4 - 18.6	FIXED FIXED-SATELLITE (space-to-Earth) MOBILE 870	

ADD **870A** 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 in the following countries [...].

GHz
21.4 - 22

Allocation to Services		
Region 1	Region 2	Region 3
21.4 - 22 FIXED MOBILE BROADCASTING-SATELLITE 873A	**21.4 - 22** FIXED MOBILE	**21.4 - 22** FIXED MOBILE BROADCASTING-SATELLITE 873A

ADD **873A** The allocation to the broadcasting-satellite service in the band 21.4 - 22 GHz is intended for use by wide RF-band high-definition television (HDTV). The allocation shall come into effect on 1 April 2005; however, before that date experimental and operational BSS (HDTV) systems may be introduced into the band provided that they do not cause harmful interference to existing services operating in the band in accordance with the Table of Frequency Allocations. The interim procedures for the introduction of experimental and operational BSS (HDTV) systems before 1 April 2005, and for the introduction of BSS (HDTV) systems after that date are contained in Resolution COM5/[5 - Doc. 242]. After 1 April 2005 existing services may continue to operate on the basis that they shall neither cause harmful interference to BSS (HDTV) systems nor claim protection from such systems.

GHz
22.5 - 23

Allocation to Services		
Region 1	Region 2	Region 3
22.5 - 22.55 FIXED MOBILE	**22.5 - 22.55** FIXED MOBILE ~~BROADCASTING-SATELLITE 877~~ 878	
22.55 - 23 FIXED INTER-SATELLITE MOBILE 879	**22.55 - 23** FIXED INTER-SATELLITE MOBILE ~~BROADCASTING-SATELLITE 877~~ 878 879	

SUP **877**

GHz
24.25 - 25.25

Allocation to Services		
Region 1	Region 2	Region 3
24.25 - ~~25.25~~24.45	~~RADIONAVIGATION~~ FIXED RADIOLOCATION-SATELLITE (Earth-to-space) 881X	
~~24.25~~24.45 - ~~25.25~~24.65	~~RADIONAVIGATION~~ FIXED INTER-SATELLITE 881X	
~~24.25~~24.65 - ~~25.25~~24.75	~~RADIONAVIGATION~~ FIXED INTER-SATELLITE	
~~24.25~~24.75 - 25.25 ~~RADIONAVIGATION~~ FIXED	**~~24.25~~24.75 - 25.25** ~~RADIONAVIGATION~~ FIXED FIXED-SATELLITE (Earth-to-space) 880A	**~~24.25~~24.75 - 25.25** ~~RADIONAVIGATION~~ FIXED

ADD **880A** In the band 24.75 - 25.25 GHz, feeder links to stations in the broadcasting-satellite service shall have priority over other uses in the fixed-satellite service (Earth-to-space). Other assignments within the fixed-satellite service shall protect and shall not claim protection from existing and future operating feeder-link networks to such broadcasting satellite stations[1].

---

[1] No. 2584 in Article 28 should be modified to include the band 24.45 - 24.75 GHz in order to protect operations in the fixed service from interference from inter-satellite operations.

ADD **881X** Additional allocation: In Japan [, ...], the band 24.25 - 24.65 GHz is also allocated to the radionavigation service on a primary basis.

GHz
27 - 30

Allocation to Services		
Region 1	Region 2	Region 3
27 - 27.5 FIXED MOBILE INTER-SATELLITE 881A Earth Exploration-Satellite (space-to-space)	**27 - 27.5** FIXED FIXED-SATELLITE (Earth-to-space) MOBILE INTER-SATELLITE 881A Earth Exploration-Satellite (space-to-space)	
27.5 - 28.5~~29.5~~	FIXED FIXED-SATELLITE (Earth-to-space) 881B MOBILE 882A 882B	
~~27.5~~28.5 - 29.5	FIXED FIXED-SATELLITE (Earth-to-space) 881B MOBILE Earth Exploration-Satellite (Earth-to-space) 882C 882B	
29.5 - 30	FIXED-SATELLITE (Earth-to-space) 881B Mobile-Satellite (Earth-to-space) Earth Exploration-Satellite (Earth-to-space) 882C 882A 882B 882 883	

ADD **881Y** The band 27.5 - 30 GHz may be used by the fixed-satellite service (Earth-to-space) for the provision of feeder links for the broadcasting-satellite service.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/104
24 February 1992
Original:

COMMITTEE 4

Report from the Chairman of the Informal Ad-Hoc Group of Working Group 4B to Committee 4

At its meeting on 20th February 1992, Working Group 4B established an informal ad-hoc group to consider the range of mobile-satellite service proposals and try to rationalize them, as a basis for progressing the Work of Committee 4. Subsequently, some texts resulting from discussions between the CEPT countries and the United States of America were also considered.

The membership of the group consisted of one member each from the following countries: Brazil, Canada, Ecuador, France, Indonesia, Japan, Nigeria, Russian Federation, Saudi Arabia, Senegal, Sweden and the United States of America. The Group was chaired by the Chairman of Working Group 4B (Mr. Jenkinson).

The group established the following principles for its work:

- Its findings are only intended for guidance of the work of Committee 4;
- Its findings do not represent any formal proposals, they are not necessarily the views of all participants, and there is no committment by any participant to reflect the Group's findings.
- Its work largely addressed spectrum issues for the mobile-satellite services in the range 137 MHz-3.0 GHz, and has not taken account of the proposals for new allocations to other services being made at this Conference.

The following views were also emphasized by the Group:

(1) The protection of the existing services and their future requirements is an essential element in any proposals for new allocations.

(2) Allocations on a worldwide basis are very desirable and should be made wherever possible. However, in order to meet the requirements of some countries, Regional or even sub-regional allocations may be necessary in some cases.

(3) The discussions on the topics in the bands between 1 GHz and 3 GHz are interrelated.

(4) Recognizing the need for new allocations, the phased introduction of some of new allocations over an extended period of time could help the Conference to find acceptable solutions on the following topics.

The Group's findings are given in the following paragraphs in descending frequency order.

1. 2 500-2 690 MHz

An allocation of two [20 MHz] to the mobile-satellite service, with the Earth-to-space allocation near but below 2 690 MHz and the space-to-Earth allocation near but above 2 500 MHz. The allocation of more or less than two [20 MHz] depends on allocations to be made in other bands for the Mobile-satellite service.

2. 2 483.5-2 500 MHz and 1 610-1 626.5 MHz

An allocation in the frequency bands 1 610-1 626.5 MHz (Earth-to-space) and 2 483.5-2 500 MHz (space-to-Earth) for the mobile-satellite service on a primary basis. In addition, a secondary allocation to the mobile-satellite service (space-to Earth) in the band 1 610.6-1 613.8 MHz. Protection of the radioastronomy service in the band 1 610.6-1 613.8 MHz. In making such allocations, specific provisions would be required to protect the existing services and their future requirements.

The Group took particular note of the need for protection of the aeronautical radionavigation service, the associated satellite-borne facilities and the future requirements of these services in the band 1 610-1 626.5 MHz.

One suggestion which was made to the Group, but not discussed in the time available, was an allocation for the MSS in the parts of the band 1 559-1 626.5 MHz which may not be used by the Radionavigation service.

3. Spectrum around 2 GHz

Within the band around 2 GHz there was discussion on the provision of spectrum for the mobile-satellite service. While there was general acceptance of the need for such mobile-satellite provision, the matter requires further consideration, particularly in any relationship to FPLMTS, the amount of MSS spectrum needed and the location in or near the bands to be designated for FPLMTS.

4. Spectrum around the existing allocations in 1.5/1.6 GHz

The Group discussed some proposals for the allocation of additional spectrum below 1 525 MHz and above 1.6 GHz for the mobile-satellite service. The matter requires further consideration, however concerns were expressed due to sharing with other proposed or existing services in the bands below 1 525 MHz and above 1 670 MHz.

5. Below 1 GHz

Allocations to the mobile-satellite service in the bands 137-138 MHz, 148-149.9 MHz and 400.15-401 MHz with primary allocations with certain bands and sub-bands of these bands (137-137.025 MHz; 137.175-137.825 MHz; 148-149.9 MHz; 400.15-401 MHz) and a primary allocation for the land-mobile satellite service in the band 149.9-150.05 MHz. Additional provisions must be made to protect the existing and the future requirements of other services in these bands.

G.F. Jenkinson
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/105-E
25 February 1992
Original: English

COMMITTEE 4

Note by the Chairman of Working Group 4B

PROPOSED DRAFT RESOLUTION

ADJUSTMENTS TO THE FIXED SERVICE AS A CONSEQUENCE OF CHANGES TO THE FREQUENCY ALLOCATIONS WITHIN THE RANGE 1 - 3 GHz

(Agenda item 2.9.1)

An informal Drafting Group of ad hoc 4B8 has prepared a draft Resolution which appears in Annex 1. This Resolution recognizes that the fixed service in the range 1 - 3 GHz is used extensively and is likely to be used well into the future by many administrations. In the case of future public land mobile telecommunication systems (FPLMTS), the Resolution refers to the conclusion in the CCIR Report that FPLMTS can share with the fixed service. The Resolution invites the CCIR to continue its studies of sharing between the fixed service and other services considering that the fixed service will remain primary in various parts of the frequency range 1 - 3 GHz. In addition it invites the CCIR to prepare new radio frequency channelling arrangements as necessary.

This draft Resolution has not been discussed in Working Group 4B. It is being submitted to Committee 4 for its consideration.

G.F. JENKINSON
Chairman

Annex: 1

ANNEX 1

DRAFT RESOLUTION COM4/[ ]

Relating to Adjustments to the Fixed Service as a Consequence of Changes to the Frequency Allocations Within the Range 1 - 3 GHz

considering

[a) that the present Conference has allocated new frequency bands in the range 1 - 3 GHz for the mobile-satellite, broadcasting satellite (sound) and designated spectrum for the future public land mobile telecommunication systems (FPLMTS);]

b) that the fixed service is allocated on a primary basis in various frequency bands in the range 1 - 3 GHz;

c) that the fixed service in this range is extensively used and is likely to be used well into the future by many administrations;

d) that the terrestrial components of FPLMTS can share with the fixed service where there is adequate geographic or frequency separation (see CCIR Report to WARC-92);

e) that the fixed service has for many years shared satisfactorily with the space research, space operation and earth exploration-satellite services,

recognizing

that although new techniques will allow some systems in the fixed service to be transferred to higher frequency bands or to use other means of telecommunications, there are technical and economic factors that will require continued operation of systems in the range 1 - 3 GHz,

noting

that item 2.9.1 of the agenda for the present Conference drew attention to the need to safeguard the interests of existing services that may be affected by changes to the Table of Frequency Allocations,

resolves

that when administrations implement new services in the range 1 - 3 GHz, to facilitate sharing they should take full account of the continuing needs of the fixed service by appropriate choice of geographical location, frequencies and timescales,

invites the CCIR

1. to continue its studies of the sharing criteria between the fixed service and other services;

2. to prepare new radio frequency channelling arrangements, if necessary, for the fixed service in the relevant frequency bands,

urges

administrations to continue to participate actively in these studies and to undertake the necessary adjustments to the fixed service within the timetable adopted by the present Conference for implementation of the new frequency allocations and designations in the range 1 - 3 GHz.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/106-E
25 February 1992
Original: English

AD HOC GROUP 1 TO COMMITTEE 5

Source: Documents 229, DT/98

Note from the Chairman of ad hoc 1 to Committee 5

CONSOLIDATED ARTICLE 27 TEXT

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section I. Choice of Sites and Frequencies

NOC 2501 to 2503

MOD 2504 (3) In the frequency bands above 15 GHz there shall be no restriction[1] as to the direction of maximum radiation for stations in the fixed or mobile service, except as noted in 2504-A.

ADD 2504A As far as practicable, sites for transmitting stations, in the fixed or mobile service, employing maximum values or equivalent isotropic radiated power (e.i.r.p.) density exceeding 24 dBW in any 1 MHz band in the frequency band 25.25 - 27.5 GHz should be selected so that the direction of maximum radiation of any antenna will be at least 1.5° away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction[1, 2].

Section II. Power Limits

MOD 2509 (5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service[, the space research service, the space operation service, the earth exploration-satellite service] and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

[*~~1 626.5~~1 610 - 1 645.5 MHz] (for countries mentioned in No. 730)

1 646.5 - 1 660 MHz (for countries mentioned in No. 730)

[1 670 - 1 690 MHz]

[*1 765 - 1 775 MHz]
[*1 960 - 1 990 MHz]
[*2 025 - 2 110 MHz]
[*2 200 - 2 290 MHz]
[*2 638.5~~2 655~~] - 2 690 MHz[1] (for Regions 2 and 3)
5 725 - 5 755 MHz[1] (for countries of Region 1 mentioned in Nos. 803 and 805)
5 755 - 5 850 MHz[1] (for countries of Region 1 mentioned in Nos. 803, 805 and 807)
5 850 - 7 075 MHz
7 900 - 8 400 MHz

ADD **2504A-1** 1. The provisions of No. 2504A shall apply until such time as the CCIR has made a recommendation on the e.i.r.p. density limits which should apply in the band.

ADD **2504A-2** 2. Information on the effect of atmospheric refraction is given in the most recent version of CCIR Recommendation [4/53-9/84].

MOD **2511 Orb-88** (7) The limits given in Nos. 2505 and 2508 apply in the following frequency bands allocated to the fixed-satellite service and the inter-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

17.7 - 18.1 GHz
[*21.4 - 22.2 GHz]
*25.25 - 29.5 GHz
~~27.0 - 27.5 GHz[2]~~ ~~(for Regions 2 and 3)~~
~~27.5 - 29.5 GHz~~

SUP **2511-2**

CONSOLIDATED ARTICLE 28 TEXT

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

NOC **Section I. Choice of Sites and Frequencies**

NOC **2539**

NOC **Section II. Power Limits**

NOC 2540 to 2548A

MOD 2548A Mob-87 [(10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service in the band 1 610 - 1 626.5 [or in the mobile-satellite service in the band [ ]] MHz shall not exceed *-3 dBW in any 4 kHz band.]

NOC **Section III. Minimum Angle of Elevation**

NOC 2549 to 2551

NOC **Section IV. Limits of Power Flux-Density from Space Stations**

NOC 2552 to 2555

MOD 2556 (2) Power flux-density limits between [~~1 525~~1 475] MHz and [~~2 500~~*2 300] MHz.

NOC 2557

MOD 2558 Mob-87 b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) [(space-to-space);]
- space operation service (space-to-Earth) [(space-to-space);]

[- earth exploration-satellite service (space-to-Earth) (space-to-space);]

[- mobile-satellite service (space-to-Earth)]

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service[~~, and to the~~

- [~~radiodetermination-satellite service (space-to-Earth)~~].]

MOD 2559 Mob-87

[*1 475 - 1 525 MHz]	
[*1 515 - 1 525 MHz]	
1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
[~~1 530 - 1 535 MHz~~[1]]	~~(for Regions 1 and 3, up to 1st January 1990)~~]
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)

1 700 - 1 710 MHz
[*2 025 - 2 110 MHz]
[*2 2002 290] - 2 300 MHz
[*2 483.5 - 2 500 MHz]

MOD **2561** (3) Power flux-density limits between [2 500*2 300] MHz and 2 690 MHz.

MOD **2562** **Mob-87** a) The power flux-density at the Earth's surface produced by emissions from a space station in the [broadcasting satellite service or], the fixed-satellite service or the [radiodetermination mobile-]satellite service for all conditions and for all methods of modulation shall not exceed the following values:

*-152 dB(W/m²) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

-152 + 0.75(δ - 5) dB(W/m²) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m²) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **2563** **Mob-87** b) The limits given in No. 2 5622 557 apply in the frequency bands:

[*2 483.5 - 2 500 MHz]
2 500 - 2 690 MHz

which [isare] shared by the [broadcasting satellite service or the] fixed-satellite service [or the mobile-satellite service] with the fixed or mobile service[; and in the frequency band 2 500 - 2 516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination satellite service].

(MOD) **2564** c) The power flux-density values given in No. 2562 are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the [bands] mentioned in No. 2563 and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

MOD **2581** (8) Power flux-density limits between [31.021.7 25.25] GHz and 40.5 GHz.

MOD **2583** b) The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service, the inter-satellite service, the earth exploration-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

MOD **2584**

[21.7 - 22 GHz]	
*22.55 - 23.55 GHz	
*25.25 - 27.501 GHz	
31.0 - 31.3 GHz	
[~~34.2~~34.7] - 35.2 GHz	(for space-to-Earth transmissions under Nos. [895 and] 896 on the territory of countries mentioned in No. 894)
~~37.5~~37.0 - 40.5 GHz	

(MOD) **2585** (9) The limits given in Nos. 2553, 2557, [MOD] 2562, 2566, 2570, 2574, 2578, 2582 and 2582.1 may be exceeded on the territory of any country the administration of which has so agreed.

---

* = Parameters marked with an asterisk have been forwarded to the ad hoc Working Group of the Plenary for advice.

[ ] = Items shown in square brackets are dependent upon decisions in Committee 4.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/107-E
25 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Note by the Chairman of ad hoc Group 1 to Committee 5 to the Chairman of the Working Group of the Plenary

Ad hoc Group 1 to Committee 5 requests the technical advice of the Working Group of the Plenary concerning the proposed changes to Articles 27 and 28.

Questions concerning these proposals as shown in Document DT/106:

(* Indicates current allocation or allocation approved in 4.)

1. Are the limits given in Nos. 2502, 2505, 2506 and 2507 appropriate for the following frequency bands as proposed for the following services in No. 2509:

1 475	-	1 525	MHz	Mobile-satellite service
2 483.5	-	2 500	MHz	Mobile-satellite service

K. IRION
Chairman, ad hoc Group 1 to Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/108-E
25 February 1992
Original: French

BUDGET CONTROL COMMITTEE

Draft

REPORT OF THE BUDGET CONTROL COMMITTEE TO THE PLENARY MEETING

1. The Budget Control Committee held three meetings during the Conference and examined the questions arising from its terms of reference.

Under Nos. 476 to 479 of the International Telecommunication Convention (Nairobi, 1982), the Committee's terms of reference are:

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

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

c) to estimate the costs that may be entailed by the execution of the decisions taken by the Conference.

2. Agreement with the inviting Administration

In accordance with Resolution No. 83 (amended) of the Administrative Council of the ITU on the organization, financing and liquidation of the accounts of conferences and meetings of the ITU, the Spanish Government and the Secretary-General of the ITU concluded an agreement concerning the organization and financing of WARC-92.

The Budget Control Committee took note of the agreement concluded between the Spanish Government and the Secretary-General of the Union.

3. Appreciation of the organization and facilities available to delegates

The Budget Control Committee considered that the organization and facilities made available to delegates were entirely satisfactory and wishes to express its thanks for all the efforts made to ensure the smooth running of the Conference.

4. Conference budget

The Budget Control Committee examined the Conference budget, as approved by the Administrative Council at its 46th session, 1991, amounting to 2,581,000 Swiss francs.

This budget includes 100,000 Swiss francs for IFRB post-conference work.

The Committee noted that the Conference budget had been adjusted to take into account changes in the Common System of the United Nations and the specialized agencies with regard to salaries and allowances and fluctuations in the rate of exchange between the US dollar and the Swiss franc, as required by Administrative Council Resolution No. 647. These adjustments raised the budget for the Conference to 2,697,000 Swiss francs, i.e. an increase of 116,000 Swiss francs (see Annex 1).

The Committee noted that the budget did not include expenditure incurred for the Conference in respect of supernumerary staff for the common services of the General Secretariat, which is included in a special section of the ordinary budget of the Union. This expenditure was evaluated at 1,285,000 Swiss francs.

5. Situation of Conference expenditure

Under No. 478 of the Convention, the Budget Control Committee has to submit a report to the Plenary Meeting showing, as accurately as possible, the estimated total expenditure of the Conference.

Accordingly, Annex 2 contains a statement showing the budget for the Conference and for post-conference work, as approved by the Administrative Council and adjusted under Administrative Council Resolution No. 647, together with a breakdown of credits among the budget subheads and items, as well as the actual expenditure incurred as at 25 February 1992. There is also an indication of the expenditure committed up to that date and an estimate of expenditure up to the end of the financial year 1992.

The above statement shows that the total amount to be charged to the ordinary budget for WARC-92 is estimated at 2,697,000 Swiss francs, i.e. the same as the amount allocated by the Administrative Council as adjusted at 1 February 1992. It can therefore be assumed that 1992 expenditure will remain within the approved budgets, provided that the 1992 overall workload of the Conference is maintained within the current estimates.

6. Expenditure limit for WARC-92

The Committee considered the situation regarding the expenditure limit for WARC-92 decided by the Plenipotentiary Conference (Nice, 1989). The latest estimates of expenditure for the Conference amount to less than 1,100,000 Swiss francs, valued at 1 April 1989 (see Annex 3). This amount will need to be adjusted to take account of actual 1991 and 1992 expenditure.

7. Estimate of work for the execution of WARC-92 decisions

At its 46th session, the Administrative Council provisionally approved a credit of 100,000 Swiss francs for post-conference work by the IFRB, pending details of decisions by WARC-92 which could entail additional expenditure.

The Budget Control Committee considered the estimates of the resources needed for post-conference work.

As far as the CCIR is concerned, most of the Resolutions and decisions proposed which call for urgent studies can be implemented within its normal work programme. They can be covered in the normal way out of the resources allocated to the CCIR under the ordinary budget.

As far as the work of the IFRB is concerned, the expected expenditure amounts to 500,000 Swiss francs (see Document 269 in Annex 4). Allowing for the provisional credit of 100,000 Swiss francs included in the ordinary budget for 1992, the additional expenditure envisaged by the IFRB is thus estimated at 400,000 Swiss francs.

The Budget Control Committee notes that the IFRB will have to make a more detailed evaluation of its requirements as given in Annex 4. More precise estimates will be submitted to the Administrative Council at its 47th session in June-July 1992.

The Budget Control Committee draws attention to the fact that the amount of 400,000 Swiss francs envisaged by the IFRB was less than the margin of 1,100,000 Swiss francs over the WARC-92 expenditure limit fixed by the Plenipotentiary Conference (Nice, 1989).

The Budget Control Committee takes note of the IFRB's provisional estimates.

8. Recognized private operating agencies and international organizations taking part in the Conference

Under Article 16 of the Financial Regulations, the report of the Budget Control Committee must include a list of the recognized private operating agencies and international organizations which contribute to the expenses of the Conference. To this shall be added a list of the international organizations which have been exempted from payment in accordance with Resolution No. 925 of the Administrative Council.

The list is found in Annex 5 to this document.

It should be noted that, on the basis of the provisions of No. 383 of the Convention (Nice, 1989), the contributory unit for recognized private operating agencies and international organizations not exempt under Administrative Council Resolution 925 amounts to 11,500 Swiss francs. These contributions are to be considered as income in the Union's budget.

* * * *

The Plenary Meeting is requested to examine and approve this Report, which, together with the comments of the Plenary Meeting, will then be transmitted to the Secretary-General for submission to the Administrative Council at its next annual meeting.

S. AL BASHEER

Chairman of the Budget
Control Committee

ANNEX 1

Budget of the WARC-92 Conference adjusted at 1 February 1992

WARC-92		1992 budget basis 1.1.91*	1992 budget at 1.2.92**
		Swiss francs	
Subhead I	**Staff expenses**		
	Salaries and related expenses	1,532,000	1,648,000
	Travel (recruitment)	167,000	167,000
	Insurance	17,000	17,000
	Staff provided for the Conference	---	----
		1,716,000	1,832,000
Subhead II	**Premises and equipment**		
	Premises, furniture, machines	150,000	150,000
	Document production	305,000	305,000
	Supplies and office expenses	50,000	50,000
	PTT	112,000	112,000
	Technical installations	20,000	20,000
	Sundry and unforeseen	20,000	20,000
		657,000	657,000
Subhead III	**Other expenses**		
	Conference Final Acts	108,000	108,000
	Travel expenses for the preparation of the Conference	---	---
		108,000	108,000
Subhead IV	**Post-conference work of the IFRB**	100,000	100,000
Subhead V	**Travel costs away from Geneva**		
	Per diem	---	---
	Travel expenses	---	---
	Transport and dispatch costs	---	---
		---	---
Total		2,581,000	2,697,000

* Basis: exchange rate at 1 January 1991: 1 US $ = 1.27 Swiss francs

** Basis: exchange rate at 1 February 1992: 1 US $ = 1.43 Swiss francs

ANNEX 2

Position of the WARC-92 accounts (at 25 February 1992)

Estimate of expenditure for WARC-92, Torremolinos 25.2.1992

Recapitulation	Budget value 1.1.91	Adjusted budget 1.2.1992	Actual expenditure 25.2.92	Committed and estimated expenditure	Total expenditure charged to reg.budget		Total expenditure charged to Host Admin.
				Swiss francs			
Salaries and related expenses							
- Meeting staff	1,532,000	1,648,000	298,000	1,383,000	1,681,000		-298,000
- Travel expenses (recruitment)	167,000	167,000	167,000		167,000		-167,000
- Insurance	17,000	17,000	4,000	13,000	17,000		-4,000
Sub-total I	1,716,000	1,832,000	469,000	1,396,000	1,865,000		-469,000
Cost of travel outside Geneva							
- Subsistance allowance							2,316,000
- Travel expenses							353,000
- Transport and dispatch costs							75,000
- Travel for the preparation of the Conf.							35,000
Sub-total II							2,779,000
Premises and equipment							
- Premises, furniture, machines	150,000	150,000	150,000		150,000		-150,000
- Document production	305,000	305,000	47,748	232,252	280,000		
- Supplies and office expenses	50,000	50,000	43,470	16,530	60,000		
- PTT	112,000	112,000	3,358	103,642	107,000		
- Technical installations	20,000	20,000	1,600	18,400	20,000		
- Sundry and unforeseen	20,000	20,000		25,000	25,000		
Sub-total III	657,000	657,000	246,176	395,824	642,000		-150,000
Finals Acts of the Conference	108,000	108,000		90,000	90,000		
Post Conference work of the IFRB	100,000	100,000		100,000	100,000		
TOTAL	2,581,000	2,697,000	715,176	1,981,824	2,697,000		2,160,000
Less : Staff made available to the WARC-92							-253,000
TOTAL	**2,581,000**	**2,697,000**	**715,176**	**1,981,824**	**2,697,000**		**1,907,000**

ANNEX 3

Limit on expenditure set for WARC-92

World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum, 1992 - Section 11.2

			- Swiss francs -
1)	Limit on expenditure set for WARC 1992 under Decision No. 1, 4.1 a)		5,100,000
less:			
2)	Budget provision for 1991 - Limit value		443,000
3)	Limit available for 1992-94		4,657,000
4)	Estimated expenditure in the draft budget for 1992	3,866,000*	
5)	Differences referred to in 5.1 and 5.2 of Decision No. 1 of the Plenipotentiary Conference (Nice, 1989) to take into account increases in salary scales, pension contributions and allowances, including post adjustments established by the United Nations Common System for application to its staff employed in Geneva, changes in the exchange rate between the Swiss franc and the United States dollar insofar as this affects the costs of staff on United Nations scales	-179,000	
6)	Differences referred to in 5.3 of Decision No. 1 of the Plenipotentiary Conference (Nice, 1989) to take into account changes in the purchasing power of the Swiss franc in relation to non-staff items of expenditure	-130,000	
7)	Expenditure on WARC 1992 for 1992 - Limit value		3,557,000
8)	Balance (3 - 7)		1,100,000

* i.e. 2,581,000 Sw.frs. under Section 11.2
1,285,000 Sw.frs. under Section 17

ANNEX 4

Note from the Chairman, IFRB

FINANCIAL IMPLICATIONS OF THE DECISIONS OF WARC-92

1. On the basis of the work being carried out in Committees 4 and 5, the Board foresees post-Conference activities which it would be required to carry out and which would require additional resources.

2. At the present stage of the Conference, it is obviously not possible for the Board to make precise estimates of the financial implications of all the decisions that the Conference may take. In spite of the fact that the resources available to the Board will continue to decrease during the period 1992-1994, the Board will make every effort to use its available manpower in the most efficient manner, thus limiting the need for additional requirements. However, the Board has identified the items under consideration by WARC-92 that will require additional resources to be available to the Board to enable it to carry out the resulting post-Conference work. They are:

2.1 actions to be taken for the preparation of Part III of Appendix 26(Rev.);

2.2 actions to be taken for the development of the accelerated application of the RR 1218 procedure;

2.3 actions to be taken in the application of the procedures for various space radiocommunication services.

3. The estimated requirements are as follows:

3.1 for actions relating to the preparation of Part III of Appendix 26(Rev.), the following resources are required:

- 12 person-months (8 person-months of engineer and 4 person-months of system analyst) at P4 level;
- 8 person-months at G5/G6 level;

3.2 for the development of the accelerated application of the RR 1218 procedure, it would be necessary to foresee 12 person-months of P4 system analyst to fully automate the present semi-automatic procedure;

3.3 for the actions arising from the decisions relating to space radiocommunication services, at present the Board considers that they can be implemented without any additional resources; this will need to be reviewed after the decisions of the Conference are known with more precision;

3.4 thus, the overall resource requirements, as far as they can be estimated at present, are:

- 24 person-months at the P4 level (engineer and system analyst), and 8 person-months at the G5/G6 level.

At the current levels of salary scales and inclusive of the accessory expenses of office accommodation, office equipment and hardware/software, this would amount to 500,000.- Swiss francs spread over the calendar years of 1992-1994.

4. The Board wishes to emphasize that these estimates need to be refined after very careful study of the full implications of all Conference decisions which the Board will carry out before the 47th session of the Administrative Council to be held in June/July 1992.

5. The Conference is kindly requested to consider these estimates, note their provisional nature and agree that the Board develop more precise estimates for submission to the 47th session of the Administrative Council.

ANNEX 5

List of recognized private operating agencies and international organizations contributing to the expenses of the Conference

		Number of contributory units
I.	**Recognized private operating agencies**	
	None	
II.	**International organizations**	
II.1	**United Nations**	*)
II.2	**Specialized agencies**	
	International Civil Aviation Organization (ICAO)	*)
	International Maritime Organization (IMO)	*)
	World Meteorological Organization (WMO)	*)
II.3	**Regional telecommunications organizations**	
	Asia-Pacific Telecommunity (APT)	*)
	European Conference of Postal and Telecommunications Administrations (CEPT)	*)
	Caribbean Telecommunications Union (CTU)	*)
	Pan-African Telecommunication Union (PATU)	*)
	Arab Satellite Communications Organization (ARABSAT)	1/2
	European Telecommunications Satellite Organization (EUTELSAT)	1/2
	International Maritime Satellite Organization (INMARSAT)	1/2
	International Telecommunications Satellite Organization (INTELSAT)	1
	European Meteorological Satellite Organization (EUMETSAT)	1/2
II.4	**Other international organizations**	
	Asia-Pacific Broadcasting Union (ABU)	*)
	International Broadcasting Association (IBA)	*)
	Arab States Broadcasting Union (ASBU)	*)
	European Space Agency (ESA)	1/2

European Communities (EC)	1/2
International Committee of the Red Cross (ICRC)	*)
International Maritime Radio Committee (IMRC)	*)
International Satellite System for Search and Rescue (COSPAS-SARSAT)	*)
Gulf Cooperation Council for Arab Countries (GCC)	*)
International Amateur Radio Union (IARU)	*)
International Air Transport Association (IATA)	*)
International Chamber of Shipping (ICS)	1/2
International Organization of Space Communications (INTERSPUTNIK)	1/2
International Transport Workers Federation (ITF)	1/2
Inter-Union Commission on Frequency Allocations for Radio Astronomy and Space Science (IUCAF)	*)
International Society for Aeronautical Telecommunications (ISAT)	1/2
European Broadcasting Union (EBU)	*)
Union of National Radio and Television Organizations of Africa (URTNA)	*)

*) Exempt from any contribution in accordance with Administrative Council Resolution No. 925.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/109(Rev.1)-E
26 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of GT-PLEN Ad-hoc

RESOLUTION GT-PLEN/...

Relating to the Review of Resolutions and Recommendations of the World Administrative Radio Conferences [1979 - 1992]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this Conference has reviewed a number of Resolutions and Recommendations of the following Conferences: [WARC-79], [MOB-83], [HFBC-87], [MOB-87] and [ORB-88],

b) the actions taken according to Resolution No. [GT-PLEN/...] adopted by this Conference,

further considering

the need to continue to review the Resolutions and Recommendations of the above Conferences and those of this Conference,

invites the CCIR, the IFRB and the Secretary General

to report to the next competent Conference about the actions taken in response to the relevant Resolutions and Recommendations,

resolves

that the Administrative Council should include in the agenda of the next competent Conference the review of the relevant Resolutions and Recommendations in view of their possible revision, replacement and abrogation.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/109-E
25 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of GT-PLEN Ad-hoc

RESOLUTION GT-PLEN/...

Relating to the Review of Resolutions and Recommendations of the World Administrative Radio Conferences [1979- 1987]

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

that this Conference has reviewed a number of Resolutions and Recommendations of the following Conferences: [WARC-79], [MOB-83], [HFBC-87], [MOB-87] and [ORB-88],

further considering

the need to continue to review the Resolutions and Recommendations of the above Conferences and those of this Conference,

invites the CCIR

to report to the next competent Conference about the actions taken in response to the relevant Resolutions and Recommendations,

invites the IFRB

to report to the next competent Conference about the actions taken in response to the relevant Resolutions and Recommendations,

resolves

that the Administrative Council should include in the agenda of the next competent Conference the review of the relevant Resolutions and Recommendations in view of their possible revision, replacement and abrogation.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/110-E
25 February 1992
Original: English

COMMITTEE 4

Note from the Chairman of ad hoc Group 1C4

DRAFT NOTE FROM THE CHAIRMAN OF COMMITTEE 4 TO COMMITTEE 5

As a consequence of the allocations agreed to in Committee 4 with respect to BSS (HDTV) and the associated feeder links, Committee 5 is requested to consider the following:

i) Consequential modifications to Appendix 30A in the band 17.3 - 17.8 GHz

ANNEX 4

Criteria for Sharing Between Services

1. Threshold values for determining when coordination is required between ~~a~~ transmitting space stations in the fixed-satellite service or the broadcasting-satellite service and a receiving space station in the feeder-link Plans in the frequency bands ~~17.7~~ 17.3 - 18.1 GHz (Regions 1 and 3) and ~~17.7~~ 17.3 - 17.8 GHz (Region 2)

With respect to paragraph 7.1, Article 7 of this Appendix, coordination of a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service with a broadcasting-satellite feeder link in the Regions 1 and 3 Plan or the Region 2 Plan is required, for inter-satellite geocentric angular separations of less than 3° or greater than 150°, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which exceeds a threshold value of $\Delta T_s T_s$ corresponding to 4%. $\Delta T_s/T_s$ is calculated in accordance with Case II of the method given in Appendix 29.

The above provision does not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service or in the broadcasting-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -137 dB(W/m^2/MHz) on the Earth's surface at the equatorial Earth limb.

ii) Consequential modifications to Article 28 in the band 24.45 - 24.75 GHz

No. 2584 in Article 28 should be modified to include the band 24.45 - 24.75 GHz in order to protect operations in the fixed and the radionavigation services from interference from inter-satellite operations.

R.A. BEDFORD
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/111-E
25 February 1992
Original: Spanish

AD HOC 2 OF COMMITTEE 5

Source: Document DL/37

RESOLUTION COM5/[ ]

Assistance to the Developing Countries to Facilitate the Implementation of Changes in Frequency Band Allocations which Necessitate the Transfer of Existing Assignments

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that major changes have been made in the Table of Frequency Allocations, extending bands allocated to some services and allocating bands to new services in order to facilitate the development of new technologies;

b) that these extensions of bands and new allocations necessitate the transfer of existing frequency assignments to stations of the services in the reallocated bands;

c) that many of these assignments correspond to services which are vital to the telecommunication networks of many countries, particularly developing countries;

d) that the allocations referred to in **considering** a) cannot come into effect until the process of transferring the existing assignments therein has been concluded in a satisfactory manner;

e) that the transfer of these assignments will necessitate investments and in many cases a transfer of technology, which will require both resources and technical training,

recognizing

a) that, owing to the world economic situation, the developing countries still lack the resources needed for investment in various sectors of development;

b) that the Nice Plenipotentiary Conference established the Telecommunications Development Conferences and the Telecommunications Development Bureau (BDT) to discharge the Union's dual responsibility as a United Nations specialized agency and executing agency for implementing projects under the United Nations development system or other funding arrangements so as to facilitate and enhance telecommunications development by offering, organizing and coordinating technical cooperation and assistance activities,

resolves

1. that a future world development conference should consider, when defining the priorities of the BDT, the need to take account of assistance to developing countries and should provide them with the resources needed to implement the required modifications to their radiocommunication networks;

2. that the Telecommunication Development Conference should give the BDT the necessary instructions and elements to enable it to provide technical assistance to the developing countries, and should monitor its activities in this respect;

3. to request the BDT, when formulating its immediate plans for assistance to the developing countries, to consider as a matter or priority the introduction of specific modifications in their telecommunication networks, coordinating the necessary technical advice activities with the IFRB and the CCIR,

requests the IFRB and the CCIR

to provide the BDT with their assistance in the implementation of this Resolution,

requests the Director of the BDT

to place this Resolution on the draft agenda of the next world development conference,

invites the Administrative Council

to ensure that this Resolution is placed on the agenda of the next world development conference.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/112-E
26 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Note by the Chairman of GT-PLEN Ad-hoc

RESOLUTION No. GT-PLEN/...

Review and Revision or Deletion of certain Resolutions and Recommendations of the World Administrative Radio Conference (WARC-79), Geneva, 1979; the World Administrative Mobile Radio Conference (MOB-83), Geneva, 1983; the World Administrative Radio Conference Dealing with High Frequency Broadcasting Matters (HFBC-87), Geneva, 1987; the World Administrative Radio Conference Dealing with Mobile Telecommunications Matters (MOB-87), Geneva, 1987 and the World Administrative Radio Conference on the Use of the Geostationary Satellite Orbit and Planning of the Space Services Utilizing It (Second Session - Geneva, 1988) (ORB-88)

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

that because of actions taken at this Conference and the actions resulting from decisions taken at the indicated previous Conferences, there is a need to review the existing Resolutions and Recommendations for their appropriate consistency,

further considering

a) that the following Resolutions and Recommendations of the Conferences referred to above have been revised as indicated:

RESOLUTION No. 703 (Rev. WARC-92)

Relating to the Calculation Methods and Interference Criteria Recommended by the CCIR for Sharing Frequency Bands Between Space Radiocommunication and Terrestrial Radiocommunication Services or Between Space Radiocommunication Services

RECOMMENDATION No. 66 (Rev. WARC-92)

Studies of the Maximum Permitted Levels of Spurious Emissions

b) that the following Resolutions and Recommendations of the Conferences referred above either have been implemented or do not require any further action:

RESOLUTION No. 6 (WARC-79)

Relating to the Preparation of a Handbook to Explain and Illustrate the Procedures of the Radio Regulations

RESOLUTION No. 9 (WARC-79)

Relating to the Revision of Entries in the Master International Frequency Register in the Bands Allocated to the Fixed Service Between 3 000 kHz and 27 500 kHz

RESOLUTION No. 36 (WARC-79)

Relating to the Preparation of Explanatory Information by the International Frequency Registration Board on the Application of the New Method for Designating Emissions in Notification Procedures and the Consequential Revision of the Master International Frequency Register

RESOLUTION No. 62 (WARC-79)

Relating to the Experimental Use of Radio Waves by Ionospheric Research Satellites [1]

RESOLUTION No. 64 (WARC-79)

Relating to CCIR Study of Lightning Protection of Radio Equipment

RESOLUTION No. 66 (WARC-79)

Relating to the Division of the World into Regions for the Purposes of Allocating Frequency Bands

RESOLUTION No. 67 (WARC-79)

Relating to Improvements in the Design and Use of Radio Equipment

RESOLUTION No. 68 (WARC-79)

Relating to the Redefinition of Certain Terms Contained in Annex 2 to the International Telecommunication Convention (Malaga-Torremolinos, 1973) and Applicable to the Radio Regulations

RESOLUTION No. 90 (Mob-83)

Relating to the Revision, Replacement and Abrogation of Resolutions and Recommendations of the World Administrative Radio Conference, Geneva, 1979

RESOLUTION No. 91 (HFBC-87)

Revision, Replacement and Abrogation of Resolutions and Recommendations of the World Administrative Radio Conference (Geneva, 1979)

RESOLUTION No. 92 (Orb-88)

Revision, Replacement and Cancellation of Resolutions of the World Administrative Radio Conference, Geneva, 1979, and the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (First Session – Geneva, 1985) (Orb-85)

RESOLUTION No. 108 (Orb-88)

Use of the Bands 4 500 - 4 800 MHz, 6 725 - 7 025 MHz, 10.70 - 10.95 GHz, 11.2 - 11.45 GHz and 12.75 - 13.25 GHz prior to the Date of Entry into Force of Appendix 30B

RESOLUTION No. 324 (Mob-87)

Procedures to be Applied for the Coordination of the Use of the Frequency 518 kHz for the International NAVTEX System

RESOLUTION No. 326 (Mob-87)

Transfer of Frequency Assignments of Radiotelephone Stations Operating in Accordance with Appendix 25

RESOLUTION No. 337 (Mob-87)

Resolutions and Recommendations Which Remain in Effect Until the Provisions of the Radio Regulations as Partially Revised by WARC Mob-87 Take Effect

RESOLUTION No. 501 (WARC-79)

Relating to Examination by the IFRB of the Notices Referring to Stations in the Broadcasting Service in Region 2 in the Band 535 - 1 605 kHz During the Period Preceding the Entry into Force of the Final Acts of the Regional Administrative MF Broadcasting Conference (Region 2)

RESOLUTION No. 509 (WARC-79)

Relating to the Convening of a Regional Broadcasting Conference to Review and Revise the Provisions of the Final Acts of the African VHF/UHF Broadcasting Conference, Geneva, 1963

RESOLUTION No. 510 (WARC-79)

Relating to the Convening of a Planning Conference for Sound Broadcasting in the Band 87.5 - 108 MHz for Region 1 and Certain Countries Concerned in Region 3

RESOLUTION No. 704 (Mob-83)

Relating to the Holding of a Regional Administrative Radio Conference to Prepare Frequency Assignment Plans for the Maritime Mobile Service in the Bands Between 435 kHz and 526.5 kHz and in Parts of the Band Between 1 606.5 kHz and 3 400 kHz in Region 1 and to Plan for the Aeronautical Radionavigation Service in the Band 415 - 435 kHz in Region 1

RESOLUTION No. 709 (Orb-88)

Coordination Between Feeder-Link Earth Stations and Stations of other Services in the Bands 14.5 - 14.8 GHz and 17.7 - 18.1 GHz in Regions 1 and 3

RECOMMENDATION No. 3 (WARC-79)

Relating to the Transmission of Electric Power by Radio Frequencies from a Spacecraft

RECOMMENDATION No. 12 (WARC-79)

Relating to the Convening of Future Administrative Radio Conferences to Deal with Specific Services

RECOMMENDATION No. 67 (WARC-79)

Relating to the Definitions of "Service Area" and "Coverage Area"

RECOMMENDATION No. 70 (WARC-79)

Relating to Studies of the Technical Characteristics of Equipment [1]

RECOMMENDATION No. 100 (WARC-79)

Relating to Preferred Frequency Bands for Systems Using Tropospheric Scatter

RECOMMENDATION No. 101 (WARC-79)

Relating to Feeder Links for the Broadcasting-Satellite Service [1]

RECOMMENDATION No. 102 (WARC-79)

Relating to the Study of Modulation Methods for Radio-Relay Systems in Relation to Sharing with Fixed-Satellite Service Systems [1]

RECOMMENDATION No. 104 (Mob-87)

Provision of Frequency Bands for Feeder Links in the Fixed-Satellite Service for the Mobile-Satellite Service or for the Aeronautical, Land, or Maritime Mobile-Satellite Services in the Bands 1 530 - 1 559 MHz and 1 626.5 - 1 660.5 MHz

RECOMMENDATION No. 504 (WARC-79)

Relating to the Preparation of a Broadcasting Plan in the Band 1 605 - 1 705 kHz in Region 2

RECOMMENDATION No. 602 (Rev.Mob-83)

Relating to the Planning of Frequencies in the Band 283.5 - 315 kHz Used by Maritime Radiobeacons in the European Maritime Area

RECOMMENDATION No. 708 (WARC-79)

Relating to Frequency Bands Shared Between Space Radiocommunication Services and Between Space and Terrestrial Radiocommunication Services [1]

resolves

that the Resolutions and Recommendations of the WARC-79, MOB-83, HFBC-87, MOB-87 and ORB-88 listed under *a)* above shall apply as revised by this Conference and that those listed under *b)* above shall be cancelled.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/113-E
26 February 1992
Original: English

COMMITTEE 4

Note by the Chairman of Working Group 4B

PROPOSED DRAFT RESOLUTION

CONSIDERATION OF FEASIBILITY OF ALLOCATIONS OF THE MOBILE-SATELLITE SERVICE IN THE BAND 1 670 - 1 710 MHz

This draft Resolution was developed by an informal Group of Working Group 4B, but has not been discussed in Working Group 4B. It is submitted to Committee 4 for its possible consideration.

G.F. JENKINSON
Chairman

Annex: 1

ANNEX

Draft Resolution COM4/[ ]

Consideration of feasibility of allocations of the mobile-satellite service in the band 1 670 - 1 710 MHz

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that agenda item 2.2.4 of this Conference requested the consideration of an allocation of frequency bands to the mobile and mobile-satellite service and associated feeder links;

b) that spectrum adjacent to or near the existing mobile satellite allocations may offer opportunities for implementation;

c) that the band 1 670 - 1 710 MHz is principally used by the meteorological-satellite and meteorological aids services;

d) that operational and technical means may be found that would allow sharing of the band 1 670 - 1 710 MHz between the meteorological-satellite/meteorological aids services and the mobile-satellite service;

e) that given the worldwide nature of the meteorological services, there is a need to determine the operational and technical means for preventing harmful interference to these services,

resolves

1. that studies be undertaken by the CCIR to examine the operational and technical measures that would facilitate sharing;

2. that the WMO be invited to participate in these sharing studies,

invites

the CCIR to study as a matter of urgency the technical and operational issues relating to the sharing of this band between the meteorological aids/meteorological-satellite services and the mobile-satellite service.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/114-E
26 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Draft

Note by the Chairman of the Working Group to the Plenary
to the Chairman of Committee 5

SHARING CRITERIA IN ARTICLES 27 AND 28 (SECOND REPLY)

In response to a request from the Chairman of Sub-Working Group 5B5 (see Document DT/91 (Rev. 1)), the Working Group to the Plenary offers the following comments as the second reply.

1. EIRP limits on terrestrial systems to protect space stations in the mobile-satellite service- applicability of Nos. 2502, 2505, 2506 and 2507 to the 1610 - 1626.5 MHz, 1670 - 1690 MHz and 2638.5 - 2655 MHz bands (§ 1 of Doc. DT/91 (Rev. 1))

Assuming that the fixed and mobile services share the same frequency bands with the mobile-satellite service (Earth-space) with equal rights, Nos. 2502, 2505, 2506 and 2507 are provisionally appropriate for the 1610 - 1626.5 MHz, 1670 - 1690 MHz and 2638.5 - 2655 MHz bands, but further study by the CCIR is required (see Note).

2. PFD limits on the mobile-satellite service to protect the terrestrial systems - applicability of No. 2562 for MSS in the band 2483.5 - 2500 MHz (§ 6 of Doc. DT/91(Rev.1))

The following is a status report of the study on this issue.

2.1 Views were expressed that the PFD values of No. 2562 should be applied "provisionally" in the band 2483.5 - 2500 MHz. Views were also expressed that No. 2562 should not be applied provisionally and that No. 2557 is appropriate for the band 2483.5 - 2500 MHz and, further, that procedures for increasing the power limits exist (No. 2585 and Doc. 257). If the higher PFD levels of No. 2562 were applied, existing services (involving transportable equipment) could suffer interference. Moreover, those services could not operate at higher frequencies with similar flexibility. The CCIR may be requested to conduct further studies on this matter (see Note).

2.2 The relevant PFD values may be exceeded in accordance with No. 2585.

2.3 No. 2560 should be applied for protection of trans-horizon systems.

2.4 The coordination procedure described in Resolution [Doc. 257] is appropriate for MSS systems using non-geostationary satellites in the band 2483.5 - 2500 MHz.

Note - The Working Group to the Plenary has prepared a Recommendation requesting the CCIR to carry out further studies on these subjects (see Document DT/117).

M. MUROTANI
Chairman, Working Group to the Plenary

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/115-E
26 February 1992
Original: English

WORKING GROUP OF THE PLENARY

Note by the Chairman of ad hoc Group 1 of Committee 5 to the Chairman of the Working Group of the Plenary

Ad hoc Group 1 of Committee 5 requests the technical advice of the Working Group of the Plenary concerning the proposed changes to Articles 27 and 28.

Questions concerning these proposals as shown in Document DT/106:

1. Are the limits given in Nos. 2502, 2505, 2506 and 2507 appropriate for the following frequency bands as proposed for the following services in No. 2509:

1 765 - 1 775 MHz for	Fixed-satellite, mobile-satellite and meteorological-satellite services
1 960 - 1 990 MHz for	Fixed-satellite, mobile-satellite and meteorological-satellite services
24.45 - 24.75 GHz for	Inter-satellite service.

K. IRION
Chairman, ad hoc Group 1 of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/116-E
27 February 1992
Original: English

COMMITTEE 5

Report of the Chairman of ad hoc 1 of Committee 5
to the Chairman of Committee 5

Two meetings were held with full interpretation. The results of those meetings are contained in the Annex. It should be noted that the items in square brackets are awaiting decisions by Committee 4 and parameters marked with an asterisk have been forwarded to Working Group of the Plenary for advice.

Members of the ad hoc Group requested that certain items be brought to the attention of the Group of Committee 5. These are reflected in this report.

The proposed revision to No. 2504.1 references CCIR draft Recommendation 4/53-9/84. This CCIR draft Recommendation is expected to be approved by correspondence on 8 March 1992, one week following the close of WARC-92. If, however, this draft Recommendation is not approved at that time, No. 2504.1 should reference Report 393. Also, as noted in Document 229, Note 2, Nos. 2502.1 and 2506.1 may need to be modified to reflect the new CCIR Recommendation, if it is approved.

Annex: 1

ANNEX

Note from the Chairman of ad hoc 1 of Committee 5

CONSOLIDATED ARTICLE 27 TEXT

Terrestrial Radiocommunication Services Sharing Frequency Bands with Space Radiocommunication Services Above 1 GHz

Section I. Choice of Sites and Frequencies

NOC **2501 to 2503**

MOD **2504** (3) In the frequency bands above 15 GHz there shall be no restriction[1] as to the direction of maximum radiation for stations in the fixed or mobile service, except as noted in 2504-A.

ADD **2504A** As far as practicable, sites for transmitting stations, in the fixed or mobile service, employing maximum values or equivalent isotropic radiated power (e.i.r.p.) density exceeding 24 dBW in any 1 MHz band in the frequency band 25.25 - 27.5 GHz should be selected so that the direction of maximum radiation of any antenna will be at least 1.5° away from the geostationary-satellite orbit, taking into account the effect of atmospheric refraction[1, 2].

ADD **2504A-1** [1] The provisions of No. 2504A shall apply until such time as the CCIR has made a recommendation on the e.i.r.p. density limits which should apply in the band.

ADD **2504A-2** [2] Information on the effect of atmospheric refraction is given in the most recent version of CCIR Recommendation [4/53-9/84].

Section II. Power Limits

MOD **2509** (5) The limits given in Nos. 2502, 2505, 2506 and 2507 apply in the following frequency bands allocated to the fixed-satellite service, the meteorological-satellite service[, the space research service, the space operation service, the earth exploration-satellite service] and the mobile-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

[*~~1 626.5~~1 610 - 1 645.5 MHz]	(for countries mentioned in No. 730)
1 646.5 - 1 660 MHz	(for countries mentioned in No. 730)
[1 670 - 1 690 MHz]	

[*1 765 - 1 775 MHz]

[*1 960 - 1 990 MHz]

2 025 - 2 110 MHz

2 200 - 2 290 MHz

[*2 638.5~~2 655~~] - 2 690 MHz[1] (for Regions 2 and 3)

5 725 - 5 755 MHz[1] (for countries of Region 1 mentioned in Nos. 803 and 805)

5 755 - 5 850 MHz[1] (for countries of Region 1 mentioned in Nos. 803, 805 and 807)

5 850 - 7 075 MHz

7 900 - 8 400 MHz

ADD **2509.2** Trans-horizon systems in the 2 025 - 2 110 MHz and 2 200 - 2 290 MHz bands may exceed the limits given in Nos. 2505 and 2507, but the provisions of Nos. 2502 and 2506 should be observed. Considering the difficult sharing conditions with other services, administrations are urged to keep the number of trans-horizon systems in these bands to a minimum.

MOD **2511 Orb-88** (7) The limits given in Nos. 2505 and 2508 apply in the following frequency bands allocated to the fixed-satellite service and the inter-satellite service for reception by space stations, where these bands are shared with equal rights with the fixed or mobile service:

17.7 - 18.1 GHz

[21.4 - 22.2 GHz]

25.25 - 29.5 GHz

~~27.0 - 27.5 GHz[2]~~ ~~(for Regions 2 and 3)~~

~~27.5 - 29.5 GHz~~

SUP **2511-2**

CONSOLIDATED ARTICLE 28 TEXT

Space Radiocommunication Services Sharing Frequency Bands with Terrestrial Radiocommunication Services Above 1 GHz

NOC **Section I. Choice of Sites and Frequencies**

NOC **2539**

NOC **Section II. Power Limits**

NOC 2540 to 2548A

MOD 2548A Mob-87 [(10) The equivalent isotropically radiated power (e.i.r.p.) transmitted in any direction by an earth station in the radiodetermination-satellite service in the band 1 610 - 1 626.5 [or in the mobile-satellite service in the band [ ]] MHz shall not exceed *-3 dBW in any 4 kHz band.]

NOC **Section III. Minimum Angle of Elevation**

NOC 2549 to 2551

NOC **Section IV. Limits of Power Flux-Density from Space Stations**

NOC 2552 to 2555

MOD 2556 (2) Power flux-density limits between [~~1 525~~1 475] MHz and [~~2 500~~*2 300] MHz.

NOC 2557

MOD 2558 Mob-87 b) The limits given in No. 2557 apply in the frequency bands listed in No. 2559 which are allocated to the following space radiocommunication services:

- meteorological-satellite service (space-to-Earth);
- space research service (space-to-Earth) (space-to-space);
- space operation service (space-to-Earth) (space-to-space);
- earth exploration-satellite service (space-to-Earth) (space-to-space);
- [mobile-satellite service (space-to-Earth);]

for transmission by space stations where these bands are shared with equal rights with the fixed or mobile service[~~, and to the~~

- [~~radiodetermination-satellite service (space-to-Earth)~~].]

MOD 2559 Mob-87

[*1 475 - 1 525 MHz]	
[*1 515 - 1 525 MHz]	
1 525 - 1 530 MHz[1]	(for Regions 1 and 3)
[~~1 530 - 1 535 MHz~~[1]]	~~(for Regions 1 and 3, up to 1st January 1990)~~]
1 670 - 1 690 MHz	
1 690 - 1 700 MHz	(on the territory of the countries mentioned in Nos. 740 and 741)

1 700 - 1 710 MHz

2 025 - 2 110 MHz

2 200~~2 290~~ - 2 300 MHz

[*~~2 483.5 - 2 500 MHz~~]

MOD **2561** (3) Power flux-density limits between [~~2 500~~*2 300] MHz and 2 690 MHz.

MOD **2562** **Mob-87** a) The power flux-density at the Earth's surface produced by emissions from a space station in ~~the [broadcasting satellite service or],~~ the fixed-satellite service or the [~~radiodetermination~~ mobile-]satellite service for all conditions and for all methods of modulation shall not exceed the following values:

*-152 dB(W/m^2) in any 4 kHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

-152 + 0.75(δ - 5) dB(W/m^2) in any 4 kHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane;

-137 dB(W/m^2) in any 4 kHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

MOD **2563** **Mob-87** b) The limits given in No. ~~2 562~~2 557 apply in the frequency bands:

[*2 483.5 - 2 500 MHz]

2 500 - 2 690 MHz

which [~~is~~are] shared by the ~~[broadcasting satellite service or the]~~ fixed-satellite service [or the mobile-satellite service] with the fixed or mobile service[~~; and in the frequency band 2 500 - 2 516.5 MHz (in the countries mentioned in No. 754A) allocated to the radiodetermination satellite service~~].

(MOD) **2564** c) The power flux-density values given in No. 2562 are derived on the basis of protecting the fixed service using line-of-sight techniques. Where a fixed service using tropospheric scatter operates in the [bands] mentioned in No. 2563 and where there is insufficient frequency separation, there must be sufficient angular separation between the direction to the space station and the direction of maximum radiation of the antenna of the receiving station of the fixed service using tropospheric scatter to ensure that the interference power at the receiver input of the station of the fixed service does not exceed -168 dBW in any 4 kHz band.

MOD **2581** (8) Power flux-density limits between [~~31.0~~21.7 25.25] GHz and 40.5 GHz.

MOD **2583** b) The limits given in No. 2582 apply in the frequency bands given in No. 2584 which are allocated to the fixed-satellite service, the mobile-satellite service, the inter-satellite service, the earth exploration-satellite service and the space research service for transmission by space stations where these bands are shared with equal rights with the fixed or mobile services.

MOD **2584**

[21.7 - 22 GHz]

22.55 - 23.55 GHz

[*24.45 - 24.75 GHz]

25.25 - 27.5[0/1] GHz

31.0 - 31.3 GHz

~~34.2~~34.7 - 35.2 GHz (for space-to-Earth transmissions under Nos. ~~[895 and]~~ 896 on the territory of countries mentioned in No. 894)

~~37.5~~37.0 - 40.5 GHz

(MOD) **2585** (9) The limits given in Nos. 2553, 2557, [MOD] 2562, 2566, 2570, 2574, 2578, 2582 and 2582.1 may be exceeded on the territory of any country the administration of which has so agreed.

ADD **2613A** 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.

---

* = Parameters marked with an asterisk have been forwarded to the ad hoc Working Group of the Plenary for advice.

[ ] = Items shown in square brackets are dependent upon decisions in Committee 4.

Document DT

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

Document DT/117-E
27 February 1992
Original: English

MÁLAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

WORKING GROUP TO THE PLENARY

Draft

Note by the Chairman of GT-PLEN Ad-hoc

RECOMMENDATION GT-PLEN/...

Relating to the Power Limits and Power Flux-Density Limits in Frequency Bands Shared by the Mobile-Satellite Service and the Fixed, Mobile and Other Terrestrial Services

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that this present Conference has made frequency allocations for the mobile-satellite service (Earth-to-space) shared with the fixed and mobile services;

b) that the limits in Nos. 2502, 2505, 2506 and 2507 of the Radio Regulations are based on CCIR Recommendation 406;

c) that CCIR Recommendation 406 was primarily developed in order to protect space stations in the fixed-satellite service operating in the 6 GHz band or higher frequency bands;

d) that, therefore, the limits in Nos 2502, 2505, 2506 and 2507 of the Radio Regulations may not be appropriate to protect receiving space stations in the mobile-satellite service operating in the [1610 - 1626.5 MHz], [1670 - 1690 MHz] and [2638.5 - 2655 MHz] bands,

e) that the band [1610 - 1626.5 MHz] is also allocated to the aeronautical radionavigation service, including the use of space techniques under No. 732, and radio astronomy under No. 734, [and the limit in No. 2548A of the Radio Regulations may not be appropriate to protect the services operating in this band] [and the limit in No. 2548A of the Radio Regulations appears appropriate to protect the services operating in this band pending the completion of additional CCIR studies],

considering further

f) that this present Conference has made frequency allocations for the mobile-satellite service (space-to-Earth) shared with the fixed and mobile services,

g) that the limits in Nos. 2557 and 2562 of the Radio Regulations are based on CCIR Recommendation 358, for sharing between the fixed-satellite and fixed services,

[*h-1)* that CCIR Recommendation 358 was primarily developed to protect stations in the fixed service operating in the 4 GHz band or higher frequency bands,]

[*h-2)* that no CCIR Recommendations are available for sharing between the mobile-satellite and fixed services,]

i) that the 2483.5 - 2500 MHz band is also allocated to the fixed, mobile, radiolocation and radiodetermination satellite service,

[*j-1)* that, therefore, the limits in No. 2562 of the Radio Regulations may not be appropriate to protect stations in the fixed, mobile and radiolocation services operating in the [2483.5 - 2500] MHz band,]

[*j-2)* that the applicability of the limits in Nos. 2557 and 2562 of the Radio Regulations to protect stations in the fixed and mobile services from the mobile-satellite service operating in the 2483.5 - 2500 MHz requires further examination,]

[*k)* that the development of the mobile-satellite service under the constraints imposed on this service in order to share the band with existing services require the determination of optimum power flux-density levels as soon as possible,]

[noting]

[that provisional sharing criteria have been adopted in the bands allocated by this Conference to the mobile satellite service,]

[that both geostationary and non-geostationary satellites may be operated in the mobile satellite service in some of these bands,]

recommends that, as a matter of urgency, the CCIR

1. study the appropriate power limits on the fixed and mobile services adequate to protect receiving space stations in the mobile-satellite service operating in the [1610 - 1626.5 MHz], [1670 - 1690 MHz] and [2638.5 - 2655 MHz] bands, without placing undue restrictions on the design and planning of systems in the fixed and mobile services;

2. study the appropriate power limits on mobile earth stations in the mobile satellite service in the [1610 - 1626.5 MHz] band to protect the aeronautical radionavigation service, including the use of space techniques under No. 732, radio astronomy under No. 734, the fixed service under No. 730 and the radiodetermination satellite service without placing undue restrictions on the design and planning of mobile-satellite systems,

[3. study the appropriate power limits on mobile earth stations in the mobile-satellite service in the [1670 - 1690 MHz] and [2638.5 - 2655 MHz] bands to [protect] [enable sharing with] the fixed, mobile, meteorological aids, meteorological satellite and broadcasting-satellite services without placing undue restrictions on the design and planning of mobile-satellite systems,]

4. study the appropriate power flux-density limits on space stations in the mobile-satellite service in the [2483.5 - 2500 MHz] band to [protect] [enable sharing with] the fixed, mobile and radiolocation services without placing undue restrictions on the design and planning of mobile-satellite systems,

5. issue Recommendations on the subject within a few years,

recommends that administrations

collaborate with the CCIR, as a matter of urgency, by sending it contributions relating to the aforementioned studies.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/118-E
26 February 1992
Original: English

COMMITTEE 4

Report from the Chairman of the ad hoc Group 4C4 to Committee 4

The ad hoc Group held three meetings and had participation from the Administrations of:

ALG, AUS, B, CAN, D, I, IND, INS, IRN, J, MEX, SEN, SYR, URS, USA.

The Group agreed to accept as terms of reference "to endeavour to draft a compromise based on submitted proposals for BSS (Sound) and complementary terrestrial broadcasting, taking into account:

a) the deliberations in Committee 4;

b) the preferred bands 1.5 GHz, 2.3 GHz and 2.5 GHz;

c) the information contained in Document DT/100 regarding technical feasibility, service objectives, sharing, bandwidth requirements, timing and orbit options."

In the deliberations mention was made of the indicative show of cards in Committee 4 with regard to countries preferences for solutions.

Some participants proposed to have an allocation only in the bands below 2 GHz, others preferred an allocation in the bands above 2 GHz. There were also proposals for allocations in all three bands 1.5 GHz, 2.3 GHz and 2.5 GHz.

Although there were objections to allocations in more than one band, after in-depth discussion, in order to achieve a compromise, the Group agreed on an approach, based on the following general principles:

a) protection of the existing services;

b) allocations in the 1.5 GHz and 2.3/2.5 GHz band ("split band approach");

c) phased implementation, band segmentation or a combination thereof;

d) digital techniques shall be used;

e) possibilities for the BSS (Sound) and complementary terrestrial sound broadcasting in 1.5 and 2.3/2.5 GHz bands;

f) protection of services in neighbouring countries by avoiding spillover (power flux-density limits) and/or by appropriate coordination procedures, which should be developed by this Conference;

g) different types of reception and systems are envisaged (cars, portables and fixed);

h) potential use of satellites in both geostationary and non-geostationary orbits.

Based on the above principles the following compromise was agreed:

1. The frequency bands [1 450 - 1 490 MHz and 40 MHz in the bands 2.3/2.5 GHz] be allocated to the broadcasting-satellite service (sound) and complementary terrestrial BC on co-primary basis from the date [2005].

2. The allocations should allow the implementation of digital sound broadcasting by satellite and/or complementary terrestrial means.

3. A competent conference should be convened not later than [B] in order to review sharing criteria with existing services, to assess the spectrum allocations above, to review the time schedule and bands segmentations, the requirements for planning and an appropriate coordination procedure.
4. The administrations may use these bands for the development of BSS and/or terrestrial BC before the date [2005] under the agreement with the countries affected using a procedure based on Resolution 33 in order to protect the existing services.
5. The calculation methods and the interference criteria to be employed in evaluating the interference should be based upon relevant CCIR Recommendations agreed by the administrations affected either as a result of Resolution 703 or otherwise.

Note 1 - The delegate from Japan proposed to add at the end of paragraph 1 the following text "with the agreement of the countries concerned in order to protect existing services".

Note 2 - With respect to the date of a competent conference it was proposed to have this conference in two phases, the first phase to be around 1998.

Note 3 - The delegate from Algeria proposed that only geostationary satellites can be used before the decisions of the appropriate conference.

Note 4 - The delegates of Canada and Germany expressed their views in the usefulness of the phased-in approach for introducing the broadcasting-satellite service and complementary terrestrial broadcasting in order to protect the existing services for as long as possible.

The delegate of Germany mentioned that his Administration is not in a position to accept an allocation of 40 MHz at 1.5 GHz as primary by 2005.

J.F. BROERE
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 **WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM**

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/119-E
27 February 1992
Original: English

COMMITTEE 4

Note from the Chairman of Committee 4

The discussions in Committee 4 concerning the texts related to MSS and FPLMTS are summarized in the attached texts.

I. HUTCHINGS
Chairman

Annexes: 4

ANNEX 1

Allocations below 1 GHz (LEO MSS)

MHz
137 - 137.175

Allocation to Services		
Region 1	Region 2	Region 3
137 - ~~138~~137.025	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) [MOBILE-SATELLITE (space-to-Earth)] 599B Fixed Mobile except aeronautical mobile (R) 596 597 598 599 [599A]	
~~137~~137.025 - ~~138~~137.175	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) 599B Fixed Mobile except aeronautical mobile (R) 596 597 598 599 [599A]	

ADD **599A** Coordination of mobile satellite systems will be in accordance with the provisions [of Resolution ....]. The power flux-density of the mobile-satellite service will not exceed -125 dB(W/m^2/4 kHz) at the surface of the Earth unless otherwise agreed by the affected administrations. The above power flux-density limit shall apply until such time as a competent world administrative radio conference revises it. In making assignments to the space stations in the mobile-satellite service in the 137 - 138 MHz band, administrations shall take all practicable steps to protect the radio astronomy service in the 150.05 - 153 MHz band from harmful interference from unwanted emissions. (RR 2904 applies.)

ADD **599B** The use of the bands 137 - 138 MHz, 400.15 - 401 MHz and 148 - 149.9 MHz by the mobile-satellite service and the band 149.9 - 150.05 MHz by the land mobile-satellite service is limited to LEO systems.

MHz
137.175 - 138

Allocation to Services		
Region 1	Region 2	Region 3
~~137~~137.175 - ~~138~~137.825	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) [MOBILE-SATELLITE (space-to-Earth)] 599B Fixed Mobile except aeronautical mobile (R) 596 597 598 599 [599A]	
~~137~~137.825 - 138	SPACE OPERATION (space-to-Earth) METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Mobile-Satellite (space-to-Earth) 599B Fixed Mobile except aeronautical mobile (R) 596 597 598 599 [599A]	

MHz
400.15 - 401

Allocation to Services		
Region 1	Region 2	Region 3
400.15 - 401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) SPACE RESEARCH (space-to-Earth) Space Operation (space-to-Earth) MOBILE-SATELLITE (space-to-Earth) 599B 647 [647X]	

ADD **647X** Coordination of mobile satellite systems will be in accordance with the provisions [of Resolution ....]. The power flux-density of the mobile-satellite service will not exceed -125 dB(W/m²/4 kHz) at the surface of the Earth unless otherwise agreed by the affected administrations. The above power flux-density limit shall apply until such time as a competent world administrative radio conference revises it. In making assignments to the space stations in the mobile-satellite service in the 400.15 - 401 MHz band, administrations shall take all practicable steps to protect the radio astronomy service in the 406.1 - 410 MHz band from harmful interference from unwanted emissions. (RR 2904 applies.)

MHz
148 - 150.05

Allocation to Services		
Region 1	Region 2	Region 3
148 - 149.9 FIXED MOBILE except aeronautical mobile (R) [MOBILE-SATELLITE (Earth-to-space)] 599B 608 608X	**148 - 149.9** FIXED MOBILE [MOBILE-SATELLITE (Earth-to-space)] 599B 608 608X	
149.9 - 150.05	RADIONAVIGATION-SATELLITE LAND MOBILE-SATELLITE (Earth-to-space) 599B 608Y 609 609A 609B	

ADD **608X** The mobile-satellite service shall not constrain the development and use of fixed, mobile and space operations services in the band 148 - 149.9 MHz. MSS mobile earth station transmitters will not cause a power flux-density in excess of -150 dB(W/m²/4 kHz) outside of national boundaries.

ADD **608Y** The land mobile-satellite service shall not constrain the development and use of the band 149.9 - 150.05 MHz by the radionavigation-satellite service. Land mobile earth station transmitters will not cause a power flux-density in excess of -150 dB(W/m²/4 kHz) outside of national boundaries.

[**ADD** **609B** The mobile-satellite service shall be secondary in this allocation until 1 January 1997.]

ANNEX 2

MSS allocations in the bands between 1 525 MHz and 1 660.5 MHz

BANDS BELOW 1 525 MHz: NOC

MHz
1 525 - 1 530

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) [MARITIME MOBILE-SATELLITE (space-to-Earth) Land Mobile-Satellite (space-to-Earth) 726B] FIXED Earth Exploration-Satellite Mobile except aeronautical mobile 724 722 725 726A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) [MARITIME MOBILE-SATELLITE (space-to-Earth) Land Mobile-Satellite (space-to-Earth) 726B MOBILE-SATELLITE (space-to-Earth)] Earth Exploration-Satellite Fixed Mobile 723 722 723A 726A	**1 525 - 1 530** SPACE OPERATION (space-to-Earth) [MARITIME MOBILE-SATELLITE (space-to-Earth) Land Mobile-Satellite (space-to-Earth) 726B MOBILE-SATELLITE (space-to-Earth)] FIXED Earth Exploration-Satellite Mobile 723 724 722 726A

MOD **726A** **Mob-87** The bands ~~1 530~~1 525 - 1 544 MHz, 1 545 - 1 559 MHz, 1 626.5 - 1 645.5 MHz and 1 646.5 - 1 660.5 MHz shall not be used for feeder links of any service. In exceptional circumstances, however, an earth station at a specified fixed point in any of the mobile-satellite services may be authorized by an administration to communicate via space stations using these bands.

MOD **726B** **Mob-87** The use of the bands 1 525 - 1 530 MHz, 1 533 - 1 544 MHz, 1 626.5 - 1 631.5 MHz and 1 634.5 - 1 645.5 MHz by the land mobile-satellite service is limited to non-speech low bit-rate data transmissions.

MHz
1 530 - 1 533

Allocation to Services		
Region 1	Region 2	Region 3
1 530 - 1 533	**1 530 - 1 533**	
SPACE OPERATION (space-to-Earth)	SPACE OPERATION (space-to-Earth)	
MARITIME MOBILE-SATELLITE (space-to-Earth)	MARITIME MOBILE-SATELLITE (space-to-Earth)	
LAND MOBILE-SATELLITE (space-to-Earth)	LAND MOBILE-SATELLITE (space-to-Earth)	
Earth Exploration-Satellite	Earth Exploration-Satellite	
Fixed	Fixed	
Mobile except aeronautical mobile	Mobile 723	
722 726A	722 726A [726C]	

MOD

SUP **726**

ADD **726C** Alternative allocation: in Australia, Brazil, Canada, Mexico and the United States, the band 1 530 - 1 535 MHz is allocated to the following services: to the mobile-satellite (space-to-Earth) and to space operation services (space-to-Earth) on a primary basis, and to Earth exploration-satellite, fixed and mobile services on a secondary basis.

MHz
1 533 - 1 559

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile except aeronautical mobile Land Mobile-Satellite (space-to-Earth) 726B 722 726A	**1 533 - 1 535** SPACE OPERATION (space-to-Earth) MARITIME MOBILE-SATELLITE (space-to-Earth) Earth Exploration-Satellite Fixed Mobile 723 Land Mobile Satellite (space-to-Earth) 726B 722 726A [726C]	
MOD	**1 535 - 1 544**	MARITIME MOBILE-SATELLITE (space-to-Earth) Land Mobile-Satellite (space-to-Earth) 726B 722 726A 727 [[726D]	
NOC	**1 544 - 1 545**	MOBILE-SATELLITE (space-to-Earth) 722 727 727A	
MOD	**1 545 - 1 555**	AERONAUTICAL MOBILE-SATELLITE (R) (space-to-Earth) 722 726A 727 729 729A 730 [726E]	
MOD	**1 555 - 1 559**	LAND MOBILE-SATELLITE (space-to-Earth) 722 726A 727 730 730A [726D]	

[ADD 726D Alternative allocation: in Australia, Brazil, Canada, Mexico and the United States, the bands 1 535 - 1 544 MHz and 1 555 - 1 559 MHz is allocated to the mobile-satellite service (space-to-Earth).]

[ADD 726E Alternative allocation: in Australia, Canada, Mexico and the United States, the band 1 545 - 1 555 MHz is allocated to the mobile-satellite service (space-to-Earth).]

BANDS 1 559 - 1 610 MHz: NOC

MHz
1 610 - 1 626.5

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	1 610 - ~~1 626.5~~1 610.6 AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE 731X (Earth-to-space) 722 727 730 731 ~~731A 731B~~ ~~731D~~ 732 733 733A 733B ~~733E~~ 733F 734	1 610 - ~~1 626.5~~1 610.6 AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E MOBILE-SATELLITE 731X (Earth-to-space) 722 ~~731B 731C~~ 732 733 733C 733D 734	1 610 - ~~1 626.5~~1 610.6 AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space) 733A 733E MOBILE-SATELLITE 731X (Earth-to-space) 722 727 730 ~~731B 731C~~ 732 733 733B 734
MOD	~~1 610~~1 610.6 - ~~1 626.5~~1 613.8 AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE 731X (Earth-to-space) RADIO ASTRONOMY 722 727 730 731 ~~731A 731B~~ ~~731D~~ 732 733 733A 733B 733E 733F 734	~~1 610~~1 610.6 - ~~1 626.5~~1 613.8 AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E MOBILE-SATELLITE 731X (Earth-to-space) RADIO ASTRONOMY 722 ~~731B 731C~~ 732 733 733C 733D 734	~~1 610~~1 610.6 - ~~1 626.5~~1 613.8 AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space) 733A 733E MOBILE-SATELLITE 731X (Earth-to-space) RADIO ASTRONOMY 722 727 730 ~~731B 731C~~ 732 733 733B 734

MHz
1 610 - 1 626.5 (continued)

MOD

Allocation to Services		
Region 1	Region 2	Region 3
~~1 610~~1 613.8 - 1 626.5 AERONAUTICAL RADIONAVIGATION MOBILE-SATELLITE 731X (Earth-to-space) Mobile-satellite 731X (space-to-Earth) 722 727 730 731 ~~731A 731B~~ ~~731D~~ 732 733 733A 733B ~~733E~~ 733F 734	~~1 610~~1 613.8 - 1 626.5 AERONAUTICAL RADIONAVIGATION RADIODETERMINATION-SATELLITE (Earth-to-space) 733A 733E MOBILE-SATELLITE 731X (Earth-to-space) Mobile-satellite (space-to-Earth) 722 ~~731B 731C~~ 732 733 733C 733D 734	~~1 610~~1 613.8 - 1 626.5 AERONAUTICAL RADIONAVIGATION Radiodetermination-Satellite (Earth-to-space) 733A 733E MOBILE-SATELLITE 731X (Earth-to-space) Mobile-satellite (space-to-Earth) 722 727 730 ~~731B 731C~~ 732 733 733B 734

SUP **731A**

SUP **731B**

SUP **731C**

SUP **731D**

ADD **731X** Stations of the mobile-satellite service shall not cause harmful interference to, or claim protection from stations in the radionavigation service and stations in the fixed service operating in the countries listed in No. 730.

MOD **733A** **Mob-87** In respect of the radiodetermination-satellite and mobile-satellite service the provisions of No. 953 do not apply in the frequency band 1 610 - 1 626.5 MHz.

MOD **734** ~~The band 1 610.6 - 1 613.8 MHz is also allocated to the radio astronomy service on a secondary basis for spectral line observations.~~ In making assignments to stations of other services to which the band 1 610.6 - 1 613.8 MHz is allocated, administrations are urged to take all practicable steps to protect the radio astronomy service from harmful interference. Emissions from space or air-borne stations can be particularly serious sources of interference to the radio astronomy service (see Nos. 343 and 344 and Article 36).

MHz
1 626.5 - 1 660

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**1 626.5 - 1 631.5**	MARITIME MOBILE-SATELLITE (Earth-to-space) Land Mobile-Satellite (Earth-to-space) 726B 722 726A 727 730 [728A]	
MOD	**1 631.5 - 1 634.5**	MARITIME MOBILE-SATELLITE (Earth-to-space) LAND MOBILE-SATELLITE (Earth-to-space) 722 726A 727 730 734A [728A]	
MOD	**1 634.5 - 1 645.5**	MARITIME MOBILE-SATELLITE (Earth-to-space) Land Mobile-Satellite (Earth-to-space) 726B 722 726A 727 730 [728A]	
NOC	**1 645.5 - 1 646.5**	MOBILE-SATELLITE (Earth-to-space) 722 734B	
MOD	**1 646.5 - 1 656.5**	AERONAUTICAL MOBILE-SATELLITE (R) (Earth-to-space) 722 726A 727 729A 730 735 [728B]	
MOD	**1 656.5 - 1 660**	LAND MOBILE-SATELLITE (Earth-to-space) 722 726A 727 730 730A 734A [728A]	

ADD **728A** Alternative allocation: in Australia, Brazil, Canada, Mexico and the United States, the bands 1 626.5 - 1 645.5 MHz and 1 656.5 - 1 660 MHz are allocated to the mobile-satellite (Earth-to-space) service.

ADD **728B** Alternative allocation: in Australia, Canada, Mexico and the United States, the band 1 646.5 - 1 656.5 MHz is allocated to the mobile-satellite (Earth-to-space) service.

MHz
1 660 - 1 660.5

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**1 660 - 1 660.5**	RADIO ASTRONOMY LAND MOBILE-SATELLITE (Earth-to-space) 722 726A 730A 736 [728C]	

ADD **728C** Alternative allocation: in Australia, Brazil, Canada, Mexico and the United States, the band 1 660 - 1 660.5 MHz is allocated to the radio astronomy and to the mobile-satellite (Earth-to-space) services.

ANNEX 3

Allocations between 1 660.5 and 2 690 MHz

1 660.5 - 1 670 MHz: NOC

MHz
1 670 - 1 700

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**1 670 - 1 690**	METEOROLOGICAL AIDS FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 722 740A	
	1 690 - 1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) Fixed Mobile except aeronautical mobile 671 722 741	**1 690 - 1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (space-to-Earth) 671 722 740 742	

ADD **740A** The bands 1 670 - 1 675 MHz and 1 800 - 1 850 MHz are intended for use, on a worldwide basis, by administrations wishing to implement aeronautical public correspondence. The band 1 670 - 1 675 MHz is limited to transmissions from aeronautical stations and the band 1 800 - 1 850 MHz is limited to transmissions from aircraft stations. Administrations operating systems for public correspondence with aircraft in these frequency bands shall ensure that the frequencies actually assigned to their stations do not cause harmful interference and shall coordinate such use of frequencies accordingly.

MHz
1 700 - 2 025

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile ~~Mobile except aeronautical mobile~~ 671 722~~-743A~~	**1 700 - 1 710** FIXED METEOROLOGICAL-SATELLITE (space-to-Earth) MOBILE except aeronautical mobile 671 722 743	
MOD	**1 710 - ~~2 290~~2 010** FIXED MOBILE ~~Mobile~~ 722 740A~~-743A~~ 744 746 746A~~-747 748-750~~	**1 710 - ~~2 290~~2 010** FIXED MOBILE 722 740A 744 745 746 746A~~-747 748 749-750~~	
MOD	**2 010 - 2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 746B 722 744 746A	**2 010 - 2 025** FIXED MOBILE MOBILE-SATELLITE (Earth-to-space) 746B 722 744 745 746A	

ADD **746A** The frequency bands [1 850 - 2 025 MHz and 2 110 - 2 200 MHz] are intended for use, on a worldwide basis, by administrations wishing to implement the future public land mobile telecommunication systems (FPLMTS). Such use does not preclude the use of these bands by other services to which these bands are allocated. The use of these bands by FPLMTS shall have priority over other mobile applications where administrations implement FPLMTS.

The frequency bands shall be made available for FPLMTS in accordance with Resolution [COM4/FPLMTS].

ADD **746B** The allocation of the band 2 010 - 2 025 MHz to the mobile-satellite service (Earth-to-space) and of the band 2 185 - 2 200 MHz to the mobile-satellite service (space-to-Earth) shall be effective on 1 January 2010. The coordination of MSS systems in these bands will be in accordance with Resolution COM5/8.

MHz
1 710 - 2 200

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	~~1 710~~2 025 - ~~2 290~~2 110 FIXED SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) MOBILE 747A ~~Mobile~~ ~~722 743A 744 746 747 748 750~~ 750A	~~1 710~~2 025 - ~~2 290~~2 110 FIXED MOBILE 747A SPACE RESEARCH (Earth-to-space, space-to-space) SPACE OPERATION (Earth-to-space, space-to-space) EARTH EXPLORATION-SATELLITE (Earth-to-space, space-to-space) ~~722 744 745 746 747 748 749 750~~ 750A	
MOD	~~1 710~~2 110 - ~~2 290~~2 120 FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) ~~Mobile~~ ~~722 743A 744 746 747 748 750~~	~~1 710~~2 110 - ~~2 290~~2 120 FIXED MOBILE SPACE RESEARCH (deep space) (Earth-to-space) ~~722 744 745 746 747 748 749 750~~	
MOD	2 120 - 2 185 FIXED MOBILE ~~Mobile~~ ~~722 743A 744 746 747 748 750~~	2 120 - 2 185 FIXED MOBILE ~~722 744 745 746 747 748 749 750~~	
MOD	2 185 - 2 200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 746B 746A	2 185 - 2 200 FIXED MOBILE MOBILE-SATELLITE (space-to-Earth) 746B 746A	

Band 2 200 - 2 450 MHz: See Document 288

Band 2 450 - 2 483.5 MHz: NOC

MHz
2 483.5 - 2 500

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**2 483.5 - 2 500** FIXED MOBILE Radiolocation MOBILE-SATELLITE 753F (space-to-Earth) 733F 752 753A 753B 753C 753E	**2 483.5 - 2 500** FIXED MOBILE RADIODETERMINATION-SATELLITE (space-to-Earth) 753A RADIOLOCATION MOBILE-SATELLITE 753F (space-to-Earth) 752 753D	**2 483.5 - 2 500** FIXED MOBILE RADIOLOCATION MOBILE-SATELLITE 753F (space-to-Earth) Radiodetermination-Satellite (space-to-Earth) 753A 752 753C

ADD **753F** The use of the frequency band 2 483.5 - 2 500 MHz by the mobile-satellite service is subject to the application of the procedure for coordination and notification set forth in Resolution COM5/8.

MHz
2 500 - 2 655

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	**2 500 - ~~2 655~~2 535** FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOBILE-SATELLITE 760A (space-to-Earth) ~~720~~–753 756 758 759	**2 500 - ~~2 655~~2 535** FIXED 762 764 FIXED SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOBILE-SATELLITE 760A (space-to-Earth) ~~720~~–755	**2 500 - 2 535** FIXED 762 764 FIXED SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 MOBILE-SATELLITE 760A (space-to-Earth) 754 754A
MOD	**~~2 500~~2 535 - 2 655** FIXED 762 763 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 720 753 756 758 759	**~~2 500~~2 535 - 2 655** FIXED 762 764 FIXED SATELLITE (space-to-Earth) 761 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 720 755	**2 535 - 2 655** FIXED 762 764 MOBILE except aeronautical mobile BROADCASTING-SATELLITE 757 760 720

ADD **760A** The allocation of the frequency bands 2 500 - 2 520 MHz and 2 520 - 2 535 MHz to the mobile-satellite service shall be effective on 1 January 2005 and on 1 January 2015, respectively. When introducing MSS systems in these bands the administration shall take all necessary steps to protect the satellite systems operating in these bands prior to 3 March 1992. The power flux-density of the mobile-satellite service will not exceed -152 dB(W/m²/4 kHz) at the surface of the Earth. The coordination of mobile satellite systems in these bands will be in accordance with Resolution COM5/8.

MHz
2 655 - 2 690

MOD

Allocation to Services		
Region 1	Region 2	Region 3
2 655 - 2 690	**2 655 - 2 690**	**2 655 - 2 690**
FIXED 762 763 764	FIXED 762 764	FIXED 762 764
MOBILE except aeronautical mobile	FIXED-SATELLITE (Earth-to-space) (space-to-Earth) 761	FIXED-SATELLITE (Earth-to-space) 761
BROADCASTING-SATELLITE 757 760	MOBILE except aeronautical mobile	MOBILE except aeronautical mobile
Earth Exploration-Satellite (passive)	BROADCASTING-SATELLITE 757 760	BROADCASTING-SATELLITE 757 760
Radio Astronomy	Earth Exploration-Satellite (passive)	Earth Exploration-Satellite (passive)
Space Research (passive)	Radio Astronomy	Radio Astronomy
MOBILE-SATELLITE (Earth-to-space) 764A	Space Research (passive)	Space Research (passive)
	MOBILE-SATELLITE (Earth-to-space) 764A	MOBILE-SATELLITE (Earth-to-space) 764A

ADD **764A** The allocation of the frequency bands 2 655 - 2 675 MHz and 2 675 - 2 690 MHz to the mobile-satellite service shall be effective on 1 January 2005 and on 1 January 2015, respectively. When introducing MSS systems in these bands administrations shall take all necessary steps to protect the satellite systems operating in these bands prior to 3 March 1992. The power flux-density of the MSS will not exceed -152 dB(W/m^2/4 kHz) at the surface of the Earth. The coordination of MSS systems in the bands will be in accordance with Resolution COM5/8.

ANNEX 4

RESOLUTION COM4/[FPLMTS]

Identification of Frequency Bands Foreseen For Use by Future Public Land Mobile Telecommunication Systems (FPLMTS)

The World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (Malaga-Torremolinos, 1992),

considering

a) that the CCIR has recommended that the 1 - 3 GHz range is the most suitable band for FPLMTS;

b) that the CCIR has recommended approximately 60 MHz for use by the personal station and approximately 170 MHz for use by the mobile station;

c) that the CCIR has recognized that space techniques are an integral part of FPLMTS;

d) that this Conference has identified, in the Radio Regulations, frequency bands to accommodate this future service;

considering further

e) that the CCIR has not completed its studies regarding duplexing methods, modulation techniques, channelling arrangements, signalling or communication protocols;

f) that no worldwide numbering plan currently exists that would facilitate worldwide roaming;

noting

a) that the initial implementation of the terrestrial components FPLMTS in the band 1 910 - 1 990 MHz is expected to commence by the year 2000;

b) that the implementation of the satellite component FPLMTS in the bands 2 010 - 2 025 MHz and 2 185 - 2 200 MHz is expected to be required by the year 2010;

c) that the bands 1 885 - 1 910 MHz, 1 990 - 2 025 MHz and 2 110 - 2 200 MHz are expected to be required by the year 2010;

d) that the band 1 850 - 1 885 MHz is expected to be required by the year 2020;

invites administrations

to give due consideration to the accommodation of other services currently operating in these bands when implementing FPLMTS;

invites the CCIR

to complete its studies of duplexing methods, modulation techniques, channelling arrangements, signalling and communication protocols and provide guidance for design and implementation of FPLMTS;

invites the CCITT

to develop a common worldwide numbering plan that will facilitate worldwide roaming;

resolves

that administrations who implement services from the future public land mobile telecommunication systems should make the relevant frequency bands available as necessary for system development and should use those frequency bands with the relevant technical characteristics as identified by the studies of the CCIR.

INTERNATIONAL TELECOMMUNICATION UNION

WARC-92 WARC FOR DEALING WITH FREQUENCY ALLOCATIONS IN CERTAIN PARTS OF THE SPECTRUM

MALAGA-TORREMOLINOS, FEBRUARY/MARCH 1992

Document DT/120-E
28 February 1992
Original: English

COMMITTEE 4

REPORT FROM THE CHAIRWOMAN OF AD HOC GROUP 5 TO COMMITTEE 4

1. Terms of reference

1.1 The ad hoc Group was to study frequency sharing between the proposed worldwide MSS allocations (2 x 20 MHz and 2 x 15 MHz) in Document 277 (Section 4B) and the existing fixed service and BSS in use and planned to be taken into use under RR 757 (INSAT and ARABSAT systems). The ad hoc Group was to propose new allocations for the MSS Sub-bands in such a way that the minimum amount of constraints is put on the services mentioned above.

1.2 The Group was also to study the proposed new MSS frequencies at around 2 GHz in Sub-Section 4C of Document 277 with a view to minimizing the impact on the use of the fixed service.

2. 2.5 GHz frequency range

2.1 BSS and MSS sharing

The Group agreed that there is no possibility of using the same frequency in the same geographical area for MSS and existing or planned television BSS systems. From this point of view, band segmentation is necessary.

As a compromise solution to this problem ARABSAT proposed to restrict the operation of its BSS networks after 2005 in such a way that two 20 MHz segments could be allocated to the MSS after 2005 at 2 500 - 2 520 MHz (space-to-Earth) and 2 670 - 2 690 MHz (Earth-to-space). The Administration of India also indicated its willingness to accept such a compromise solution.

This solution would avoid any sharing problems between MSS and BSS allocations at 2.5 - 2.6 GHz.

2.2 FS and MSS sharing

CCIR Recommendation 283-5 gives the channelling arrangements for the use of the fixed service. Regardless of the channelling arrangement, adverse impact on the fixed service is minimized if the channel separation of the MSS Earth-to-space and space-to-Earth directions would correspond to the frequency separation between the paired go and return channels of the fixed service. In the CCIR channelling plan of Recommendation 283-5, the separation is 119 MHz. Other channelling arrangements are also in use on a national basis.

Sharing between the MSS satellite receiver and the fixed service transmitter is facilitated by the relevant e.i.r.p. and antenna pointing limitations in the Radio Regulations (Article 27).

Sharing between the MSS satellite transmitter and the fixed service station receiver can be covered by the relevant power flux-density limitations in Radio Regulations (Article 28).

The remaining potential interference problems between the FS and the MSS would therefore be limited to interference situations between Fixed Service stations and MSS mobile earth stations. These problems would be of a local nature, except in the case of Aeronautical MSS and would have to be resolved in the framework of existing RR procedures (Articles 11 and 13 for geostationary-satellites and WARC-92 Resolution COM5/5 for non-geostationary-satellites).

If the MSS allocations were put in the proposed 2 500 - 2 520/2 670 - 2 690 MHz bands, this would constrain the FS operation to about 20% of its existing channelling plan. This impact could be minimized by adopting the same 119 MHz frequency translation between the uplink and downlink MSS allocations. This would lead to constrain the FS operation to about 70% of its existing channelling plan.

However, such a solution would not be acceptable by the Indian and ARABSAT signatory Administrations because it would very seriously limit the development of the ARABSAT and INSAT BSS networks.

Another possible approach applicable in the case of the MMSS and LMSS would be to resolve the local coordination constraints by local solutions, which would be possible when using MSS systems integrating an RDSS function: when allocating a frequency to a MSS mobile earth station located within the coordination area of an FS station, the communications control centre of the MSS system could select frequencies which do not overlap with those used by the FS station.

2.3 Sharing between MSS and MS

The Group agreed that there was little possibility of sharing the same frequencies within the same geographical areas between the mobile-satellite service and the mobile service, which presently has primary status in these bands.

2.4 Conclusion on the 2.5 GHz band

The Group arrived at the conclusion that, in order to protect existing and planned BSS networks (ARABSAT and INSAT), the only possible worldwide allocations for the MSS at 2.5 GHz would be at 2 500 - 2 520 MHz (space-to-Earth) and 2 670 - 2 690 MHz (Earth-to-space).

Sharing between MSS and FS in these bands would be facilitated by the adoption of appropriate power flux-density and e.i.r.p./pointing limits in Radio Regulations Articles 27 and 28. The operation of the MSS in these bands would however, have a serious impact on the operation of the fixed service in this band. This impact could be minimized by adopting new channelling arrangements for the FS in these bands.

In the case of the maritime and land MSS systems integrating an RDSS function, this impact could also be reduced by taking account of coordination constraints in the frequency allocation process of the MSS system.

The Group also concluded that there was little possibility of sharing the same frequencies within the same geographical areas between the mobile-satellite service and the mobile service, which presently has primary status in these bands.

The Group also noted the plans of the Administration of Japan to operate, within its territory, a MSS system from 1995 onwards in the bands 2 500 - 2 535 MHz/2 655 - 2 690 MHz, under the provisions of RR 754 and 766, and that the proposed allocation to MSS would be consistent with this utilization.

3. MSS allocations around 2 GHz

Taking into account the existing fixed service channelling plans the proposed MSS allocations could be placed in the gaps within the fixed service channels plans.

However, two CCIR Recommendations deal with the channelling plans in this band (283 and 382) and some administrations use different channelling plans. Therefore, any new MSS allocations based on one of the presently existing plans would not be compatible with another plan.

Therefore the Group suggested that a new channelling plan for the FS should be developed by the CCIR, taking into account the new frequency allocations decided by this Conference.

M. HUHTALA
Chairwoman