FINAL ACTS

OF THE

EXTRAORDINARY ADMINISTRATIVE RADIO CONFERENCE TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES

GENEVA, 1963

Published by the
International Telecommunication Union
GENEVA

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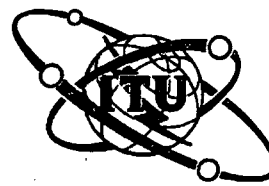

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ABBREVIATIONS

The following abbreviations are used in the Annexes, to indicate the nature of amendments made in the partial revision of the Radio Regulations.

Symbol	Meaning
MOD	Modification
SUP	Suppression
ADD	Addition
NOC	No change

Note: If a modification affects only the drafting of a number, without changing the substance, the following symbol is used:

(MOD)

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FINAL ACTS

of the Extraordinary Administrative Radio Conference to Allocate Frequency Bands for Space Radiocommunication Purposes Geneva, 1963

RECOMMENDATIONS

PARTIAL REVISION OF THE RADIO REGULATIONS, GENEVA, 1959

Recommendation No. 36 of the Ordinary Administrative Radio Conference, Geneva, 1959, recommended that the Administrative Council of the Union should consider the convening, in the latter part of 1963, of an Extraordinary Administrative Radio Conference to allocate frequency bands for Space Radiocommunication Purposes.

The Administrative Council considered this question during its annual session, in 1962, and, at its session in 1963, adopted Resolution No. 524, which, with the prior concurrence of a majority of the Members of the Union, determined the Agenda of the Conference and decided that it should be convened in Geneva on 7th October 1963.

The Extraordinary Administrative Radio Conference accordingly convened on the appointed date, and, in accordance with the provisions of Nos. 60 and 61 of the Convention, revised the relevant portions of the Radio Regulations, Geneva, 1959. Particulars of these revisions are given in the attached Annexes.

The revised provisions of the Radio Regulations, Geneva, 1959, shall form an integral part of the Radio Regulations, which are annexed to the International Telecommunication Convention. They shall come into force on the first of January, 1965, upon which date the provisions of the Radio Regulations, Geneva, 1959, which are cancelled or modified by these revisions, shall be abrogated.

The delegates signing this revision of the Radio Regulations, Geneva, 1959, hereby declare that should an administration make reservations concerning the application of one or more of the revised provisions of the Radio Regulations, Geneva, 1959, no other administration shall be obliged to observe that provision or those provisions in its relations with that particular administration.

In witness whereof the delegates of the Members and Associate Member of the Union represented at the Extraordinary Administrative Radio Conference, Geneva, 1963, have signed in the names of their respective countries this revision of the Radio Regulations, Geneva, 1959, in a single

copy which will remain in the archives of the International Telecommunication Union and of which a certified copy will be delivered to each Member and Associate Members of the Union.

Members and Associate Members of the Union shall inform the Secretary-General of their approval of the revision of the Radio Regulations, Geneva, 1959, by the Extraordinary Administrative Radio Conference, Geneva, 1963. The Secretary-General will inform Members and Associate Members of the Union promptly regarding receipt of such notifications of approval.

Done at Geneva, 8 November, 1963.

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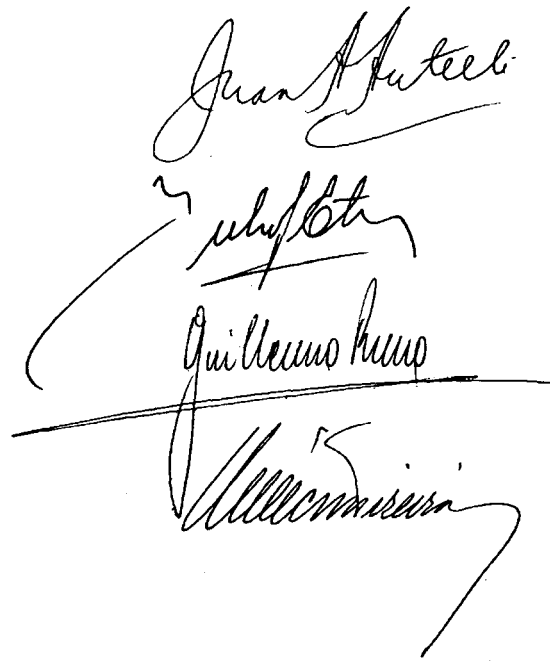

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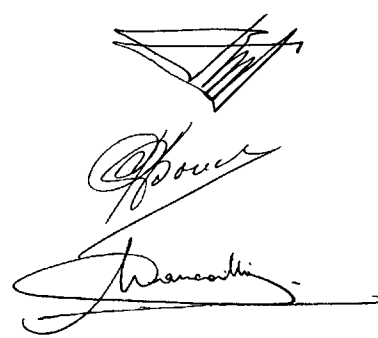

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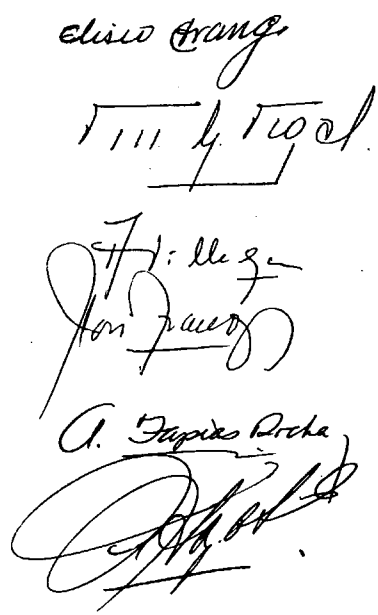

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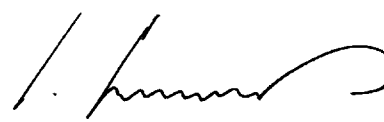

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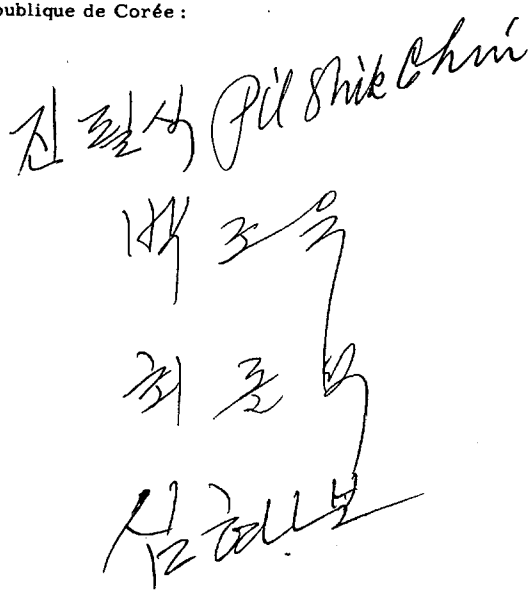

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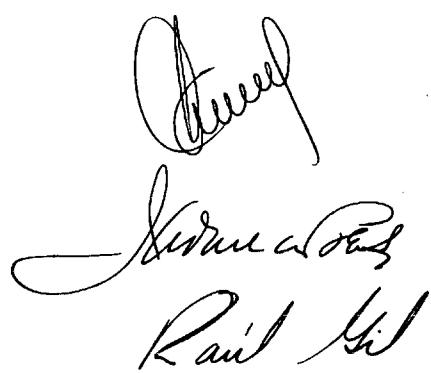

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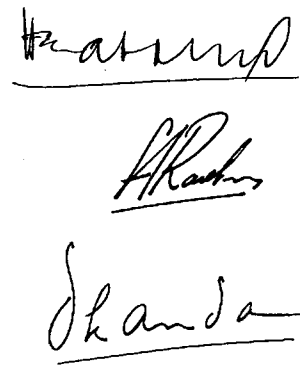

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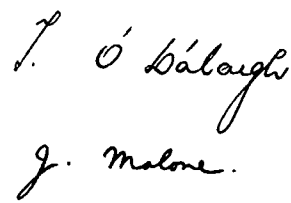

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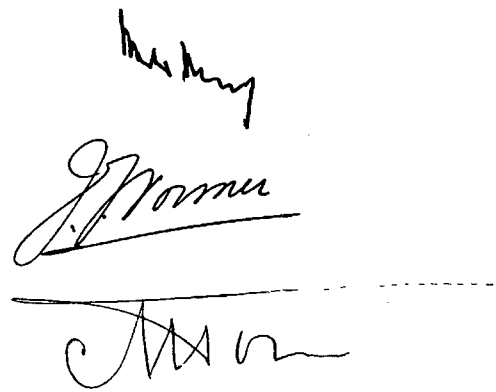

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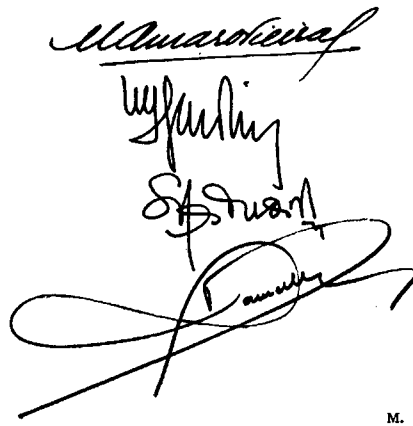
Pour le Portugal :



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A. RAMALHO

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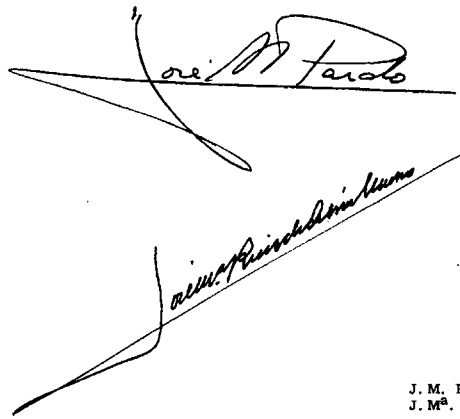

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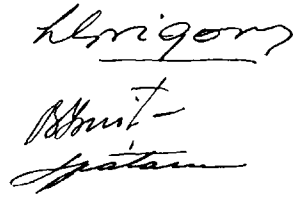

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B. IONITA
A. SPATARU

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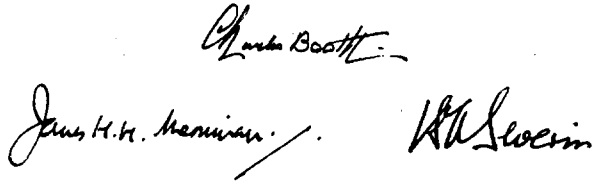

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Pour les Territoires des Etats-Unis d'Amérique :

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J. T. DEVINE

Pour les Territoires d'Outre-Mer dont les relations internationales sont assurées par le Gouvernement du Royaume-Uni de la Grande-Bretagne et de l'Irlande du Nord :

D. C. MASTERS

Pour l'Union des Républiques Socialistes Soviétiques :

A. BADALOV

Pour le Kenya :

V. G. BENNETT

ANNEX 1

Revision of Article 1 of the Radio Regulations

Article 1 of the Radio Regulations shall be amended as follows:

For Regulation Nos. 34 and 35, there shall be substituted the following Regulations :

Section II. Radio Systems, Services and Stations

MOD **34** *Aeronautical Station*

A land station in the aeronautical mobile service. In certain instances an aeronautical station may be placed on board a ship or an earth satellite.

MOD **35** *Aircraft Station*

A mobile station in the aeronautical mobile service on board an aircraft or an air-space vehicle.

Regulation Nos. 70, 71, 72 and 73 shall be repealed.

After Regulation No. 75, there shall be inserted the following Regulation :

ADD **75A** *Radio Astronomy Station*

A station in the radio astronomy service.

After Regulation No. 84, there shall be inserted the following Regulations :

ADD **84AA** *Terrestrial Service*

Any radio service defined in these Regulations, other than a space service or the radio astronomy service.

ADD **84AB** *Terrestrial Station*

A station in a terrestrial service.

ADD **Section IIA. Space Systems, Services and Stations**

ADD **84AC** *Space Service*

A radiocommunication service:

— between earth stations and space stations,

— or between space stations,

— or between earth stations when the signals are re-transmitted by space stations, or transmitted by reflection from objects in space, excluding reflection or scattering by the ionosphere or within the earth's atmosphere.

ADD **84AD** *Earth Station*

A station in the space service located either on the earth's surface, including on board a ship, or on board an aircraft.

ADD **84AE** *Space Station*

A station in the space service located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the earth's atmosphere.

ADD **84AF** *Space System*

Any group of co-operating earth and space stations, providing a given space service and which, in certain cases, may use objects in space for the reflection of the radiocommunication signals.

ADD **84AG** *Communication-Satellite Service*

A space service:

— between earth stations, when using active or passive satellites for the exchange of communications of the fixed or mobile service, or

— between an earth station and stations on active satellites for the exchange of communications of the mobile service, with a view to their re-transmission to or from stations in the mobile service.

ADD **84AH** *Communication-Satellite Earth Station*

An earth station in the communication-satellite service.

ADD **84AI** *Communication-Satellite Space Station*

A space station in the communication-satellite service, on an earth satellite.

ADD **84AJ** *Active Satellite*

An earth satellite carrying a station intended to transmit or re-transmit radiocommunication signals.

ADD **84AK** *Passive Satellite*

An earth satellite intended to transmit radiocommunication signals by reflection.

ADD **84AL** *Satellite System*

Any group of co-operating stations providing a given space service and including one or more active or passive satellites.

ADD **84AM** *Space Research Service*

A space service in which spacecraft or other objects in space are used for scientific or technological research purposes.

ADD **84AN** *Space Research Earth Station*

An earth station in the space research service.

ADD **84AO** *Space Research Space Station*

A space station in the space research service.

ADD **84AP** *Broadcasting-Satellite Service*

A space service in which signals transmitted or re-transmitted by space stations, or transmitted by reflection from objects in orbit around the Earth, are intended for direct reception by the general public.

ADD **84AQ** *Radionavigation-Satellite Service*

A service using space stations on earth satellites for the purpose of radionavigation, including, in certain cases, transmission or re-transmission of supplementary information necessary for the operation of the radionavigation system.

ADD **84AR** *Radionavigation-Satellite Earth Station*

An earth station in the radionavigation-satellite service.

ADD **84AS** *Radionavigation-Satellite Space Station*

A space station in the radionavigation-satellite service, on an earth satellite.

ADD **84AT** *Meteorological-Satellite Service*

A space service in which the results of meteorological observations, made by instruments on earth satellites, are transmitted to earth stations by space stations on these satellites.

ADD **84AU** *Meteorological-Satellite Earth Station*

An earth station in the meteorological-satellite service.

ADD **84AV** *Meteorological-Satellite Space Station*

A space station in the meteorological-satellite service, on an earth satellite.

ADD **84AW** *Space Telemetering*

The use of telemetering for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.

ADD **84AX** *Maintenance Space Telemetering*

Space telemetering relating exclusively to the electrical and mechanical condition of a spacecraft and its equipment together with the condition of the environment of the spacecraft.

ADD **84AY** *Space Telecommand*

The use of radiocommunication for the transmission of signals to a space station to initiate, modify or terminate functions of the equipment on a space object, including the space station.

ADD **84AZ** *Space Tracking*

Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object.

ADD **Section IIB. Space, Orbits and Types of Objects in Space**

ADD **84BA** *Deep Space*

Space at distances from the Earth equal to or greater than the distance between the Earth and the Moon.

ADD **84BB** *Orbit*

The path in space described by the centre of mass of a satellite or other object in space.

ADD **84BC** *Angle of Inclination of an Orbit*

The acute angle between the plane containing an orbit and the plane of the earth's equator.

ADD **84BD** *Period of an Object in Space*

The time elapsing between two consecutive passages of an object in space through the same point on its closed orbit.

ADD **84BE** *Altitude of the Apogee*

Altitude above the surface of the Earth of the point on a closed orbit where a satellite is at its maximum distance from the centre of the Earth.

ADD **84BF** *Altitude of the Perigee*

Altitude above the surface of the Earth of the point on a closed orbit where a satellite is at its minimum distance from the centre of the Earth.

ADD **84BG** *Stationary Satellite*

A satellite, the circular orbit of which lies in the plane of the earth's equator and which turns about the polar axis of the Earth in the same direction and with the same period as those of the earth's rotation.

ADD **84BH** *Spacecraft*

Any type of space vehicle, including an earth satellite or a deep-space probe, whether manned or unmanned.

ANNEX 2

Revision of Article 3 of the Radio Regulations

Article 3 of the Radio Regulations shall be amended as follows:

For Regulation No. 114, there shall be substituted the following :

MOD **114** § 2. Any new assignment or any change of frequency or other basic characteristic of an existing assignment (see Appendix 1 or Appendix 1A) shall be made in such a way as to avoid causing harmful interference to services rendered by stations using frequencies assigned in accordance with the Table of Frequency Allocations in this Chapter and the other provisions of these Regulations, the characteristics of which assignments are recorded in the Master International Frequency Register.

After Regulation No. 116, there shall be inserted the following new Regulation :

ADD **116A** § 4A. For the purpose of resolving cases of harmful interference, the radio astronomy service shall be treated as a radiocommunication service. However, protection from services in other bands shall be afforded the radio astronomy service only to the extent that such services are afforded protection from each other.

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ANNEX 3

Revision of Article 5 of the Radio Regulations

Article 5 of the Radio Regulations shall be amended as follows:

In the Table of Frequency Allocations for the band 9 995-10 005 kc/s there shall be substituted the following:

kc/s

Allocation to Services		
Region 1	Region 2	Region 3
9 995—10 005		
STANDARD FREQUENCY		
204 214 215		

NOC **204 214**

MOD **215** The band 10 003-10 005 kc/s is also allocated, on a secondary basis, to the space research service.

In the Table of Frequency Allocations for the bands 15 450-16 460 kc/s there shall be substituted the following :

kc/s

Allocation to Services		
Region 1	Region 2	Region 3
15 450—15 762		
	FIXED	
15 762—15 768		
	FIXED	
	Space Research 215A	
15 768—16 460		
	FIXED	

ADD **215A** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the bands 15 762-15 768 kc/s and 18 030-18 036 kc/s.

In the Table of Frequency Allocations for the bands 18 030-20 010 kc/s there shall be substituted the following :

kc/s

Allocation to Services		
Region 1	Region 2	Region 3
18 030—18 036		
	FIXED	
	Space Research 215A	
18 036—19 990		
	FIXED	
19 990—20 010		
	STANDARD FREQUENCY	
	204 220 221 221A	

NOC **220**

MOD **221** The band 19 990-20 010 kc/s is also allocated, on a secondary basis, to the space research service.

ADD **221A** The frequency 20 007 kc/s may also be used, in emergency, in the search for, and rescue of, astronauts and space vehicles. Emissions must be confined in a band of ± 3 kc/s about this frequency.

In the Table of Frequency Allocations for the bands 29·7-41 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
29·7—30·005	FIXED 228 229 231 232 MOBILE 233	
30·005—30·010	FIXED 228 229 231 MOBILE SPACE RESEARCH SPACE (Satellite identification) 233	
30·010—37·750	FIXED 228 229 230 231 MOBILE 233	
37·75—38·25	FIXED 228 229 231 MOBILE *Radio Astronomy* 233	
38·25—41	FIXED 228 229 230 231 MOBILE 233 235 236	

NOC **228 229 230 231 232 233 236**

SUP **234**

MOD **235** The band 39·986-40·002 Mc/s is also allocated, on a secondary basis, to the space research service.

In the Table of Frequency Allocations for Region 2 and for the band 68-74·6 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
68—74·8	**68—73** FIXED MOBILE BROADCASTING	**68—70**
	73—74·6 RADIO ASTRONOMY 253A 253B	**70—74·6**

SUP **253**

ADD **253A** In Region 2, fixed, mobile and broadcasting service operations previously authorized in the band 73-74·6 Mc/s may continue to operate on a non-interference basis to the radio astronomy service.

ADD **253B** In Cuba, the band 73-74·6 Mc/s is also allocated to the fixed, mobile and broadcasting services.

In the Table of Frequency Allocations for the bands 117·975-144 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
117·975—132 AERONAUTICAL MOBILE (R) 273 273A		
132—136 AERONAUTICAL MOBILE (R) 273A 274 275	**132—136** FIXED MOBILE 273A 276 277 278 279	
136—137 FIXED MOBILE SPACE RESEARCH (Telemetering and tracking) 281A	**136—137** SPACE RESEARCH (Telemetering and tracking) 281A 281B	**136—137** FIXED MOBILE SPACE RESEARCH (Telemetering and tracking) 281A
137—138 METEOROLOGICAL-SATELLITE SPACE RESEARCH (Telemetering and tracking) 281F SPACE (Telemetering and tracking) 275A 279A 281C 281D 281E		
138—143·6 AERONAUTICAL MOBILE (OR) 275 282 283	**138—143·6** FIXED MOBILE Radiolocation	**138—143·6** FIXED MOBILE 278 279A 284

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
143·6—143·65	**143·6—143·65**	**143·6—143·65**
AERONAUTICAL MOBILE (OR)	FIXED	FIXED
	MOBILE	MOBILE
SPACE RESEARCH (Telemetering and tracking)	SPACE RESEARCH (Telemetering and tracking)	SPACE RESEARCH (Telemetering and tracking)
275 282 283	Radiolocation	278 279A 284
143·65—144	**143·65—144**	**143·65—144**
AERONAUTICAL MOBILE (OR)	FIXED	FIXED
	MOBILE	MOBILE
275 282 283	Radiolocation	278 279A 284

NOC **273**

ADD **273A** In the band 117·975-132 Mc/s and in the band 132-136 Mc/s where the aeronautical mobile (R) service is authorized, the use and development, for this service, of systems using space communication techniques may be authorized but limited initially to satellite relay stations of the aeronautical mobile (R) service. Such use and development shall be subject to co-ordination between administrations concerned and those having services operating in accordance with the Table, which may be affected.

NOC **274**

MOD **275** In Burundi, Ethiopia, Nigeria, Sierra Leone, Gambia, Portuguese Oversea Provinces in Region 1 south of the equator, Rhodesia and Nyasaland, Rwanda and the Rep. of South Africa and Territory of South-West Africa, the bands 132-136 Mc/s and 138-144 Mc/s are allocated to the fixed and mobile services.

ADD **275A** In Burundi, Nigeria, Sierra Leone, Gambia, Portuguese Oversea Provinces in Region 1 south of the equator, Rhodesia and Nyasaland, and Rwanda, the band 137-138 Mc/s is also allocated to the fixed and mobile services.

NOC **276 277**

MOD **278** In New Zealand, the bands 132-136 Mc/s and 138-144 Mc/s are allocated to the aeronautical mobile (OR) service.

MOD **279** In Australia, the band 132-136 Mc/s is allocated to the aeronautical mobile service.

ADD **279A** In Australia, the band 137-144 Mc/s is also allocated to the broadcasting service for television.

SUP **280 281**

ADD **281A** For the use of the band 136-137 Mc/s, see Recommendation No. 7A.

ADD **281B** In Region 2, the band 136-137 Mc/s is also allocated to the fixed and mobile services until 1 January, 1969. Thereafter, in Cuba, the band will continue to be allocated also to the fixed and mobile services.

ADD **281C** In Algeria, Bulgaria, Hungary, Kuwait, Lebanon, Morocco, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 137-138 Mc/s is also allocated to the aeronautical mobile (OR) service. In the remaining countries of Region 1, the band 137-138 Mc/s is also allocated to the aeronautical mobile (OR) service until 1 January, 1969.

ADD **281D** In Norway, Switzerland and Turkey, the band 137-138 Mc/s is also allocated to the fixed service and mobile, except aeronautical mobile, service until 1 January, 1969.

ADD **281E** In Regions 2 and 3, the band 137-138 Mc/s is also allocated to the fixed and mobile services until 1 January, 1969. Thereafter, in Cuba, Malaysia, Pakistan and the Philippines, the band 137-138 Mc/s will continue to be allocated also to the fixed and mobile services.

ADD **281F** The band 137-138 Mc/s will be used mainly for research concerning the establishment, technical improvement, and maintenance of operational space systems.

MOD **282** In Austria, the Netherlands and the United Kingdom, the band 138-144 Mc/s will, at some future date, be allocated to the fixed service and mobile, except aeronautical mobile, service.

MOD **283** In Denmark, Greece, Norway, Portugal, F.R. of Germany, Sweden, Switzerland and Turkey, the band 138-144 Mc/s is also allocated to the fixed service and mobile, except aeronautical mobile (R), service.

MOD **284** In China, the band 138-144 Mc/s is also allocated to the radiolocation service.

In the Table of Frequency Allocations for the bands 144-150·05 Mc/s there shall be substituted the following :

Mc/s

<table>
<tr><th colspan="3">Allocation to Services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td colspan="3">144—146
AMATEUR
284A</td></tr>
<tr><td rowspan="2">146—149·9
FIXED
MOBILE except aeronautical mobile (R)
274 285 285A</td><td colspan="2">146—148
AMATEUR
289</td></tr>
<tr><td colspan="2">148—149·9
FIXED
MOBILE
285A 290</td></tr>
<tr><td colspan="3">149·9—150·05
RADIONAVIGATION-SATELLITE
285B</td></tr>
</table>

ADD **284A** In the band 144-146 Mc/s, artificial satellites may be used by the amateur service.

MOD **285** In Rhodesia and Nyasaland, and the Rep. of South Africa and Territory of South-West Africa, the bands 146-149·9 Mc/s and 150·05-174 Mc/s are also allocated to the aeronautical mobile service.

ADD **285A** The frequencies 148·25 Mc/s ±15 kc/s and 154·2 Mc/s±15 kc/s may be used for space telecommand, subject to agreement among the administrations concerned and those having services operating in accordance with the Table, which may be affected.

ADD **285B** Stations operating in the fixed and mobile services may continue to use this band until 1 January, 1969. This cessation date shall not apply in Austria,

Bulgaria, Cuba, Hungary, Iran, Kuwait, Morocco, Pakistan, the Netherlands, Poland, the United Arab Republic, Yugoslavia and Roumania where the fixed and mobile services will continue to have equal primary status with the radionavigation-satellite service. (See Recommendation No. 8A).

NOC **289**

MOD **290** In New Zealand, the bands 148-149·9 Mc/s and 150·05-156 Mc/s are allocated to the aeronautical mobile (OR) service.

In the Table of Frequency Allocations for the bands 150·05-174 Mc/s there shall be substituted the following :

Mc/s

<table>
<tr><th colspan="3">Allocation to Services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>150·05—151
FIXED
MOBILE except aeronautical mobile (R)
274 285 286 286A</td><td rowspan="4">150·05—174
FIXED
MOBILE
285A 287</td><td rowspan="3">150·05—170
FIXED
MOBILE
285A 287 290</td></tr>
<tr><td>151—154
FIXED
MOBILE except aeronautical mobile (R)
Meteorological aids
285 286 286A</td></tr>
<tr><td>154—156
FIXED
MOBILE except aeronautical mobile (R)
285 285A</td></tr>
<tr><td>156—174
FIXED
MOBILE except aeronautical mobile
285 287 288</td><td>170—174
FIXED
MOBILE
BROADCASTING</td></tr>
</table>

MOD **285** (See page 41)

MOD **286** In Region 1, the band 150·05-153 Mc/s is also allocated to the radio astronomy service. In making assignments to new stations of other services to which this band is allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference.

ADD **286A** In the United Kingdom, the band 150·05-151 Mc/s is allocated to the radio astronomy service, and the band 151-153 Mc/s is allocated to the radio astronomy service on a primary basis and to the meteorological aids service on a secondary basis; however, in this band the provisions of No. **274** apply.

NOC **287** **288**

MOD **290** (See page 42)

In the Table of Frequency Allocations for the band 174-216 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
174—216	**174—216**	
BROADCASTING	FIXED MOBILE BROADCASTING	
291 292 293 294	294 295 296	

NOC **291 292 293 295 296**

MOD **294** The band 183·1-184·1 Mc/s is also allocated, on a secondary basis, to the space research service.

In the Table of Frequency Allocations for the bands 235-328·6 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
235—267		
	FIXED	
	MOBILE	
	305 309	
267—272		
	FIXED	
	MOBILE	
	Space (Telemetering)	309A 309B
272—273		
	FIXED	
	MOBILE	
	SPACE (Telemetering)	309A
273—328·6		
	FIXED	
	MOBILE	
	310	

NOC **305 309 310**

ADD **309A** Space stations employing frequencies in the band 267-273 Mc/s for telemetering purposes may also transmit tracking signals in the band.

ADD **309B** In the band 267-272 Mc/s individual administrations may use space telemetering in their countries on a primary basis, subject to the agreement of the administrations concerned and those having services operating in accordance with the Table, which may be affected.

In the Table of Frequency Allocations for the bands 335·4-401 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
335·4—399·9		
	FIXED	
	MOBILE	
399·9—400·05		
	RADIONAVIGATION-SATELLITE	
	311A	
400·05—401		
	METEOROLOGICAL AIDS	
	METEOROLOGICAL-SATELLITE (Maintenance telemetering)	
	SPACE RESEARCH (Telemetering and tracking)	
	312A 313 314	

ADD **311A** Stations operating in the fixed and mobile services may continue to use this band until 1 January, 1969. This cessation date shall not apply in Bulgaria, Cuba, Greece, Hungary, Iran, Kuwait, Lebanon, Morocco, the United Arab Republic and Yugoslavia where the fixed and mobile services will continue to have equal status with the radionavigation-satellite service. (See Recommendation No. 8A).

SUP **312**

ADD **312A** In Sweden, the band 400·05-401 Mc/s is also allocated to the fixed and mobile services until 1 January, 1966.

MOD **313** In Albania, Bulgaria, Greece, Hungary, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 400·05-401 Mc/s, is also allocated to the fixed and mobile services.

MOD **314** In the United Kingdom, the band 400·05-420 Mc/s is also allocated to the radiolocation service; however, between 400·05 and 410 Mc/s the allocation to the radiolocation service is on a secondary basis.

In the Table of Frequency Allocations for the bands 401-406 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
401—402	METEOROLOGICAL AIDS SPACE (Telemetering) 315A *Fixed* *Mobile* except aeronautical mobile 314 315 315B 316	
402—406	METEOROLOGICAL AIDS *Fixed* *Mobile* except aeronautical mobile 314 315 316 317	

MOD **314** (See page 47)

NOC **315**

ADD **315A** Space stations employing frequencies between 401-402 Mc/s for telemetering purposes may also transmit tracking signals in this band.

ADD **315B** In Australia, the space (telemetering) service in the band 401-402 Mc/s is a secondary service.

NOC **316**

MOD **317** The band 404-410 Mc/s in Region 2 and the band 406-410 Mc/s in Regions 1 and 3 are also allocated to the radio astronomy service. An appropriate continuous band within these limits shall be designated on a national or area basis. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference.

In the Table of Frequency Allocations for the bands 420-470 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
420—430 FIXED MOBILE except aeronautical mobile *Radiolocation* 318 319	**420—450** RADIOLOCATION *Amateur*	
430—440 AMATEUR RADIOLOCATION 318 319 320 321 322		
440—450 FIXED MOBILE except aeronautical mobile *Radiolocation* 318 319 319A	318 319A 323 324	
450—460 FIXED MOBILE 318 319A		
460—470 FIXED MOBILE *Meteorological-Satellite* 318A		

NOC **318 319 320 321 322 323 324**

ADD **318A** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 460-470 Mc/s may be used, on a primary basis, by the meteorological-satellite service subject to agreement among administrations concerned and those having services, or intending to introduce services, operating in accordance with the Table, which may be affected.

ADD **319A** The band 449·75-450·25 Mc/s may be used for space telecommand, subject to agreement among the administrations concerned and those having services operating in accordance with the Table, which may be affected.

In the Table of Frequency Allocations for the bands 470-890 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
470—582	**470—890**	**470—585**
	BROADCASTING	
582—606		**585—610**
		RADIONAVIGATION
606—790		336 337
BROADCASTING		**610—890**
		FIXED
326 329 330 330A 331 332		MOBILE
		BROADCASTING
790—890		
	332	332 338 339

NOC **326 329**

MOD **330** In Region 1, except the African Broadcasting Area*, the radionavigation service may continue to operate in the band 606-610 Mc/s until the band is required for the broadcasting service.

330.1 * For the purposes of this Regulation the term " African Broadcasting Area " means:

a) African countries, parts of countries, territories and groups of territories situated between the parallels 40° South and 30° North.

b) Islands in the Indian Ocean west of meridian 60° East, situated between the parallel 40° South and the great circle arc joining the points 45° East, 11° 30′ North and 60° East, 15° North.

c) Islands in the Atlantic Ocean east of Line B defined in No. **131** of these Regulations, situated between the parallels 40° South and 30° North.

ADD **330A** In the African Broadcasting Area*, the band 606-614 Mc/s is allocated to the radio astronomy service.

NOC **331**

MOD **332** In Region 1, except the African Broadcasting Area*, the band 606-614 Mc/s, and in Region 3, the band 610-614 Mc/s may be used by the radio astronomy service. Administrations shall avoid using the band concerned for the broadcasting service as long as possible, and thereafter, as far as practicable, shall avoid the use of such effective radiated powers as will cause harmful interference to radio astronomy observations.

In Region 2, the band 608-614 Mc/s is reserved exclusively for the radio astronomy service until the first Administrative Radio Conference after 1 January, 1974 which is competent to review this provision; however, this provision does not apply to Cuba.

NOC **336 337 338 339**

* See No. **330.1**

In the Table of Frequency Allocations for the bands 890-1 215 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
890—942 FIXED BROADCASTING *Radiolocation* 329 331 333 339A	**890—942** FIXED RADIOLOCATION 339A 340	**890—942** FIXED MOBILE BROADCASTING *Radiolocation* 339 339A
942—960 FIXED BROADCASTING 329 331 333 339A	**942—960** FIXED 339A	**942—960** FIXED MOBILE BROADCASTING 338 339 339A
960—1 215 AERONAUTICAL RADIONAVIGATION 341		

NOC **333 340**

ADD **339A** Specific portions of the frequency band 900-960 Mc/s may also be used, on a secondary basis, for experimental purposes in connection with space research.

MOD **341** The band 960-1 215 Mc/s is reserved on a world-wide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

In the Table of Frequency Allocations for the bands 1 400-1 660 Mc/s there shall be substituted the following, the allocations in the Radio Regulations, Geneva, 1959, being retained for the band 1 429-1 525 Mc/s:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 400—1 427	RADIO ASTRONOMY	
1 427—1 429	FIXED MOBILE except aeronautical mobile SPACE (Telecommand)	
1 429—1 525	**1 429—1 435** **1 435—1 525**	**1 429—1 525**
1 525—1 535 FIXED 350B SPACE (Telemetering) 350A *Mobile* except aeronautical mobile 350C	**1 525—1 535** SPACE (Telemetering) 350A *Fixed* *Mobile* 350D	**1 525—1 535** FIXED 350B SPACE (Telemetering) 350A *Mobile* 350E
1 535—1 540	SPACE (Telemetering) 350A 351 352 352C	
1 540—1 660	AERONAUTICAL RADIONAVIGATION 351 352 352A 352B 352D	

SUP **350**

ADD **350A** Space stations employing frequencies in the band 1 525-1 540 Mc/s for telemetering purposes may also transmit tracking signals in the band.

ADD **350B** As regards the category of the fixed service, see Resolution No. 3A.

ADD **350C** In Albania, Bulgaria, France, Hungary, Kuwait, Lebanon, Morocco, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 1 525-1 535 Mc/s is also allocated, on a primary basis, to the mobile, except aeronautical mobile, service. As regards the category of this service, see Resolution No. 3A.

ADD **350D** In Cuba, the band 1 525-1 535 Mc/s is also allocated, on a primary basis, to the mobile service.

ADD **350E** In Japan, the band 1 525-1 535 Mc/s is also allocated to the mobile service, on a primary basis, until 1 January, 1969.

MOD **351** In Italy, the band 1 535-1 600 Mc/s is also allocated to the fixed service until 1 January, 1970.

MOD **352** In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 1 535-1 660 Mc/s is also allocated to the fixed service. As regards the category of the fixed service in the band 1 535-1 540 Mc/s, see Resolution No. 3A.

ADD **352A** The bands 1 540-1 660 Mc/s, 4 200-4 400 Mc/s, 5 000-5 250 Mc/s and 15·4-15·7 Gc/s are reserved, on a world-wide basis, for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities.

ADD **352B** The bands 1 540-1 660 Mc/s, 5 000-5 250 Mc/s and 15·4-15·7 Gc/s are also allocated to the aeronautical mobile (R) service for the use and development of systems using space communication techniques. Such use and development is subject to agreement and co-ordination between administrations concerned and those having services operating in accordance with the Table, which may be affected.

ADD **352C** In Morocco and Yugoslavia, the band 1 535-1 540 Mc/s is also allocated to the aeronautical radionavigation service.

ADD **352D** In Austria, Indonesia and the F. R. of Germany, the band 1 540-1 660 Mc/s is also allocated to the fixed service.

In the Table of Frequency Allocations for the bands 1 660-1 710 Mc/s there shall be substituted the following, the allocations in the Radio Regulations, Geneva, 1959, being retained for the band 1 670-1 690 Mc/s:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 660—1 664·4	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 353 354 354A 354B	
1 664·4—1 668·4	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A *Radio Astronomy* 353 353A 354 354A 354B	
1 668·4—1 670	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 353 354 354A 354B	
1 670—1 690		
1 690—1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A *Fixed* *Mobile* except aeronautical mobile 353 354A	**1 690—1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 354A 354C	

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 700—1 710	**1 700—1 710**	**1 700—1 710**
FIXED	SPACE RESEARCH (Telemetering and tracking)	FIXED
SPACE RESEARCH (Telemetering and tracking)		MOBILE
Mobile	355A	SPACE RESEARCH (Telemetering and tracking)

ADD **324A** It is intended that meteorological-satellite space stations operating in this band shall transmit to selected earth stations. The location of such earth stations is subject to agreement among administrations concerned and those having services operating in accordance with the Table, which may be affected.

NOC **353**

ADD **353A** In view of the successful detection of two spectral lines in the region of 1 665 Mc/s and 1 667 Mc/s by astronomers, administrations are urged to give all practicable protection in the band 1 664·4-1 668·4 Mc/s for future research in radio astronomy.

NOC **354**

ADD **354A** In Algeria, Bulgaria, Cuba, Hungary, Kuwait, Lebanon, Morocco, Pakistan, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the bands 1 660-1 670 Mc/s and 1 690-1 700 Mc/s are also allocated to the fixed service and the mobile, except aeronautical mobile, service.

ADD **354B** In Australia, Cyprus, Spain, Ethiopia, Indonesia, Israel, New Zealand, Portugal, the Spanish Provinces in Africa, the United Kingdom, Sweden and Switzerland, the band 1 660-1 670 Mc/s is also allocated, on a secondary basis, to the fixed service, and the mobile, except aeronautical mobile, service.

ADD **354C** In Australia, Indonesia and New Zealand, the band 1 690-1 700 Mc/s is also allocated, on a secondary basis, to the fixed service and the mobile, except aeronautical mobile, service.

SUP **355**

ADD **355A** In Cuba, the band 1 700-1 710 Mc/s is also allocated to the fixed and mobile services.

In the Table of Frequency Allocations for the bands 1 710-2 290 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 710—1 770	**1 710—1 770**	
FIXED	FIXED	
Mobile	MOBILE	
356		
1 770—1 790	**1 770—1 790**	
FIXED	FIXED	
Meteorological-Satellite 356AA	MOBILE	
Mobile	*Meteorological-Satellite* 356AA	
356		
1 790—2 290	**1 790—2 290**	
FIXED	FIXED	
Mobile	MOBILE	
356 356A	356A	

NOC **356**

ADD **356AA** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the meteorological-satellite service, in the band 1 770-1 790 Mc/s, shall be on a primary basis, subject to co-ordination with the administrations concerned and those having services operating in accordance with the Table, which may be affected by the siting of earth stations.

ADD **356A** The band 2110-2120 Mc/s may be used for telecommand in conjunction with spacecraft engaged in deep space research, subject to agreement between the administrations concerned and those having services operating in accordance with the Table, which may be affected.

In the Table of Frequency Allocations for the band 2 290-2 300 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
2 290—2 300	**2 290—2 300**	**2 290—2 300**
FIXED	SPACE RESEARCH (Telemetering and tracking in deep space)	FIXED
SPACE RESEARCH (Telemetering and tracking in deep space) 356C		MOBILE
Mobile	356B	SPACE RESEARCH (Telemetering and tracking in deep space)

ADD **356B** In Cuba, the band 2 290-2 300 Mc/s is also allocated to the fixed and mobile services.

ADD **356C** In Austria, the space research service in the band 2 290-2 300 Mc/s is a secondary service.

In the Table of Frequency Allocations for the bands 2 550-2 700 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
2 550—2 690	FIXED MOBILE 362 363 364	
2 690—2 700	RADIO ASTRONOMY 363 364A 364B 365	

NOC **362**

MOD **363** In the F. R. of Germany, the band 2 550-2 690 Mc/s is allocated to the fixed service; and the band 2 690-2 700 Mc/s is also allocated to the fixed service.

MOD **364** In Region 1, tropospheric scatter systems may operate in the band 2 550-2 690 Mc/s under agreements concluded between administrations concerned and those having services operating in accordance with the Table, which may be affected.

ADD **364A** In Algeria, Bulgaria, Cuba, Hungary, India, Israel, Kuwait, Lebanon, Morocco, Pakistan, the Philippines, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 2 690-2 700 Mc/s is also allocated to the fixed and mobile services.

ADD **364B** In Algeria, Bulgaria, Hungary, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., tropospheric scatter systems may operate in the band 2 690-2 700 Mc/s under agreements concluded between administrations concerned and those having services operating in accordance with the Table, which may be affected.

MOD **365** In making assignments to stations in the fixed and mobile services, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference.

In the Table of Frequency Allocations for the bands 3 300-4 200 Mc/s there shall be substituted the following :

Mc/s

<table>
<tr><th colspan="3">Allocation to Services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>3 300—3 400

RADIOLOCATION

370 371</td><td colspan="2">3 300—3 400

RADIOLOCATION

Amateur

376</td></tr>
<tr><td>3 400—3 600
FIXED
MOBILE
COMMUNICATION-SATELLITE (Satellite-to-earth) 374A
Radiolocation

372 373 374 375</td><td colspan="2">3 400—3 500

RADIOLOCATION
COMMUNICATION-SATELLITE (Satellite-to-earth) 374A
Amateur

376</td></tr>
<tr><td rowspan="2">3 600—4 200
FIXED
COMMUNICATION-SATELLITE (Satellite-to-earth) 374A
Mobile

374</td><td>3 500—3 700
FIXED
MOBILE
RADIOLOCATION
COMMUNICATION-SATELLITE (Satellite-to-earth) 374A</td><td>3 500—3 700
RADIOLOCATION
COMMUNICATION-SATELLITE (Satellite-to-earth) 374A
Fixed
Mobile

377 378</td></tr>
<tr><td colspan="2">3 700—4 200

FIXED
MOBILE
COMMUNICATION-SATELLITE (Satellite-to-earth) 374A

379</td></tr>
</table>

NOC **370 371 372 374 375 376 377 378**

MOD **373** In Denmark, Norway, Sweden and Switzerland, the fixed, mobile, radiolocation and communication-satellite services operate on a basis of equality in the band 3 400-3 600 Mc/s.

ADD **374A** This band may also be used for the transmission of tracking and telemetering signals associated with communication-satellite space stations operating in the same band.

MOD **379** In Australia, the band 3 700-3 770 Mc/s is allocated to the radiolocation and communication-satellite services.

SUP **380**

In the Table of Frequency Allocations for the bands 4 200-5 000 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
4 200—4 400	AERONAUTICAL RADIONAVIGATION 352A 381 382 383	
4 400—4 700	FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 392A	
4 700—4 990	FIXED MOBILE 354 365	
4 990—5 000 FIXED MOBILE RADIO ASTRONOMY 365	**4 990—5 000** RADIO ASTRONOMY 383A	**4 990—5 000** FIXED MOBILE RADIO ASTRONOMY 365

MOD **365** (See page 60)

NOC **381** **382** **383**

ADD **383A** In Cuba, the band 4 990-5 000 Mc/s is also allocated to the fixed and mobile services, and the provisions of No. **365** apply.

ADD **392A** This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

In the Table of Frequency Allocations for the bands 5 000-5 350 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
5 000—5 250	AERONAUTICAL RADIONAVIGATION 352A 352B	
5 250—5 255	RADIOLOCATION *Space Research* 384	
5 255—5 350	RADIOLOCATION 384 384A	

MOD **384** In Albania, Austria, Bulgaria, Hungary, Poland, Roumania, Switzerland, Czechoslovakia and the U.S.S.R., the band 5 250-5 350 Mc/s is also allocated to the radionavigation service.

ADD **384A** In Sweden, the band 5 255-5 350 Mc/s is also allocated to the radionavigation service.

In the Table of Frequency Allocations for the bands 5 650-6 425 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
5 650—5 670	RADIOLOCATION *Amateur* 388 389	
5 670—5 725	RADIOLOCATION *Amateur* *Space Research* (Deep Space) 388 389 389A	
5 725—5 850 RADIOLOCATION COMMUNICATION-SATELLITE (Earth-to-satellite) 392A *Amateur* 354 388 390 391	**5 725—5 850** RADIOLOCATION *Amateur* 389 391	
5 850—5 925 FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 392A 391	**5 850—5 925** RADIOLOCATION *Amateur* 391	**5 850—5 925** FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 392A *Radiolocation* 391
5 925—6 425	FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 392A	

NOC **354 388 389 391**

ADD **389A** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the band 5 670-5 725 Mc/s.

MOD **390** In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 5 800-5 850 Mc/s is allocated to the fixed, mobile and communication-satellite services.

SUP **392**

In the Table of Frequency Allocations for the bands 6 425-7 750 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
6 425—7 250	FIXED MOBILE 392B 392F 393	
7 250—7 300	COMMUNICATION-SATELLITE (Satellite-to-earth) 374A 392C 392D 392G	
7 300—7 750	FIXED MOBILE COMMUNICATION-SATELLITE (Satellite-to-earth) 374A 392D 392F	

ADD **392B** The band 7 120-7 130 Mc/s may be used for telecommand in association with space services, subject to agreement between the administrations concerned and those having services operating in accordance with the Table, which may be affected.

ADD **392C** Stations of the fixed and mobile services, previously authorized in the bands 7 250-7 300 Mc/s and 7 975-8 025 Mc/s, may continue to operate until 1 January, 1969. This provision does not apply to the countries listed in Nos. **392G** and **392H**.

ADD **392D** As an exception, passive communication-satellite systems also may be accommodated in the band 7 250-7 750 Mc/s, subject to:

a) agreement between administrations concerned and those whose services, operating in accordance with the Table, may be affected;

b) the co-ordination procedure laid down in Articles 9 and 9A.

Such systems shall not cause any more interference at active earth station receivers than would be caused by fixed or mobile services. Power-flux density limitations at the earth's surface after reflection from the passive communication-satellites shall not exceed those prescribed in these Regulations for active communication-satellite systems.

The maximum effective power radiated in any direction in the horizontal plane by earth stations of passive satellite systems shall not exceed + 55 dbW, not taking the site shielding factor into account. If the distance between a transmitting station of a passive system and the territory of another administration exceeds 400 km, this limitation may be increased in that direction by 2 db for each 100 km in excess of 400 km up to a maximum of 65 dbW.

ADD **392F** In the bands 7 200-7 250 Mc/s and 7 300-7 750 Mc/s, the meteorological-satellite service may use a band up to 100 Mc/s in width on a primary basis. These bands may also be used for the transmission of tracking and telemetering signals associated with meteorological-satellite space stations operating in the same band.

ADD **392G** In Algeria, Austria, Bulgaria, Cyprus, Cuba, Ethiopia, Finland, Hungary, Japan, Kuwait, Lebanon, Liberia, Malaysia, Morocco, the Philippines, Poland, the United Arab Republic, Yugoslavia, Roumania, Sweden, Switzerland, Czechoslovakia and the U.S.S.R., the band 7 250-7 300 Mc/s is also allocated to the fixed and mobile services.

MOD **393** In Italy, the band 6 450-6 575 Mc/s is also allocated to the radiolocation service.

In the Table of Frequency Allocations for the bands 7 750-8 500 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
7 750—7 900	FIXED MOBILE	
7 900—7 975	FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 392A	
7 975—8 025	COMMUNICATION-SATELLITE (Earth-to-satellite) 392A 392C 392H	
8 025—8 400	FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 392A 394 394B	
8 400—8 500 FIXED MOBILE SPACE RESEARCH 394A 394D	**8 400—8 500** SPACE RESEARCH 394C	**8 400—8 500** FIXED MOBILE SPACE RESEARCH 394A 394D

ADD **392H** In Algeria, Bulgaria, Cuba, Ethiopia, Finland, Hungary, Japan, Kuwait, Lebanon, Morocco, Poland, the United Arab Republic, Yugoslavia, Roumania, Sweden, Switzerland, Czechoslovakia and the U.S.S.R., the band 7 975-8 025 Mc/s is also allocated to the fixed and mobile services.

MOD **394** In Australia and the United Kingdom, the band 8 250-8 400 Mc/s is allocated to the radiolocation and communication-satellite services.

ADD **394A** In Australia and the United Kingdom, the band 8 400-8 500 Mc/s is allocated to the radiolocation and space research services.

ADD **394B** In Israel, the band 8 025-8 400 Mc/s is allocated, on a primary basis, to the fixed and mobile services and, on a secondary basis, to the communication-satellite service.

ADD **394C** In Cuba, the band 8 400-8 500 Mc/s is also allocated to the fixed and mobile services.

ADD **394D** In Austria, Belgium, France, Israel, Luxembourg and Malaysia, the allocation to the space research service in the band 8 400-8 500 Mc/s is on a secondary basis.

In the Table of Frequency Allocations for the bands 9800-10500 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
9 800—10 000	RADIOLOCATION *Fixed* 400 401 401A	
10 000—10 500	RADIOLOCATION *Amateur* 401A 402 403	

NOC **400 401 402 403**

ADD **401A** The band 9975-10025 Mc/s may be used by weather radar on meteorological-satellites.

In the Table of Frequency Allocations for the bands 10·55-10·7 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
10·55—10·68	FIXED MOBILE *Radiolocation*	
10·68—10·7	RADIO ASTRONOMY 405A 405B	

SUP **405**

ADD **405A** In Australia and the United Kingdom, the band 10·68-10·7 Gc/s is also allocated, on a secondary basis, to the radiolocation service.

ADD **405B** In Algeria, Bulgaria, Cuba, Hungary, Japan, Kuwait, Lebanon, Pakistan, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 10·68-10·7 Gc/s is also allocated to the fixed and mobile services.

In the Table of Frequency Allocations for the bands 14-15·7 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
14—14·3	RADIONAVIGATION 407	
14·3—14·4	RADIONAVIGATION-SATELLITE	
14·4—15·25	FIXED MOBILE	
15·25—15·35	SPACE RESEARCH 409A 409B	
15·35—15·4	RADIO ASTRONOMY 409C	
15·4—15·7	AERONAUTICAL RADIONAVIGATION 352A 352B 407	

MOD **407** In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the bands 13·25-13·5 Gc/s, 14·175-14·3 Gc/s, 15·4-17·7 Gc/s, 21-22 Gc/s, 23-24·25 Gc/s and 33·4-36 Gc/s are also allocated to the fixed and mobile services.

ADD **409A** In Algeria, Bulgaria, Cuba, Hungary, Kuwait, Lebanon, Morocco, Pakistan, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 15·25-15·35 Gc/s is also allocated to the fixed and mobile services.

ADD **409B** In Austria, Belgium, Japan, the Netherlands, Portugal, the F.R. of Germany, the United Kingdom and Switzerland, the band 15·25-15·35 Gc/s is also allocated, on a secondary basis, to the fixed and mobile services.

ADD **409C** In Algeria, Bulgaria, Cuba, Hungary, Kuwait, Lebanon, Morocco, Pakistan, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 15·35-15·4 Gc/s is also allocated to the fixed and mobile services.

In the Table of Frequency Allocations for the bands 17·7-21 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
17·7—19·3	FIXED MOBILE	
19·3—19·4	RADIO ASTRONOMY 409D	
19·4—21	FIXED MOBILE	

ADD **409D** In Bulgaria, Cuba, Hungary, Kuwait, Lebanon, Poland, the United Arab Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 19·3-19·4 Gc/s is also allocated to the fixed and mobile services.

In the Table of Frequency Allocations for the bands 25·25-40 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
25·25—31		
	FIXED	
	MOBILE	
31—31·3		
	FIXED	
	MOBILE	
	Space Research	
	412H	
31·3—31·5		
	RADIO ASTRONOMY	
	412A	
31·5—31·8	**31·5—31·8**	**31·5—31·8**
SPACE RESEARCH	SPACE RESEARCH	SPACE RESEARCH
Fixed		*Fixed*
Mobile		*Mobile*
	405C	
31·8—32·3		
	RADIONAVIGATION	
	Space Research	
	412B	
32·3—33		
	RADIONAVIGATION	

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
33—33·4 RADIO ASTRONOMY RADIONAVIGATION	**33—33·4** RADIONAVIGATION 412F	
33·4—34·2 RADIOLOCATION 407 408 412 412G		
34·2—35·2 RADIOLOCATION *Space Research* 407 408 412 412C 412D		
35·2—36 RADIOLOCATION 407 408 412		
36—40 FIXED MOBILE 412E		

ADD **405C** In Cuba, the band 31·5-31·8 Gc/s is also allocated, on a secondary basis, to the fixed and mobile services.

MOD **407** (See page 74)

NOC **408 412**

ADD **412A** In Bulgaria, Cuba, Hungary, Poland, the United Arab Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 31·3-31·5 Gc/s is also allocated to the fixed and mobile services.

ADD **412B** In Bulgaria, Cuba, Hungary, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the band 31·8-32·3 Gc/s.

ADD **412C** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the band 34·2-35·2 Gc/s.

ADD **412D** The band 34·4-34·5 Gc/s may be used by weather radar devices on meteorological-satellites for the detection of cloud.

ADD **412E** In Bulgaria, Cuba, Hungary, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 36·5-37·5 Gc/s is also allocated to the radio astronomy service.

ADD **412F** In Cuba and India, the band 33-33·4 Gc/s is also allocated to the radio astronomy service.

ADD **412G** In Bulgaria, Cuba, Hungary, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 33·4-34 Gc/s is also allocated to the radio astronomy service.

ADD **412H** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the band 31-31·3 Gc/s.

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ANNEX 4

Revision of Article 7 of the Radio Regulations

Article 7 of the Radio Regulations shall be amended as follows:

After Section VI, there shall be inserted the following new Sections VII, VIII and IX:

ADD **Section VII. Terrestrial Services sharing Frequency Bands with Space Services between 1 Gc/s and 10 Gc/s**

Choice of Sites and Frequencies

ADD **470A** § 18. Sites and frequencies for terrestrial stations, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to geographical separation from earth stations.

Power Limits

ADD **470B** § 19. (1) The maximum effective radiated power of the transmitter and associated antenna, of a station in the fixed or mobile service, shall not exceed + 55 dbW.

ADD **470C** (2) The power delivered by a transmitter to the antenna of a station in the fixed or mobile service shall not exceed + 13 dbW.

ADD **470D** (3) The limits given in Nos. **470B** and **470C** apply in the following frequency bands allocated to reception by space stations in the communication-satellite service, where these are shared with equal rights with the fixed or mobile service:

5 800-5 850 Mc/s (for the countries mentioned in No. **390**)
5 850-5 925 Mc/s (Regions 1 and 3)
5 925-6 425 Mc/s
7 900-8 100 Mc/s

ADD

Section VIII. Space Services sharing Frequency Bands with Terrestrial Services between 1 Gc/s and 10 Gc/s

Choice of Sites and Frequencies

ADD **470E** § 20. Sites and frequencies for earth stations, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to geographical separation from terrestrial stations.

Power Limits

ADD **470F** § 21. (1) Earth Stations in the Communication-Satellite Service

ADD **470G** (2) The mean effective radiated power transmitted by an earth station in any direction in the horizontal plane [1] shall not exceed + 55 dbW in any 4 kc/s band, except that it may be increased subject to the provisions of Nos. **470H** or **470I**. However, in no case shall it exceed a value of + 65 dbW in any 4 kc/s band.

ADD **470H** (3) In any direction where the distance from an earth station to the boundary of the territory of another administration exceeds 400 km, the limit of + 55 dbW in any 4 kc/s band may be increased in that direction by 2 db for each 100 km in excess of 400 km.

ADD **470I** (4) The limit of + 55 dbW in any 4 kc/s band may be exceeded by agreement between the administrations concerned or affected.

[1] For the purpose of this Regulation, the effective radiated power transmitted in the horizontal plane shall be taken to mean the effective radiated power actually transmitted towards the horizon, reduced by the site-shielding factor that may be applicable. The value of this site-shielding factor shall be determined as indicated in Section 5 of the Annex to Recommendation No. 1A.

ADD **470J** (5) The limits given in No. **470G** apply in the following frequency bands allocated to transmission by earth stations in the communication-satellite service, where these are shared with equal rights with the fixed or mobile service:

4 400-4 700 Mc/s
5 800-5 850 Mc/s (for the countries mentioned in No. **390**)
5 850-5 925 Mc/s (Regions 1 and 3)
5 925-6 425 Mc/s
7 900-8 400 Mc/s

Minimum Angle of Elevation

ADD **470K** § 22. (1) Earth Stations in the Communication-Satellite Service

ADD **470L** (2) Earth station antennae shall not be employed for transmission at elevation angles less than 3 degrees, measured from the horizontal plane to the central axis of the main lobe, except when agreed to by the administrations concerned or affected.

ADD **470M** (3) The limit given in No. **470L** applies in the following frequency bands allocated to transmission by earth stations in the communication-satellite service, where these are shared with equal rights with the fixed or mobile service:

4 400-4 700 Mc/s
5 800-5 850 Mc/s (for the countries mentioned in No. **390**)
5 850-5 925 Mc/s (Regions 1 and 3)
5 925-6 425 Mc/s
7 250-7 750 Mc/s
7 900-8 400 Mc/s

Power Flux Density Limits

ADD **470N** § 23. (1) Communication-Satellite Space Stations

ADD **470O** *a)* The total power flux density at the earth's surface, produced by an emission from a communication-satellite space station, or reflected from a passive communica-

tion satellite, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall if necessary be continuously modulated by a suitable waveform, so that the power flux density shall in no case exceed -149 dbW/m^2 in any 4 kc/s band for all angles of arrival.

ADD **470P** *b)* The power flux density at the earth's surface, produced by an emission from a communication-satellite space station, or reflected from a passive communication satellite, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 kc/s band for all angles of arrival.

ADD **470Q** *c)* The limits given in Nos. **470O** and **470P** apply in the following frequency bands allocated to transmission by space stations in the communication-satellite service, where these are shared with equal rights with the fixed or mobile services:

3 400-4 200 Mc/s
7 250-7 750 Mc/s

ADD **470R** (2) Meteorological-Satellite Space Stations [1]

ADD **470S** *a)* The power flux density at the earth's surface, produced by an emission from a meteorological-satellite space station, where wide-deviation frequency (or phase) modu-

[1] In view of the absence of any C.C.I.R. Recommendations relative to sharing between the meteorological-satellite service and other services, power flux density levels applicable to communication-satellite space stations are extended to meteorological-satellite space stations.

lation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall if necessary be continuously modulated by a suitable waveform, so that the power flux density shall in no case exceed -149 dbW/m^2 in any 4 kc/s band for all angles of arrival.

ADD **470T** *b)* The power flux density at the earth's surface, produced by an emission from a meteorological-satellite space station, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 kc/s band for all angles of arrival.

ADD **470U** *c)* The limits given in Nos. **470S** and **470T** apply in the following frequency bands allocated to transmissions by space stations in the meteorological-satellite service, shared with equal rights with the fixed or mobile service:

1 660-1 670 Mc/s
1 690-1 700 Mc/s
7 200-7 250 Mc/s
7 300-7 750 Mc/s

The limits given in Nos. **470S** and **470T** also apply in the band 1 770-1 790 Mc/s although the meteorological-satellite service is a secondary service in this band.

ADD

Section IX. Space Services

Cessation of Emissions

ADD **470V** § 24. Space stations shall be made capable of ceasing radio emissions by the use of appropriate devices [1] that will ensure definite cessation of emissions.

[1] Battery life, timing devices, ground command, etc.

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ANNEX 5

Revision of Article 9 of the Radio Regulations

Article 9 of the Radio Regulations shall be amended as follows:

For the title of the Article, the title of Section I and numbers 486, 487 and 491, there shall be substituted the following :

ARTICLE 9

MOD **Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in Terrestrial Services** [0]

MOD **Section I. Notification of Frequency Assignments and Co-ordination Procedure to be Applied in appropriate Cases**

MOD **486** § 1. (1) Any *frequency assignment* [1, 2] to a fixed, land, broadcasting [3], radionavigation land, radiolocation land or standard frequency station, or to a ground-based station in the meteorological aids service, shall be notified to the International Frequency Registration Board,

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration [4]; or

b) if the frequency is to be used for international radiocommunication; or

c) if it is desired to obtain international recognition of the use of the frequency [4].

ADD [0] For the notification and recording in the Master International Frequency Register of frequency assignments to stations in the space and radio astronomy services, see Article 9A.

ADD **486.4** [4] The attention of administrations is specifically drawn to the application of the provisions of Nos. **486** *a)* and **486** *c)* in those cases where they make a frequency assignment to a station in the fixed or mobile service, located within co-ordination distance of an earth station (see No. **492A**), in a band which these services share with equal rights with the space service, in the frequency spectrum between one and ten Gc/s.

MOD **487** (2) Similar notice shall be given for any frequency to be used for the reception of mobile stations by a particular land station in each case where one or more of the conditions specified in No. **486** are applicable.

MOD **491** § 3. (1) Whenever practicable each notice should reach the Board before the date on which the assignment is brought into use. It must reach the Board not earlier than ninety days before the date on which it is to be brought into use, but in any case not later than thirty days after the date it is actually brought into use. However, for a frequency assignment to a station in the fixed or mobile service mentioned in No. **492A**, the notice must reach the Board not earlier than two years before the date on which the assignment is to be brought into use.

After Regulation No. 492, there shall be inserted the following new Regulations :

ADD **492A** § 3A. (1) Before an administration notifies to the Board, or brings into use any frequency assignment to a station in the fixed or mobile service, whether for transmitting or receiving, in a particular band allocated with equal rights to the space service and the fixed or mobile service in the frequency spectrum between one and ten Gc/s, it shall effect co-ordination of the assignment with any other administration which has previously effected co-ordination under the provisions of No. **639AD**, for the establishment of an earth station, if the proposed station in the fixed or mobile service is to be located within the co-ordination distance [1] of the earth station, and the necessary bandwidths of emission of the station concerned in the space service on the one hand,

ADD **492A.1** [1] For the purposes of this Article the expression " co-ordination distance " means the distance from an earth station calculated along the lines of the procedures shown in Recommendation No. 1A within which there is a possibility of the use of a given transmitting frequency at this earth station causing harmful interference to stations in the fixed or mobile service in the frequency spectrum between one and ten Gc/s, sharing the same frequency band, or, as the case may be, of the use of a given frequency for reception at this earth station receiving harmful interference caused by such stations in the fixed or mobile service.

and of the station concerned in the fixed or mobile service on the other, are separated by less than six Mc/s. For this purpose it shall send to any other such administration a copy of a diagram drawn to an appropriate scale indicating the location of the station in the fixed or mobile service and all other pertinent details of the proposed frequency assignment, and the approximate date on which it is planned to begin operations.

ADD **492B** (2) An administration with which co-ordination is sought under No. **492A** shall acknowledge receipt of the co-ordination data within thirty days and shall promptly examine the matter to establish:

a) in the case of a frequency assignment to be used for transmitting by the station in the fixed or mobile service, whether the use would cause harmful interference to the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the proviso that in this latter case co-ordination specified in No. **639AD** has been effected or the co-ordination procedure has already begun;

b) in the case of a frequency assignment to be used for reception by the station in the fixed or mobile service, whether harmful interference would be caused to reception at the station in the fixed or mobile service by the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the proviso that in this latter case co-ordination specified in No. **639AD** has been effected or the co-ordination procedure has already begun;

and shall, within a further period of thirty days, either notify the administration requesting co-ordination of its agreement to the proposals or, if this is not possible, indicate the reasons therefor and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

ADD **492C** (3) No co-ordination under No. **492A** is required when an administration proposes:

a) to bring into use a station in the fixed or mobile service which is not located, in relation to an earth station, within the co-ordination distance defined in No. **492A.1**; or

b) to change characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to the earth stations of other administrations.

ADD **492D** (4) An administration seeking co-ordination may request the Board to endeavour to effect co-ordination, in those cases where:

a) an administration with which co-ordination is sought under No. **492A** fails to reply within a period of ninety days;

b) there is a disagreement between the administration seeking co-ordination and an administration with which co-ordination is sought as to the probability of harmful interference; or

c) co-ordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to effect such co-ordination.

ADD **492E** (5) Either the administration seeking co-ordination or an administration with which co-ordination is sought, or the Board, may request additional information which they may require to assess the probability of harmful interference to the services concerned.

ADD **492F** (6) Where the Board receives a request under No. **492D** *a)*, or where the Board receives no reply within ninety days to its request for co-ordination in the case foreseen in No. **492D** *c)*, it shall immediately send a telegram to the administration with which co-ordination is sought. If no reply has been received from that administration within a period of sixty days from the date of despatch of the telegram, it shall be deemed that the administration with which co-ordination was sought shall have undertaken that no complaint will

be made in respect of any harmful interference which may be caused by the station in the fixed or mobile service to the services rendered by its earth station.

ADD **492G** (7) Where necessary, as part of the procedure under No. **492D**, the Board shall assess the probability of harmful interference. In any case, the Board shall inform the administrations concerned of the results obtained.

For Regulations Nos. 493 and 494, there shall be substituted the following Regulations :

(MOD) **493** § 3B. (1) Whatever the means of communication, including telegraph, by which a notice is transmitted to the Board, it shall be considered complete if it contains at least those appropriate basic characteristics specified in Appendix 1.

(MOD) **494** (2) Complete notices shall be considered by the Board in the order of their receipt.

The following new title is added after No. 499 :

ADD **Sub-Section IIA. Procedure to be followed in cases where the provisions of No. 492A are not applicable**

For Regulation No. 535, there shall be substituted the following Regulation :

MOD **535** § 17. *In applying the provisions of the whole of this Sub-Section,* any resubmitted notice which is received by the Board more than one hundred and eighty days after the date of its return by the Board shall be considered as a new notice.

After Regulation No. 570, there shall be inserted the following new Regulations :

ADD **Sub-Section IIB. Procedure to be followed in cases where the provisions of No. 492A are applicable**

ADD **570AA** § 23A. The Board shall examine each notice:

ADD **570AB** *a)* with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provi-

sions of the Radio Regulations (with the exception of those relating to the co-ordination procedure and the probability of harmful interference);

ADD **570AC** *b)* with respect to its conformity with the provisions of No. **492A** relating to co-ordination of the use of the frequency assignment with the other administrations concerned;

ADD **570AD** *c)* where appropriate, with respect to the probability of harmful interference to the service rendered by an earth receiving station for which a frequency assignment already recorded in the Master Register is in conformity with the provisions of No. **639AS**, and if the corresponding frequency assignment to the space transmitting station has not, in fact, caused harmful interference to any frequency assignment in conformity with No. **501** or **570AB**, as appropriate, previously recorded in the Master Register.

ADD **570AE** §23B. Depending upon the findings of the Board subsequent to the examination prescribed in Nos. **570AB, 570AC** and **570AD**, further action shall be as follows:

ADD **570AF** §23C.(1) *Finding unfavourable with respect to No.* **570AB.**

ADD **570AG** (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115**, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AH** (3) Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115**, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AI** (4) If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. **570AH.**

ADD **570AJ** (5) If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115,** the assignment shall be recorded in the Master Register. The date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD **570AK** (6) If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. **570AB,** the notice shall be treated under the provisions of Nos. **570AL** to **570AY.** However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD **570AL** § 23D. (1) *Finding favourable with respect to No.* **570AB.**

ADD **570AM** (2) Where the Board finds that the co-ordination procedure mentioned in No. **570AC** has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AN** (3) Where the Board finds that the co-ordination procedure mentioned in No. **570AC** has not been applied, and the notifying administration requests the Board to effect the required co-ordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with No. **570AM.** If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of No. **570AD.**

ADD **570AO** (4) Where the Board finds that the co-ordination procedure mentioned in No. **570AC** has not been applied, and the notifying administration does not request the Board to effect the required co-ordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this

action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AP** (5) Where the notifying administration resubmits the notice and the Board finds that the co-ordination procedure mentioned in No. **570AC** has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AQ** (6) Where the notifying administration resubmits the notice with a request that the Board effect the required co-ordination, it shall be treated in accordance with the provisions of No. **570AN.** However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AR** (7) Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the co-ordination, it shall be examined by the Board with respect to the provisions of No. **570AD.** However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AS** §23E.(1) *Finding favourable with respect to Nos.* **570AB** *and* **570AD.**

ADD **570AT** (2) The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AU** §23F.(1) *Finding favourable with respect to No.* **570AB** *but unfavourable with respect to No.* **570AD.**

ADD **570AV** (2) The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AW** (3) Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to No. **570AD**, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be indicated in the Remarks Column.

ADD **570AX** (4) Should the notifying administration resubmit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. **570AW** to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

ADD **570AY** (5) The period of one hundred and twenty days mentioned in No. **570AX** shall count from:

— the date when the assignment to the station in the fixed or mobile service which received an unfavourable finding is brought into use, if the assignment to the earth station is then in use;

— otherwise, from the date when the assignment to the earth station is brought into use.

But if the assignment to the earth station has not been brought into use by the notified date, the period of one hundred and twenty days shall be counted from this date. Allowance may be made for the additional period mentioned in No. **570BF.**

ADD **570AZ**§23G.(1) *Change in the Basic Characteristics of Assignments already recorded in the Master Register.*

ADD **570BA** (2) A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1 (except those entered in Columns 3 and 4a of the Master Register), shall be examined by the Board according to Nos. **570AB** and **570AC** and, where appropriate, No. **570AD,** and the provisions of Nos. **570AF** to **570AY** inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.

ADD **570BB** (3) However, in the case of a change in the basic characteristics of an assignment which is in conformity with No. **570AB,** should the Board reach a favourable finding with respect to No. **570AC,** and, where its provisions are applicable, with respect to No. **570AD,** or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

ADD **570BC**§23H. *In applying the provisions of the whole of this Sub-Section,* any resubmitted notice which is received by the Board more than two years after the date of its return by the Board, shall be considered as a new notice.

ADD **570BD**§23I.(1) *Recording of Frequency Assignments notified before being brought into use.*

ADD **570BE** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to Nos. **570AB** and **570AC** and, where appropriate, with respect to No. **570AD,** it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

ADD **570BF** (3) If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

ADD **570BG** (4) In the circumstances described in No. **570AX,** and as long as an assignment which received an unfavourable finding cannot be resubmitted as a consequence of the provisions of No. **570AY,** the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. **570AX,** the information relating to the absence of complaint of harmful interference.

ADD **570BH** (5) If the Board does not receive this confirmation within the period referred to in No. **570BF** or at the end of the period referred to in No. **570BG,** as appropriate, the entry concerned shall be cancelled.

For Regulation No. 572, there shall be substituted the following Regulation :

MOD **572** § 25. The procedure for recording dates in the appropriate part of Column 2 of the Master Register which shall be applied according to the frequency bands and services concerned is described in the following Nos. **573** to **604** for frequency assignments referred to in Sub-Section IIA.

After Regulation No. 611, there shall be inserted the following new Regulation :

ADD **611A** (6) If harmful interference to the reception of any station whose assignment is in accordance with No. **639AS** is actually caused by the use of a frequency assignment which is not in conformity with No. **501** or **570AB,** the station using the latter frequency assignment

must, upon receipt of advice thereof, immediately eliminate this harmful interference.

For Regulations Nos. 613 and 615, there shall be substituted the following Regulations :

MOD **613** (2) The Board, in the light of all the data at its disposal, shall review the matter, taking into account No. **501** or **570AB** and No. **502, 503, 570AC** or **570AD,** as appropriate, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

MOD **615** § 38. (1) After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistence of the notifying administration, following an unfavourable finding with respect to No. **502, 503** or **570AD,** as appropriate, this administration may request the Board to review the finding. Thereupon the Board shall review the matter, first having consulted the administrations concerned.

ANNEX 6

Addition of a new Article (Article 9A) to the Radio Regulations

The following new Article 9A shall be added to the Radio Regulations after Article 9 :

ARTICLE 9A

Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Space and Radio Astronomy Services

Section I. Notification of Frequency Assignments and Co-ordination Procedure to be Applied in appropriate Cases

ADD **639AA** § 1. (1) Any *frequency assignment* [1] to an earth or space station shall be notified to the International Frequency Registration Board:

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration; or

b) if the frequency is to be used for international radiocommunication; or

c) if it is desired to obtain international recognition of the use of the frequency.

ADD **639AA.1** [1] The expression *frequency assignment*, wherever it appears in this Article, 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 *Master Register*).

ADD **639AB** (2) Similar notice shall be given for any frequency to be used for the reception of transmissions from earth or space stations by a particular space or earth station in each case where one or more of the conditions specified in No. **639AA** are applicable.

ADD **639AC** (3) Similar notice may be given for any frequency or frequency band to be used for reception by a particular radio astronomy station, if it is desired that such data should be included in the Master Register.

ADD **639AD** § 2. (1) Before an administration notifies to the Board or brings into use any frequency assignment to an earth station, whether for transmitting or receiving, in a particular band allocated with equal rights to the space service and the fixed or the mobile service in the frequency spectrum between one and ten Gc/s, it shall effect co-ordination of the assignment with any other administration whose territory lies wholly or partly within co-ordination distance [1], but only in respect of the fixed or the mobile service. For this purpose it shall send to any other such administration a copy of a diagram drawn to an appropriate scale indicating the location of the earth station and showing the co-ordination distance from the earth station, for the cases of transmission and reception by the earth station, as a function of azimuth and the data on which it is based, including all pertinent details of the proposed frequency assignment, as listed in Appendix 1A, and an indication of the approximate date on which it is planned to begin operations.

ADD **639AD.1** [1] For the purposes of this Article the expression " co-ordination distance " means the distance from an earth station calculated along the lines of the procedures shown in Recommendation No. 1A within which there is a possibility of the use of a given transmitting frequency at this earth station causing harmful interference to stations in the fixed or the mobile service in the frequency spectrum between one and ten Gc/s, sharing the same frequency band, or, as the case may be, of the use of a given frequency for reception at this earth station receiving harmful interference caused by such stations in the fixed or the mobile service.

ADD **639AE** (2) An administration with which co-ordination is sought under No. **639AD** shall acknowledge receipt of the co-ordination data within thirty days and shall promptly examine the matter to establish:

a) in the case of a frequency assignment to be used for transmitting by the earth station, whether the use would cause harmful interference to the service rendered by its stations in the fixed or the mobile service operating in accordance with the Convention and these Regulations, or to be so operated within the next two years;

b) in the case of a frequency assignment to be used for reception by the earth station, whether harmful interference would be caused to reception at the earth station by the service rendered by its stations in the fixed or the mobile service operating in accordance with the Convention and these Regulations, or to be so operated within the next two years;

and shall, within a further period of thirty days, notify the administration requesting co-ordination of its agreement. If the administration with which co-ordination is sought does not agree it shall, within the same period, send to the administration seeking co-ordination a copy of a diagram drawn to an appropriate scale showing the location of its stations in the fixed or the mobile service which are within the co-ordination distance of the earth transmitting or receiving station, as appropriate, together with all other relevant basic characteristics, and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem. A copy of these data shall be sent to the Board, as notification within the period specified for such a case in No. **491**.

ADD **639AF** (3) No co-ordination under No. **639AD** is required when an administration proposes:

a) to bring into use an earth station which is located in relation to the territory of any other country, outside the

co-ordination distance defined in No. **639AD.1**;

b) to change the characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to the stations in the fixed or the mobile service of other administrations;

c) to bring into use an earth station in the band 4 400-4 700 Mc/s or the band 8 100-8 400 Mc/s; or

d) to operate an earth station located on board a ship or aircraft; however, in such a case the operation of this station in a band referred to in No. **639AD**, if the ship or aircraft is within the co-ordination distance with respect to the boundaries of another country, shall be subject to prior agreement between the administrations concerned, in order to avoid harmful interference to the established fixed and mobile services of that country.

ADD **639AG** (4) An administration seeking co-ordination may request the Board to endeavour to effect co-ordination in those cases where:

a) an administration with which co-ordination is sought under No. **639AD** fails to reply within a period of ninety days;

b) there is a disagreement between the administration seeking co-ordination and an administration with which co-ordination is sought as to the probability of harmful interference; or

c) co-ordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to effect such co-ordination.

ADD **639AH** (5) Either the administration seeking co-ordination or an administration with which co-ordination is sought, or the Board, may

request additional information which they may require to assess the probability of harmful interference to the services concerned.

ADD **639AI** (6) Where the Board receives a request under No. **639AG** *a)*, or where the Board receives no reply within ninety days to its request for co-ordination in the case foreseen in No. **639AG** *c)*, it shall immediately send a telegram to the administration with which co-ordination is sought. If no reply has been received from that administration within a period of sixty days from the date of despatch of the telegram, it shall be deemed that the administration with which co-ordination was sought shall have undertaken that no complaint will be made in respect of any harmful interference which may be caused by the earth station to the services rendered by its stations in the fixed or the mobile service.

ADD **639AJ** (7) Where necessary, as part of the procedure under No. **639AG**, the Board shall assess the probability of harmful interference. In any case, the Board shall inform the administrations concerned of the results obtained.

ADD **639AK** § 3. For any notification under No. **639AA**, **639AB**, or **639AC**, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A, which specifies in Sections B, C, D, E or F the basic characteristics to be furnished, according to the case. It is recommended that the notifying administration should also supply the additional data called for in Section A of that Appendix, together with such further data as it may consider appropriate.

ADD **639AL** § 4. (1) For a frequency assignment to an earth or space station, each notice must reach the Board not earlier than two years before the date on which the assignment is to be brought into use. It must reach the Board in any case not later than one hundred and eighty days before this date, except in the case of assignments in the space research service in bands allocated exclusively to this service or in shared bands in which this service is the sole primary service. In the case of such an assignment in the space research service the notice should, whenever practicable, reach the Board before the date on which the assignment is brought into use, but in any case must reach

the Board not later than thirty days after the date it is actually brought into use.

ADD **639AM** (2) Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in No. **639AL**, shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with No. **639AL**.

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

ADD **639AN** § 5. Any notice which does not contain at least those characteristics specified in Appendix 1A (Sections B, C, D, E, or F, as appropriate) shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

ADD **639AO** § 6. Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in the weekly circular referred to in No. **497**, which shall contain the particulars of all such notices received since the publication of the previous circular.

ADD **639AP** § 7. The circular shall constitute the acknowledgment to the notifying administration of the receipt of a complete notice.

ADD **639AQ** § 8. Complete notices shall be considered by the Board in the order of their receipt. The Board shall not postpone the formulation of a finding unless it lacks sufficient data to render a decision in connection therewith; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board, until it has reached a finding with respect to such earlier notice.

ADD **639AR** § 9. The Board shall examine each notice:

ADD **639AS** *a)* with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations (with the exception of those

relating to the co-ordination procedure and the probability of harmful interference);

ADD **639AT** *b)* where appropriate, with respect to its conformity with the provisions of No. **639AD** relating to the co-ordination of the use of the frequency assignment with the other administrations concerned;

ADD **639AU** *c)* where appropriate, with respect to the probability of harmful interference to the service rendered by a station in the fixed or the mobile service for which a frequency assignment already recorded in the Master Register is in conformity with the provisions of No. **501** or **570AB,** as appropriate, if this frequency assignment has not, in fact, caused harmful interference to any frequency assignment in conformity with No. **639AS** previously recorded in the Master Register.

ADD **639AV** § 10. Depending upon the findings of the Board subsequent to the examination prescribed in Nos. **639AS, 639AT** and **639AU,** further action shall be as follows:

ADD **639AW** § 11. (1) *Finding favourable with respect to No.* **639AS** *in cases where the provisions of No.* **639AT** *are not applicable.*

ADD **639AX** (2) The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639AY** § 12. (1) *Finding unfavourable with respect to No.* **639AS.**

ADD **639AZ** (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115,** the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639BA** (3) Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115,** it shall be returned immediately by airmail to the

notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **639BB** (4) If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. **639BA**. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115**, or with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. **639AS**, and the provisions of No. **639AT** are not applicable, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD **639BC** § 13. (1) *Finding favourable with respect to No.* **639AS** *in cases where the provisions of No.* **639AT** *are applicable.*

ADD **639BD** (2) Where the Board finds that the co-ordination procedure mentioned in No. **639AT** has been successfully completed with all administrations whose fixed or mobile services may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639BE** (3) Where the Board finds that the co-ordination procedure mentioned in No. **639AT** has not been applied, and the notifying administration requests the Board to effect the required co-ordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with No. **639BD**. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of No. **639AU**.

ADD **639BF** (4) Where the Board finds that the co-ordination procedure mentioned in No. **639AT** has not been applied, and the notifying administration does not request the Board to effect the required co-ordination, the notice shall be returned immediately by airmail to the

notifying administration with the reasons of the Board for this action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **639BG** (5) Where the notifying administration resubmits the notice and the Board finds that the co-ordination procedure mentioned in No. **639AT** has been successfully completed with all administrations whose fixed or mobile services may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **639BH** (6) Where the notifying administration resubmits the notice with a request that the Board effect the required co-ordination, it shall be treated in accordance with the provisions of No. **639BE**. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **639BI** (7) Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the co-ordination, it shall be examined by the Board with respect to the provisions of No. **639AU**. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **639BJ** § 14. (1) *Finding favourable with respect to Nos.* **639AS** *and* **639AU**.

ADD **639BK** (2) The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639BL** § 15. (1) *Finding favourable with respect to No.* **639AS** *but unfavourable with respect to No.* **639AU**.

ADD **639BM** (2) The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **639BN** (3) Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to No. **639AU**, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be indicated in the Remarks Column.

ADD **639BO** (4) Should the notifying administration resubmit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. **639BN** to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

ADD **639BP** (5) The period of one hundred and twenty days mentioned in No. **639BO** shall count from:

— the date when the assignment to the earth station which received an unfavourable finding is brought into use, if the assignment to the station in the fixed or the mobile service is then in use;

— otherwise, from the date when the assignment to the station in the fixed or the mobile service is brought into use.

But if the assignment to the station in the fixed or mobile service has not been brought into use by the notified date, the period of one hundred and twenty days shall be counted from this date. Allowance may be made for the additional period mentioned in No. **639BY**.

ADD **639BQ** § 16. (1) *Notices relating to radio astronomy stations.*

ADD **639BR** (2) A notice relating to a radio astronomy station shall not be examined by the Board with respect to No. **639AT** or **639AU.** Whatever the finding, the assignment shall be recorded in the Master Register with a date in Column 2c. The date of receipt by the Board of the notice shall be recorded in the Remarks Column.

ADD **639BS** § 17. (1) *Change in the basic characteristics of assignments already recorded in the Master Register.*

ADD **639BT** (2) A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1A (except the call sign, the name of the station or the name of the locality in which it is situated) shall be examined by the Board according to No. **639AS**, and, where appropriate, No. **639AT** or **639AU**, and the provisions of No. **639AW** to **639BR** inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.

ADD **639BU** (3) However, in the case of a change in the characteristics of an assignment which is in conformity with No. **639AS**, should the Board reach a favourable finding with respect to No. **639AT** or **639AU**, where these provisions apply, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. The date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

ADD **639BV** § 18. *In applying the provisions of the whole of this Section*, any resubmitted notice which is received by the Board more than two years after the date of its return by the Board, shall be considered as a new notice.

ADD **639BW** § 19. (1) *Recording of Frequency Assignments notified before being brought into use.*

ADD **639BX** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to No. **639AS** and, where appropriate, No. **639AT** or **639AU,** it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

ADD **639BY** (3) If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

ADD **639BZ** (4) In the circumstances described in No. **639BO,** and as long as an assignment which received an unfavourable finding cannot be resubmitted as a consequence of the provisions of No. **639BP,** the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. **639BO**, the information relating to the absence of complaint of harmful interference.

ADD **639CA** (5) If the Board does not receive this confirmation within the period referred to in No. **639BY** or at the end of the period referred to in No. **639BZ**, as appropriate, the entry concerned shall be cancelled.

Section III. Recording of Findings in the Master Register

ADD **639CB** § 20. In any case where a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a. In addition, a remark indicating the reasons for any finding shall be inserted in the Remarks Column.

Section IV. Categories of Frequency Assignments

ADD **639CC** § 21. (1) The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

ADD **639CD** (2) If harmful interference to the reception of any station whose assignment is in accordance with No. **501**, **570AB** or **639AS** as appropriate, is actually caused by the use of a frequency assignment which is not in conformity with No. **639AS**, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section V. Reviews of Findings

ADD **639CE** § 22. (1) The review of a finding by the Board may be undertaken:

— at the request of the notifying administration,

— at the request of any other administration interested in the question, but only on the grounds of actual harmful interference,

— on the initiative of the Board itself when it considers this is justified.

ADD **639CF** (2) The Board, in the light of all the data at its disposal, shall review the matter, taking into account No. **639AS** and No. **639AT** or **639AU**, where these latter provisions apply, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

ADD **639CG** § 23. (1) After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistence of the notifying administration, following an unfavourable finding with respect to No. **639AU**, this administration may request the Board to review the finding. Thereupon the Board shall review the matter, having first consulted the administrations concerned.

ADD **639CH** (2) If the finding of the Board is then favourable, it shall enter in the Master Register the changes that are required so that the entry shall appear in the future as if the original finding had been favourable.

ADD **639CI** (3) If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

Section VI. Modification, Cancellation and Review of Entries in the Master Register

ADD **639CJ** § 24. In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within ninety days of such discontinuance, whereupon the entry shall be removed from the Master Register.

ADD **639CK** § 25. Whenever it appears to the Board from the information available that a recorded assignment has not been brought into regular operation in accordance with the notified basic characteristics, or is not being used in accordance with those basic characteristics, the Board shall consult the notifying administration and, subject to its agreement, shall either cancel or suitably modify the entry.

ADD **639CL** § 26. If, in connection with an enquiry by the Board under No. **639CK**, the notifying administration has failed to supply the Board within ninety days with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

Section VII. Studies and Recommendations

ADD **639CM** § 27. (1) If it is requested by any administration, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these Regulations, or of harmful interference.

ADD **639CN** (2) The Board shall thereupon prepare and forward to the administration concerned a report containing its finding and recommendations for the solution of the problem.

ADD **639CO** § 28. In a case where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no answer has been received from one or more of these administrations within a period of ninety days, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.

Section VIII. Miscellaneous Provisions

ADD **639CP** § 29. The technical standards of the Board shall be based upon the relevant provisions of these Regulations and the Appendices thereto, the decisions of Administrative Conferences of the Union as appropriate, and the Recommendations of the C.C.I.R.

ADD **639CQ** § 30. The Board shall promulgate to administrations its findings and reasons therefor, together with all changes made to the Master Register, through the weekly circular referred to in No. **497**.

ADD **639CR** § 31. In case a Member or Associate Member of the Union avails itself of the provisions of Article 27 of the Convention, the Board shall, upon request, make its records available for such proceedings as are prescribed in the Convention for the settlement of international disputes.

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ANNEX 7

Revision of Article 14 of the Radio Regulations

Article 14 of the Radio Regulations shall be amended as follows:

For Regulation No. 695, there shall be substituted the following Regulation :

MOD **695** § 3. In order to avoid interference:

— locations of transmitting stations and, where the nature of the service permits, locations of receiving stations shall be selected with particular care;

— radiation in and reception from unnecessary directions shall be minimized, where the nature of the service permits, by taking the maximum practical advantage of the properties of directional antennae;

— the choice and use of transmitters and receivers shall be in accordance with the provisions of Article 12 ;

— space stations shall be fitted with appropriate devices to quickly terminate their radio emissions whenever required to do so under the provisions of these Regulations.

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ANNEX 8

Revision of Article 15 of the Radio Regulations

Article 15 of the Radio Regulations shall be amended as follows:

After Regulation No. 711, there shall be inserted the following new Regulations :

ADD **711A** § 8A. When the service rendered by an earth station suffers interference, the administration having jurisdiction over the receiving station experiencing the interference may also approach directly the administration having jurisdiction over the interfering station.

ADD **711B** § 8B. When cases of harmful interference occur as a result of emissions from space stations, the administrations concerned shall, upon request from the administration having jurisdiction over the station experiencing the interference, furnish current ephemeral data necessary to allow calculation of the positions of the space station.

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ANNEX 9

Revision of Article 19 of the Radio Regulations

Article 19 of the Radio Regulations shall be amended as follows:

For Regulation No. 735.1, there shall be substituted the following Regulation :

MOD **735.1** [1] In the present state of the technique, it is recognized nevertheless that the transmission of identifying signals for certain radio systems (e.g. radiodetermination, radio relay systems and space systems) is not always possible.

After Regulation No. 737, there shall be inserted the following new Regulation :

ADD **737A** § 2A. In the event that the transmission of identification signals by a space station is not possible, that station shall be identified by specifying the angle of inclination of the orbit, the period of the object in space and the altitudes of apogee and perigee of the space station in kilometres. In the case of a space station on board a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth shall be specified. (See Appendix 1A.)

After Regulation No. 773, there shall be inserted the following new Regulation :

ADD *Stations in the Space Service*

ADD **773A** § 21A. When call signs for stations in the space service are employed, it is recommended that they consist of:

— two letters followed by two or three digits (other than the digits 0 and 1 in cases where they immediately follow a letter). (See also No. **737A.**)

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ANNEX 10

Revision of Article 20 of the Radio Regulations

Article 20 of the Radio Regulations shall be amended as follows:

For Regulation No. 808, there shall be substituted the following Regulation :

MOD **808** (VII) *List VII. Alphabetical List of Call Signs Assigned from the International Series to Stations Included in Lists I to VI and VIIIA.*

After Regulation No. 811, there shall be inserted the following new Regulation :

ADD **811A** (VIIIA) *List VIIIA. List of Stations in the Space Service and in the Radio Astronomy Service.*

This list shall contain particulars of earth and space stations and of radio astronomy stations. In this list, each class of station shall occupy a special section.

For Regulation No. 815, there shall be substituted the following Regulation :

MOD **815** § 2. (1) The Secretary-General shall publish the amendments to be made in the documents listed in Nos. **790** to **814** inclusive. Once a month administrations shall inform him, in the form shown for the lists themselves in Appendix 9, of the additions, modifications or deletions to be made in Lists IV, V and VI using for this purpose the appropriate symbols shown in Appendix 10. Furthermore, in order to make the necessary additions, modifications and deletions to Lists I, II, III and VIIIA, he shall use the data provided by the International Frequency Registration Board, obtained from the information received in application of the provisions of Articles 9, 9A and 10. He shall make the requisite amendments to List VII by using the data he has received for Lists I to VI and VIIIA.

After Regulation No. 829, there shall be inserted the following new Regulation :

ADD **829A** § 10A. The List of Stations in the Space Service and in the Radio Astronomy Service (List VIIIA) shall be republished at intervals to be determined by the Secretary-General. Recapitulative supplements shall be published every six months.

For Regulation No. 831, there shall be substituted the following Regulation :

MOD **831** § 12. (1) The forms in which Lists I to VI inclusive, Lists VIII and VIIIA and the Radiocommunication Statistics are to be prepared are given in Appendix 9. Information concerning the use of these documents shall be given in the Prefaces thereto. Each entry shall include the appropriate symbol, as shown in Appendix 10, to designate the category of station concerned. Additional symbols, where necessary, may be selected by the Secretary-General, any such new symbols being notified by the Secretary-General to administrations.

ANNEX 11

Revision of Appendix 1 to the Radio Regulations

Appendix 1 to the Radio Regulations shall be amended as follows:

NOC **Section A. Basic Characteristics to be Furnished for Notification under No. 486 of the Regulations**

MOD *Column 5a* Locality(ies) or area(s) with which communication is established.

This is not a basic characteristic for land, radionavigation land, radiolocation land or standard frequency stations, or for ground-based stations in the meteorological aids service.

MOD *Column 5b* Length of circuit (km).

This is a basic characteristic only for land, radionavigation land, radiolocation land and standard frequency stations.

MOD Supplementary information: reference frequency or frequencies, if any, and any co-ordination required by No. **492A.**

NOC **Section B. Basic Characteristics to be Furnished for Notification under No. 487 of the Regulations**

MOD *Column 4b* Country in which the receiving land station is located.

MOD *Column 4c* Longitude and latitude of the site of the receiving land station.

MOD *Column 5a* Name of the receiving land station.

MOD *Column 5b* Maximum distance in km between mobile stations and the receiving land station.

MOD *Column 6* Class of mobile stations and nature of service.

MOD *Column 7* Class of emission of mobile stations and necessary bandwidth.

MOD *Column 8* Highest power used by the mobile stations.

MOD *Column 10* Maximum hours of operation of the mobile stations (G.M.T.).

ADD Supplementary information: any co-ordination required by No. **492A.**

NOC **Section C. Basic Characteristics to be Furnished for Notification under No. 490 of the Regulations**

ADD Supplementary information: any co-ordination required by No. **492A.**

NOC **II. Notes Concerning Information to be Entered in the Notice Pertaining to Specific Columns of the Master Register**

MOD *Column 4b (reception)* The country in which the receiving land station is located.

MOD *Column 4c (reception)* The geographical co-ordinates (in degrees and minutes) of the site of the receiving land station.

MOD *Column 5a (para. 3)* For land, radionavigation land, radiolocation land and standard frequency stations, and ground-based stations in the meteorological aids service, it is not necessary to indicate any information in this column.

MOD *Column 5a (para. 5)* For reception in the circumstances described in No. **487**, the name of the locality by which the receiving land station is known or in which it is situated should be indicated.

MOD *Column 5b (para. 2)* For reception in the circumstances described in No. **487**, the maximum distance between the mobile stations and the receiving land station should be indicated.

MOD *Column 5b (para. 3)* This information is not a basic characteristic *except in the case of paragraph 2 above, and in the case of land, radionavigation land, radiolocation land and standard frequency stations. In these latter cases, the distances shown shall represent the service ranges.*

MOD *Column 6 (para. 2)* When the frequency assignment is used for reception in the circumstances described in No. **487**, the class of station and nature of service applicable to the mobile stations should be indicated.

MOD *Column 7 (para. 2)* When the frequency assignment is used for reception in the circumstances described in No. **487**, the particulars to be indicated are those applicable to the mobile stations.

MOD *Column 8 (para. 5)* When the frequency assignment is used for reception in the circumstances described in No. **487**, the power of the mobile stations should be indicated. If not all of the stations use the same power, the highest power should be indicated.

MOD *Column 10 (para. 1)* When the frequency assignment is used for reception in the circumstances described in No. **487**, the maximum hours of operation are those relating to the mobile stations.

NOC *Supplementary Information*

MOD *para. 5* *Only the information specified in paragraph 3 above is a basic characteristic; it is recommended, however, that the information under paragraphs 1 and 2 above be supplied. However, in the case of stations in the fixed or mobile service referred to in No.* **492A**, *the name of any administration with which co-ordination of the use of the frequency has been sought and the name of any administration with which such co-ordination has been effected are basic characteristics.*

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ANNEX 12

Addition of a new Appendix (Appendix 1A) to the Radio Regulations

The following new Appendix 1A shall be added to the Radio Regulations after Appendix 1.

APPENDIX 1A

Notices Relating to Stations in the Space and Radio Astronomy Services

(See Article 9A)

Section A. General Instructions

1. A separate notice in a form convenient to the notifying administration shall be sent to the International Frequency Registration Board for notifying:

— each new frequency assignment,

— any change in the characteristics of a frequency assignment recorded in the Master International Frequency Register (hereinafter called the Master Register),

— any total deletion of a frequency assignment recorded in the Master Register.

2. When submitting notices under No. **639AA**, for earth and space transmitting assignments, and under No. **639AB**, for space and earth receiving assignments, separate notices shall be submitted to the Board. In the case of a passive satellite system, only earth transmitting and receiving assignments shall be notified.

3. In the case of a satellite system employing multiple space stations with the same general characteristics:

— for stationary satellites, a separate notice shall be submitted for each space station; and

— for non-stationary satellites, one notice covering all the space stations may be submitted.

4. The following information should be shown on the notice:

a) the serial number of the notice and the date on which the notice is sent to the Board;

b) the name of the notifying administration;

c) sufficient data to identify the particular satellite system in which the earth or space station will operate;

d) whether the notice reflects

1) the first use of a frequency by a station,

2) the first use of an additional frequency by a station,

3) a change in the characteristics of a frequency assignment recorded in the Master Register (indicate whether the change is a replacement, addition or deletion of existing characteristics), or

4) a deletion of an assignment in all of its notified characteristics;

e) any other information which the administration considers to be relevant, e.g., any special channelling arrangements or methods of modulation, the degree of terrain shielding throughout all azimuthal angles for the earth stations, an indication that the assignment concerned would be operating in accordance with No. **115**, information concerning the use of the notified frequency if such use is restricted, or, in the case of notices pertaining to space stations, if the transmissions of the station are to be permanently switched off after a certain period.

Section B. Basic Characteristics to be furnished in Notices relating to Frequencies used by Earth Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Items 3* or *4 a)*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19.

Item 4 Identity and location of the earth station

a) Indicate the name by which the station is known or the name of the locality in which it is situated.

b) Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the transmitter site.

Item 5 Station(s) with which communication is to be established

Identify the associated receiving space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a passive satellite, the identity of the satellite and the location of the receiving earth station(s).

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 7 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In any case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 8 Power (kW)

The power supplied to the antenna shall be notified as follows, according to the class of emission:

— Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. **96**);

— Peak envelope power (Pp) for all classes of emission other than those referred to above (see No. **95**).

Item 9 Transmitting antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degrees, clockwise from True North, the planned range of azimuthal angles.

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the isotropic gain (db) of the antenna in the direction of maximum radiation (see No. **100**).

e) Indicate the maximum isotropic gain (db) of the antenna in the horizontal plane with the antenna at any angle of elevation above the minimum angle of elevation (see No. **100**).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 10 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in *Item 1.*

Item 11 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of this frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15).

Section C. Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Earth Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received, as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3 a)*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity and location of the receiving earth station

a) Indicate the name by which the receiving earth station is known or the name of the locality in which it is situated.

b) Indicate the country in which the receiving earth station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the receiver site.

Item 4 Associated transmitting station(s)

Identify the associated transmitting space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a passive satellite, the identity of the satellite(s) and the associated transmitting earth station(s).

Item 5 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 6 Class of emission, necessary bandwidth and description of the transmission to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission to be received, in accordance with Article 2 and Appendix 5. Indicate also the over-all receiver bandwidth at which the receiver response is 6 db below maximum.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 7 Earth station receiving antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degrees, clockwise from True North, the planned range of azimuthal angles.

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the isotropic gain (db) of the antenna in the direction of the main lobe (see No. **100**).

e) Indicate the maximum isotropic gain (db) of the antenna in the horizontal plane with the antenna at any angle of elevation above the minimum angle of elevation (see No. **100**).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 8 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in *Item 1.*

Item 9 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of the frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 10 Noise temperature

Indicate the over-all receiving system operating noise temperature (°K) under " quiet sky " conditions at the planned minimum operating angle of elevation of the antenna.

Item 11 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

Section D. Basic Characteristics to be furnished in Notices relating to Frequencies used by Space Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Items 3* or *4*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19.

Item 4 Identity of the space station(s)

Indicate the identity of the space station(s).

Item 5 Area of coverage

Indicate the area of intended coverage or the name of the locality and country in which the associated receiving station(s) is located.

Item 6 Orbital information

Indicate, where applicable, the angle of inclination of the orbit, the period of the object in space and the altitudes of

apogee and perigee of the space station(s) in kilometres. In the case of a space station aboard a stationary satellite, indicate the mean geographical longitude of the projection of the satellite's position on the surface of the Earth.

Item 7 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 8 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In any case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 9 Power (Watts)

The power supplied to the antenna shall be notified as follows, according to the class of emission:

— Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. **96**);

— Peak envelope power (Pp) for all classes of emission other than those referred to above (see No. **95**).

Item 10 Transmitting antenna characteristics

a) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

b) Indicate the isotropic gain (db) of the antenna in the direction of maximum radiation (see No. **100**).

c) For a stationary satellite employing directional antennae, indicate the point on the Earth's surface towards which the antenna is directed and the accuracy of maintaining this direction.

Item 11 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in *Item 1.*

Item 12 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 13 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15).

Section E. Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Space Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received, as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity of the receiving space station(s)

Indicate the identity of the receiving space station(s).

Item 4 Orbital information

Indicate, where applicable, the angle of inclination of the orbit, the period of the object in space and the altitudes of apogee and perigee of the space station(s) in kilometres. In the case of a space station on board a stationary satellite, indicate the mean geographical longitude of the projection of the satellite's position on the surface of the Earth.

Item 5 Associated transmitting earth station(s)

Identify the associated transmitting earth station(s) by reference to the notification thereof or in any other appropriate manner.

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 7 Class of emission, necessary bandwidth and description of the transmission(s) to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission(s) to be received, in accordance with Article 2 and Appendix 5. Indicate also the over-all receiver bandwidth at which the receiver response is 6 db below maximum. In the case of a communication-satellite space station, designed

to receive as a composite signal two or more emissions in contiguous channels and transmitted from one or more earth stations, the description should state the number of such emissions, the spacing between their assigned frequencies and the total bandwidth collectively encompassed by them.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 8 Space station receiving antenna characteristics

a) Indicate the beamwidth in degrees, between the half power points (describe in detail if not symmetrical).

b) Indicate the isotropic gain (db) of the antenna in the direction of the main lobe (see No. **100**).

c) For a stationary satellite employing directional antennae, indicate the point on the Earth's surface towards which the antenna is directed and the accuracy of maintaining this direction.

Item 9 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in *Item 1*.

Item 10 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 11 Noise temperature

Indicate the over-all receiving system operating noise temperature (°K).

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

Section F. Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Radio Astronomy Stations

Item 1 Observed frequency

Indicate the centre of the frequency band observed, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) Indicate the date (actual or foreseen, as appropriate) when reception of the frequency band begins.

b) Whenever there is a change in any of the basic characteristics, as shown in this Section (except in the case of a change in *Item 3 b)*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Name and location of the station

a) Indicate the letters " RA ".

b) Indicate the name by which the station is known or the name of the locality in which it is situated or both.

c) Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

d) Indicate the geographical co-ordinates (in degrees and minutes) of the station site.

Item 4 Bandwidth

Indicate the width of the frequency band observed by the station.

Item 5 Antenna characteristics

Indicate the antenna type and dimensions, effective area and angular coverage in azimuth and elevation.

Item 6 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency band shown in *Item 1.*

Item 7 Noise temperature

Indicate the over-all receiving system noise temperature (°K).

Item 8 Class of observations

Indicate the class of observations to be taken on the frequency band shown in *Item 1.* Class A observations are those in which the sensitivity of the equipment is not a primary factor. Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques.

Item 9 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

ANNEX 13

Revision of Appendix 9 to the Radio Regulations

Appendix 9 to the Radio Regulations shall be modified as follows:

After List VIII, there shall be inserted the following new List:

List VIIIA. — List of Stations in the Space Service and in the Radio Astronomy Service [1]

1 — Communication-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

			Transmission						Reception								
	Name by which the station is known or the name of the locality in which it is situated		Telecommand where appropriate			Communications			Telemetering		Tracking		Communications				
	Geographical co-ordinates (in degrees and minutes) of the transmitter site																
		Call sign (identification)															
			Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Identity of the station(s) with which communication is to be established	Operating administration or company	Remarks
1	2	3	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8a	8b	9	10	11
																	1. Special channelling arrangements for: *a)* telegraphy *b)* telephony *c)* other types of communication, as appropriate 2. Special methods of modulation

[1] For the cases where these data must be supplied, see Nos. **639AA, 639AB** and **639AC.**

2 — *Communication-satellite space stations*

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

1	Identity of the station															
2	Call sign (identification)															
		Transmission									Reception					
		Telemetering			Tracking			Communications			Telecommand where appropriate		Communications			
3a		Frequency (Mc/s or Gc/s)									Frequency (Mc/s or Gc/s)					
3b		Class of emission, necessary bandwidth and description of transmission									Class of emission, necessary bandwidth and description of transmission					
3c		Power (Watts)														
4a					Frequency (Mc/s or Gc/s)								Frequency (Mc/s or Gc/s)			
4b					Class of emission, necessary bandwidth and description of transmission								Class of emission, necessary bandwidth and description of transmission			
4c					Power (Watts)											
5a								Frequency (Mc/s or Gc/s)								
5b								Class of emission, necessary bandwidth and description of transmission								
5c								Power (Watts)								
6a											Frequency (Mc/s or Gc/s)					
6b											Class of emission, necessary bandwidth and description of transmission					
7a													Frequency (Mc/s or Gc/s)			
7b													Class of emission, necessary bandwidth and description of transmission			
8	Area of coverage or the name of the locality and country in which the associated receiving station(s) is located															
9	Operating administration or company															
10	Remarks															

1. Orbital information
   a) angle of inclination of the orbit
   b) period of the object in space
   c) altitude of apogee (km)
   d) altitude of perigee (km)
   e) in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth
2. Special channelling arrangements for:
   a) telegraphy
   b) telephony
   c) other types of communication, as appropriate
3. Special methods of modulation

3 — *Meteorological-satellite earth stations*

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

1	Name by which the station is known or the name of the locality in which it is situated												
2	Geographical co-ordinates (in degrees and minutes) of the transmitter site												
3	Call sign (identification)												
		Transmission			Reception								
		Telecommand where appropriate			Telemetering		Tracking		Reception of meteorological information				
4a	Frequency (Mc/s or Gc/s)												
4b	Class of emission, necessary bandwidth and description of transmission												
4c	Power (kW)												
5a	Frequency (Mc/s or Gc/s)												
5b	Class of emission, necessary bandwidth and description of transmission												
6a	Frequency (Mc/s or Gc/s)												
6b	Class of emission, necessary bandwidth and description of transmission												
7a	Frequency (Mc/s or Gc/s)												
7b	Class of emission, necessary bandwidth and description of transmission												
8	Identity of the station(s) with which communication is to be established												
9	Operating administration or company												
10	Remarks												
	Special methods of modulation												

4 — *Meteorological-satellite space stations*

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the station	1
Call sign (identification)	2
Transmission — Telemetering — Frequency (Mc/s or Gc/s)	3a
Transmission — Telemetering — Class of emission, necessary bandwidth and description of transmission	3b
Transmission — Telemetering — Power (Watts)	3c
Transmission — Tracking — Frequency (Mc/s or Gc/s)	4a
Transmission — Tracking — Class of emission, necessary bandwidth and description of transmission	4b
Transmission — Tracking — Power (Watts)	4c
Transmission — Transmission of meteorological information — Frequency (Mc/s or Gc/s)	5a
Transmission — Transmission of meteorological information — Class of emission, necessary bandwidth and description of transmission	5b
Transmission — Transmission of meteorological information — Power (Watts)	5c
Reception — Telecommand where appropriate — Frequency (Mc/s or Gc/s)	6a
Reception — Telecommand where appropriate — Class of emission, necessary bandwidth and description of transmission	6b
Area of coverage or the name of the locality and country in which the associated receiving station(s) is located	7
Operating administration or company	8
Remarks	9

1. Orbital information:
   - *a)* angle of inclination of the orbit
   - *b)* period of the object in space
   - *c)* altitude of apogee (km)
   - *d)* altitude of perigee (km)
   - *e)* in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth
2. Special channelling arrangements for:
   - *a)* telegraphy
   - *b)* telephony
   - *c)* other types of communication, as appropriate
3. Special methods of modulation

5 — *Radionavigation-satellite earth stations*

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

1	Name by which the station is known or the name of the locality in which it is situated													
2	Geographical co-ordinates (in degrees and minutes) of the transmitter site													
3	Call sign (identification)													
		Transmission				Reception								Remarks
4a	Frequency (Mc/s or Gc/s)	Telecommand where appropriate				Telemetering				Tracking		Supplementary information necessary for the operation of the radionavigational system		
4b	Class of emission, necessary bandwidth and description of transmission													
4c	Power (kW)													
5a	Frequency (Mc/s or Gc/s)													
5b	Class of emission, necessary bandwidth and description of transmission													
6a	Frequency (Mc/s or Gc/s)													
6b	Class of emission, necessary bandwidth and description of transmission													
7a	Frequency (Mc/s or Gc/s)													
7b	Class of emission, necessary bandwidth and description of transmission													
8	Identity of the station(s) with which communication is to be established													
9	Operating administration or company													
10	Special methods of modulation													

6 — *Radionavigation-satellite space stations*

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of stations.

Identity of the station		Transmission								Reception		Area of coverage or the name of the locality and country in which the associated receiving station(s) is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of navigation information						
	Call sign (identification)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9
											Telecommand where appropriate				1. Orbital information: *a)* angle of inclination of the orbit *b)* period of the object in space *c)* altitude of apogee (km) *d)* altitude of perigee (km) *e)* in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth 2. Special channelling arrangements for: *a)* telegraphy *b)* telephony *c)* other types of communication, as appropriate 3. Special methods of modulation

7 — Space research earth stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

1	Name by which the station is known or the name of the locality in which it is situated											
2	Geographical co-ordinates (in degrees and minutes) of the transmitter site											
3	Call sign (identification)											
		Transmission			Reception							
4a		Frequency (Mc/s or Gc/s)	Telecommand where appropriate		Telemetering		Tracking		Reception of research information			
4b		Class of emission, necessary bandwidth and description of transmission										
4c		Power (kW)										
5a		Frequency (Mc/s or Gc/s)										
5b		Class of emission, necessary bandwidth and description of transmission										
6a		Frequency (Mc/s or Gc/s)										
6b		Class of emission, necessary bandwidth and description of transmission										
7a		Frequency (Mc/s or Gc/s)										
7b		Class of emission, necessary bandwidth and description of transmission										
8	Identity of the station(s) with which communication is to be established											
9	Operating administration or company											
10	Remarks	Any special characteristics of the station and scope of research										

8 — Space research space stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the station		Transmission									Reception				Remarks
		Telemetering			Tracking			Transmission of information			Telecommand where appropriate				
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9
	Call sign (identification)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Area of coverage or the name of the locality and country in which the associated receiving station(s) is located	Operating administration or company	1. In the case of an earth satellite, orbital information: *a)* angle of inclination of the orbit *b)* period of the object in space *c)* altitude of apogee (km) *d)* altitude of perigee (km) *e)* in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth 2. In the case of a space probe, general indication of its trajectory 3. Special methods of modulation

9 — Radio astronomy stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

1	Name by which the station is known or the name of the locality in which it is situated
2	Geographical co-ordinates (in degrees and minutes) of the station
3	Centre of the frequency band observed (Mc/s or Gc/s)
4	Width of the frequency band observed
5	Antenna characteristics
6	Maximum hours of reception (G.M.T.)
7	Noise temperature (°K)
8	Class of observation
9	Operating administration or company
10	Remarks Any special additional characteristics of the station including: 1) altitude in metres above sea level, 2) main particulars of antenna, 3) scope of observations.

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ANNEX 14

Revision of Appendix 10 to the Radio Regulations

Appendix 10 to the Radio Regulations shall be modified as follows:

The following additional symbols shall be inserted in alphabetical order :

EC	Communication-satellite space station
ED	Space telecommand space station
EH	Space research space station
EK	Space tracking space station
EM	Meteorological-satellite space station
EN	Radionavigation-satellite space station
ER	Space telemetering space station
RA	Radio astronomy station
TC	Communication-satellite earth station
TD	Space telecommand earth station
TH	Space research earth station
TK	Space tracking earth station
TM	Meteorological-satellite earth station
TN	Radionavigation-satellite earth station
TR	Space telemetering earth station

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ADDITIONAL PROTOCOL

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ADDITIONAL PROTOCOL

At the time of signing the Acts of the Extraordinary Administrative Radio Conference, Geneva, 1963, the undersigned delegates take note of the fact that the following reservations have been submitted by certain signatories:

ARGENTINE REPUBLIC

I

The Argentine Delegation states that its country does not recognize any frequency assignments that may be made directly or indirectly on behalf of any other Power or Powers for any type of service, in any portion of the spectrum, for the Malvinas Islands, the South Georgia Islands or the South Sandwich Islands, over which territories the Argentine Republic exercises sovereign rights. The non-mention of other territories must not be taken to imply renunciation of the Argentine Republic's sovereignty over them. In any event, the Argentine Republic reserves the right to use as its own any radio frequencies that may be assigned under the above-mentioned conditions.

II

The Argentine Delegation declares that its country reserves the right to take all necessary steps to protect its radio services in cases where any Member or Associate Member of the Union fails to comply with the provisions of the Radio Regulations as revised by the present Conference or where the reservations made by such Members have a harmful effect on the telecommunication services of the Argentine Republic.

CANADA

The Canadian Delegation wishes to record its concern at the appearance of footnotes in Region 2 concerning the use of frequencies for space purposes. The question of such footnotes breaks the long-established pattern to which all countries in this region have adhered, sometimes

by sacrifices on their parts as for example we have seen to be the case at this conference.

Canada would view with grave concern any radio operations in Region 2 which would detract from the efficient and agreed use of the radio spectrum.

The Republic of Cuba, we note, formally reserves its complete freedom of action to reject those provisions of the Final Acts of the Extraordinary Administrative Radio Conference which she may feel are prejudicial to the interests of Cuba. Because all countries of Region 2 have hitherto displayed a continued desire to co-operate, we hope that this reservation by Cuba does not imply an intention not to co-operate fully with other Members of the Region in the rational use of the spectrum.

In these circumstances, Canada has no choice but to associate itself with the Protocol submitted by the United States of America and Territories of the United States of America, insofar as it concerns these footnotes subscribed to by Cuba which may be found now or in the future to be objectionable to Canada. It is understood, of course, that the same reservations apply to the Final Protocol submitted by the Republic of Cuba.

Republic of Colombia

The Republic of Colombia reserves the right to take all necessary steps to safeguard its services operating in conformity with the provisions of the Radio Regulations in all cases where such services are affected by those of other countries operating in contravention of the said Regulations and, in particular, of the Table of Frequency Allocations.

The Republic of Colombia will also take similar steps in cases where the rights recognized by the Convention are affected as a result of the application of the Radio Regulations.

Cuba

In signing the Final Acts of the Extraordinary Administrative Conference on Space Radiocommunication, Geneva, 1963, on behalf of the Republic of Cuba, the Delegation of Cuba makes the following statement:

Considering

a) that a world-wide plan for the space radiocommunication service has not been established;

b) that principles guaranteeing equitable participation by all countries in the space radiocommunication service have not been adopted;

c) that some of the clauses contained in the procedure for frequency notification and co-ordination do not satisfy the interests of Cuba;

d) that changes have been made in the Table of Frequency Allocations which might impair the normal operation of Cuban radiocommunications;

Cuba herewith formally reserves its complete freedom of action and the right to reject those provisions of the Extraordinary Administrative Conference on Space Radiocommunication, Geneva, 1963, which would be prejudicial to the interests of Cuba.

UNITED STATES OF AMERICA AND TERRITORIES OF THE UNITED STATES OF AMERICA

The Delegations of the United States of America and the Territories of the United States of America, in signing the Final Acts of the Extraordinary Administrative Radio Conference, Geneva, 1963, declare that:

1. There has heretofore always existed between all countries of Region 2 very close co-operation and agreement in the application of the Table of Frequency Allocations contained in the Radio Regulations of the Union;

2. This co-operation has in large measure been necessary since most countries in Region 2 are either in close geographical proximity to one another or are separated by relatively short distances over water, such over-water separation affording substantially less protection from harmful interference than does the same separation over land;

3. By virtue of the co-operation referred to in 1. above, it has not in the past been necessary for any country of Region 2 to request the insertion of any footnotes in the Table of Frequency Allocations which constitute an exception, insofar as a particular country is concerned, to the international allocation of a particular frequency band or bands;

4. The Delegation of Cuba to the present Conference has decided to disassociate its country from the decisions of all other delegations from Region 2 with respect to certain provisions of the Table of Frequency Allocations as modified by this Conference;

5. In light of the foregoing, the Delegations of the Territories of the United States of America, and the United States of America cannot accept on behalf of the Government of the United States of America any obligation to observe the exceptions claimed by Cuba in those footnotes to the Table of Frequency Allocations which were adopted by the present Conference and which specifically name Cuba.

Republic of Indonesia

In the opinion of the Delegation of the Republic of Indonesia to the Extraordinary Administrative Radio Conference to allocate frequency bands for Space Radiocommunications, a country must first accede to the International Telecommunication Convention before it has the right to participate in the International Telecommunication Union Conferences. The Indonesian Delegation refers to the representation of Malaysia in which case the Indonesian Delegation could not have any other opinion than that it should be considered as a new country which is assumed to comprise the Member country Malaya (Federation of) and the Associate Member Singapore-British North Borneo, and to which Article 18 of the Convention applies. As up to the Plenary Session of this Conference on 6 November, 1963, a notification by the Secretary-General concerning the accession of the above-mentioned new country has not been received by the Indonesian Administration, the Delegation of the Republic of Indonesia would like to reserve the right of its Government not to recognize the representation of Malaysia in the Extraordinary Administrative Radio Conference to allocate frequency bands for Space Radiocommunications, as such recognition would be in contradiction with the said Article 18 of the Convention.

MALAYSIA

The Delegation of Malaysia declares that it does not accept the statement of the Indonesian Delegation contained in its declaration regarding Malaysia. The original Constitution of the Federation of Malaya, which made provisions for amendments, was amended by an Act of the Malayan Parliament before Malaysia Day on 16th September, 1963. This Act took account of the incorporation of Singapore, Sarawak and Sabah (N. Borneo) with the former Federation of Malaya and brought about a change of name to Malaysia. This Agreement has been possible following an Agreement between Her Majesty's Government in the United Kingdom and the Government of the Federation of Malaya, and by giving the Royal Assent to the Act, Her Majesty relinquished sovereignty in Singapore, Sarawak and Sabah.

In effect, Malaysia is Malaya as it was before September 16, 1963, but with the addition of new territories. This principle was publicly stated in a broadcast by the Malaysian Permanent Secretary of External Affairs on September 16. There is thus complete legal continuity as a single entity between Malaya and Malaysia.

It is clear therefore that Malaya and Malaysia are one and the same state. It may be recalled that recently Malaysia was elected to the U.N. Security Council—to alternate with Czechoslovakia—without the identity of Malaysia being called into question.

MEXICO

While signing the Final Acts of the Extraordinary Administrative Radio Conference, Geneva, 1963, the Delegation of Mexico announces that its Administration intends to comply with the provisions resulting from the revised Radio Regulations. Nevertheless, the Delegation states that the Government of Mexico reserves the right to take any steps it may deem necessary to safeguard its interest in cases where any Member or Associate Member of the Union fails to comply with the provisions of the said Regulations or where a reservation made by another country has a harmful effect on the telecommunication services of Mexico.

PAKISTAN

While the Delegation of Pakistan is fully conscious of the desirability of early implementation of the decisions of the Extraordinary Administrative Radio Conference, Geneva, 1963, with a view to expediting the development and establishment of Space Radiocommunications on a world-wide basis, it cannot overlook the fact that the Space Radiocommunication techniques are still in a state of development and experimentation. The provisions regarding sharing criteria and the interference potentialities between Space Radiocommunications and Terrestrial systems are not based on practical experience between operational Space and Terrestrial systems and these problems are still under the study of the C.C.I.R., whose present Recommendations are provisional. No sharing criteria has been laid down for the sharing of the bands below 1 Gc/s. Pakistan being a new and developing country in two parts, whose internal communications are also dependent on Radio, the ability of Pakistan to follow, in these circumstances, the new and amended provisions of the Radio Regulations agreed by this Conference will depend upon the freedom from any interference which can be caused by the space services.

The Delegation of Pakistan therefore reserves for its country the right to take, in the last resort, necessary measures for the fulfilment of its telecommunication need. In so doing, Pakistan will, however, endeavour to avoid harmful interference to the Radio services of other administrations.

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

The Delegation of the United Kingdom of Great Britain and Northern Ireland declares:

that it does not accept the statement of the Argentine Delegation contained in its declaration insofar as this statement disputes the sovereignty of Her Majesty's Government in the United Kingdom over the Falkland Islands and the Falkland Islands Dependencies and it wishes formally to reserve the rights of Her Majesty's Government on this question. The Falkland Islands and the Falkland Islands Dependencies are and remain an integral part of the territories together making up the Member hitherto known as: Colonies, Protectorates, Overseas Territories and Territories

under Mandate or Trusteeship of the United Kingdom of Great Britain and Northern Ireland on behalf of which the United Kingdom of Great Britain and Northern Ireland acceded to the International Telecommunication Convention (Buenos Aires, 1952) on 16 November 1953, and which is described in the International Telecommunication Convention (Geneva, 1959) as: Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible.

The statement of the Argentine Delegate that " non-mention of other territories must not be taken to imply renunciation of the Argentine Republic's sovereignty over them " is noted. Insofar as this may be intended to refer to the British Antarctic Territory, Her Majesty's Government in the United Kingdom of Great Britain and Northern Ireland have no doubt as to their sovereignty over the British Antarctic Territory, and wish to bring to the attention of the Argentine Government Article IV of the Antarctic Treaty to which both the Argentine Government and the United Kingdom Government are parties.

THE DEMOCRATIC AND POPULAR REPUBLIC OF ALGERIA
KUWAIT
THE UNITED ARAB REPUBLIC

considering

that the effective implementation of the United Nations Resolution on the International Co-operation on the peaceful uses of outer space (Resolution No. 1721 (XVI)) must eventually be based on the establishment, by Members and Associate Members of the Union, of world-wide plans concerning all categories of space service which will provide for the equitable participation of all countries of the world in such service in the spirit of the above-mentioned Resolution;

considering

1. that no such world-wide plan reflecting the needs of all countries of the world for space services has yet been established;

2. that the frequency bands allocated for communication-satellite services, as contained in Article 5 of the revised Radio Regulations, are

based on entirely empirical derivations and do not in any way correspond to the actual requirements of all countries;

3. *a)* that the frequency sharing between communication-satellite services, and terrestrial services as allocated in the frequency tables were based on provisional criteria, as provided by the C.C.I.R.;

b) that the same provisional sharing criteria for communication-satellite services, were applied to other services, where no sharing criteria were available, thus protection of terrestrial services from harmful interference is doubtful;

c) that the procedure of calculation of co-ordination distances is provisional, and, in no way provides assurance of interference-free operation of satellite communications;

4. that the technical progress in all the development of the various categories of space services is not sufficiently advanced;

5. that the economic considerations involved in the establishment and operation of such services, could not, so far, be assessed, thus placing small countries at a great disadvantage;

6. that the said cost, the legal and other conditions that shall govern the use of such a system are not yet evident for consideration.

The above-mentioned countries reserve the right:

a) to take all the necessary measures to protect their existing as well as planned services without placing any limitations whatsoever on the equipment in use or to be used in the future in all frequency bands;

b) to adopt all measures necessary to protect their rights concerning frequency registration priority after the implementation of the revised Radio Regulations.

However, the above-mentioned countries do contribute towards the advance of the new space telecommunication technique that was started

by the pioneering countries and accept the frequency bands allocated for the safety of lives, space research and world-wide meteorological services.

DENMARK, NORWAY, SWEDEN AND SWITZERLAND

In signing the Final Acts of the Extraordinary Administrative Radio Conference, Geneva, 1963, the Delegations of the above-mentioned countries declare that, as a Radiolocation Service on land, on board ships and in the air has been established, is being introduced or is planned in the frequency bands 3 400-3 600 Mc/s and 5 725-5 850 Mc/s in conformity with the Table of Frequency Allocations of the Radio Regulations, Geneva, 1959, the Administrations of the above-mentioned countries find difficulty in affording general protection to the Communication-Satellite Service in other countries, the Communication-Satellite Service having been authorized in these bands according to the new Radio Regulations, Geneva, 1963. However, the Administrations of the above-mentioned countries are willing to take all practicable steps in order to co-ordinate the two services after agreements with Administrations concerned.

(The signatures follow)

(The signatures which follow the Additional Protocol are the same as those reproduced on pages 3-24 of this volume)

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RESOLUTIONS
AND
RECOMMENDATIONS

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RESOLUTION No. 1A

Relating to the Provision and Use of Information Regarding International Satellite Systems

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

the interest of all administrations concerning the effective use of the radio frequency spectrum by the space services;

believing

a) that international satellite systems should provide for the interests and requirements of all countries;

b) that, in accordance with Article 4 of the International Telecommunication Convention, Geneva, 1959, the International Telecommunication Union should closely observe the development of the telecommunications aspects of international satellite systems;

c) that the permanent organs of the International Telecommunication Union should assist in that development as far as may be practicable;

d) that the development of space telecommunications ought not to be delayed, but that a suitable period of time will be needed for the acquisition of the additional data which will result from further experiment and operational experience;

e) that the interest mentioned above will best be served by the provision to administrations, as early as practicable, of information regarding the development of international satellite systems;

f) that this information, by reason of its early provision, must be regarded as of a preliminary nature;

g) that the data mentioned in *d)* above will need to be collated by the C.C.I.R., C.C.I.T.T. and the I.F.R.B. for use by such future con-

ferences as may be called to consider the international regulation of space communication systems;

resolves

1. that, as a measure which will enable administrations to make early comment upon satellite system projects, any administration (or group of administrations) which intends to establish an international satellite system shall provide the Board, as early as practicable during the co-ordination process (Radio Regulation No. **639AD**) with information similar to the data mentioned in Appendix 1A such as will provide a general description of the satellite system, e.g.

   a) the frequencies and bandwidths to be used in the initial operation of the system;

   b) the over-all frequencies and bandwidths of the satellite system required to facilitate the final development of the system, in order to meet the needs of other administrations wishing to participate in the system;

   c) the sites and functions of the earth stations in the system and the co-ordination distances, as a function of azimuth, which are applicable thereto, as defined in Recommendation No. 1A;

2. that the Board shall put these data in a special section of its weekly circular, for the information of all administrations;

and further resolves

3. that, if after studying the information given under 1) above, an administration believes that it has reason to expect that harmful interference may be caused to its space services (either those existing, or those concerning which information has already been circulated under the provisions of this Resolution), it shall address its comments, within ninety days of receipt of the relevant circular, to the administration concerned; a copy of those comments shall be sent to the Board;

4. that, if comments, as allowed for in 3) above, are received, then the administration concerned shall endeavour to find a solution satisfactory to the administration which has made the comments;

5. that, if an agreement is not reached the Board may be asked for such suggestions as it may be able to offer in the circumstances;

6. that, if within the time referred to in paragraph 3), no comments concerning the data mentioned in paragraph 2) are received, the administration concerned is entitled to assume that there are no comments on the action proposed;

7. that, in order to keep up-to-date the information relating to space systems, the Board shall collate this information and publish it periodically.

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RESOLUTION No. 2A

Relating to Space Vehicles in Distress and Emergency

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the number of flights by manned space vehicles or satellites is likely to increase;

b) that, as a result, the possibility of such vehicles being forced down in emergency anywhere on the earth's surface cannot be ignored;

c) that in such circumstances the search for and rescue of the occupants and recovery of the vehicles present problems very similar to those encountered by aircraft and ships in distress and emergency;

d) that the frequency of 20 007 kc/s has been selected by the Conference for search and rescue to augment those already designated in the Radio Regulations for distress, emergency and survival craft;

notes

that although the relevant Radio Regulations for the mobile services concerning distress and emergency contain no specific reference to space vehicles or their occupants;

resolves

that until such time as the Radio Regulations may be revised, the appropriate provisions of Chapters VII and VIII concerning distress and emergency be construed to apply equally to spacemen and space vehicles in the circumstances described herein.

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RESOLUTION No. 3A

Relating to the Category of the Fixed and Mobile Services in the Band 1 525-1 540 Mc/s

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the Table of Frequency Allocations, Geneva, 1959, made certain provisions for the fixed and mobile services in the sub-bands 1 525-1 535 Mc/s and 1 535-1 540 Mc/s;

b) that a number of administrations have fixed and mobile services operating in accordance with these provisions;

c) that the Extraordinary Administrative Radio Conference, Geneva, 1963, has agreed that the space (telemetering) service shall be allocated on a primary basis in the band 1 525-1 540 Mc/s, and that continuing provision shall be made for fixed and mobile services now operating in this band;

d) the economic consequences of an early down-grading of the category of the fixed and mobile services are not at present acceptable to the administrations concerned;

resolves

that nevertheless, it is highly desirable that reception of the very weak signals of the space (telemetering) service shall be afforded protection against interference from stations in the fixed and mobile services;

invites

those administrations operating stations in the fixed and mobile services on a primary basis in the band 1 525-1 540 Mc/s, to consider the possibility of agreeing to modify the category of these services from " primary " to " secondary " at the earliest possible date.

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RESOLUTION No. 4A

Relating to International Co-operation and Technical Assistance in the Field of Space Radiocommunications

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that a large number of countries, Members of the International Telecommunication Union, are not in a position to take immediate advantage of satellite techniques for the development of their telecommunication services;

b) that such countries would benefit immensely through the technical assistance programmes sponsored by the Union;

recognizing

a) that international satellite-communication systems will be subject to the Convention and Regulations and that they will permit participation of all countries including, in particular, the developing countries, in space communication systems;

b) that a number of problems need to be solved in order that the developing countries may participate effectively in international space communication systems and integrate these systems with their national telecommunication networks;

resolves to invite the Administrative Council

1. to draw the attention of administrations to the means by which they may avail themselves of technical assistance in connection with the introduction of space communications;

2. to consider the most effective manner in which requests for such assistance by Member-countries of the Union may be formulated and presented in order to secure maximum financial and other assistance;

3. to consider how best to make use of funds made available by the United Nations in accordance with its Resolution No. 1721 to give technical and other assistance to administrations of Member-countries of the Union to make effective use of space communications;

4. to consider in what way the work of the Consultative Committees and other organs of the Union may be utilized in the most effective way for the information and assistance of administrations of Member-countries of the Union in the development of space radiocommunications.

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RECOMMENDATION No. 1A

Relating to the Calculation of Co-ordination Distance for Earth Stations

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that Article 9A requires frequency assignments for earth stations in certain shared frequency bands to be co-ordinated with fixed or mobile services, in order to avoid mutual harmful interference;

b) that, in any direction from an earth station there is a distance beyond which the possibility that the use of a given transmitting frequency at that earth station will cause harmful interference to reception by a station in the fixed or mobile service may be regarded as negligible: this is the co-ordination distance in that direction;

c) that, in any direction from an earth station there is a distance beyond which the possibility that the use of a given transmitting frequency at a fixed or mobile station will cause harmful interference to reception at that earth station may be regarded as negligible: this is the co-ordination distance in that direction;

d) that a simple procedure is required to enable administrations to calculate the co-ordination distance from an earth station according to its location and characteristics;

noting

that the Recommendations and Reports of the C.C.I.R. Xth Plenary Assembly provide a technical basis for the calculation of co-ordination distance which is provisional and subject to further study by the C.C.I.R.;

recommends

that the procedure set out in the Annex to this Recommendation should be used to determine co-ordination distances until such time as the C.C.I.R. may recommend a procedure to be used for this purpose;

and invites the C.C.I.R.

to study the question of co-ordination distance and, as soon as improved calculation methods and more accurate propagation data become available, to make suitable Recommendations to replace the procedure set out in the Annex to this Recommendation.

ANNEX TO RECOMMENDATION No. 1A

Procedure for Calculating Co-ordination Distance between Earth Stations and Terrestrial Stations sharing the Same Frequency Band in the Range 1-10 Gc/s

1. *Objectives*

Co-ordination is required when earth stations and terrestrial stations operate in shared frequency bands with equal rights. In specific circumstances, co-ordination may involve more than two administrations, depending upon the siting of the stations and the co-ordination distances involved. The co-ordination area around an earth station is arrived at by ascertaining the co-ordination distance measured in the various azimuths from that station.

For the calculation of co-ordination distance three separate cases must be considered:

a) interference from an earth station transmitter to terrestrial station receivers;

b) interference from terrestrial station transmitters to a communication-satellite or meteorological-satellite earth station receiver;

c) interference from terrestrial station transmitters to a space research earth station receiver.

In the case of *a)* it has been assumed, for the purpose of calculation, that the terrestrial receiving station is a line-of-sight radio-relay station designed according to C.C.I.R. Recommendations. In the case of *b)* it has been assumed, for both applications, that the earth station forms a part of a communication-satellite system. Further, in order to ensure that a safe value of co-ordination distance shall be obtained, it has been assumed that in all cases the receiving station antenna is of typically high gain. For the same reason, in all cases, appropriately low-noise sensitive receivers are assumed.

2. *Minimum Permissible Basic Transmission Loss (L_b)*

The general formula for calculating the required minimum permissible basic transmission loss is:

$$L_b = (P_t + G_t) - F_s - (P_r - G_r) \qquad (1)$$

where P_t is the power in dbW supplied by the interfering transmitter to the transmission line input,

G_t is the isotropic gain in db of the transmitting antenna of the interfering station effective in the direction of the receiving station liable to interference, including the effect of all feeder losses, and losses due to any artificial screens,

F_s is the earth station site-shielding factor in db (see Section 5),

P_r is the maximum permissible interference level in dbW at the receiver input of the receiving station,

G_r is the isotropic gain in db of the antenna of the receiving station effective in the direction of the interfering transmitter, less feeder loss and polarization discrimination if applicable.

When considering interference to telephone transmission systems, particularly in the case of systems using frequency modulation, it is convenient to operate in terms of the power densities in any 4 kc/s bandwidth. Therefore, in the case of interference from an earth station transmitter to terrestrial radio-relay systems, P_t is taken as the maximum power density in any 4 kc/s bandwidth supplied by the earth station transmitter to the transmission line input, and similarly P_r is the maximum permissible power density for any 4 kc/s bandwidth at the receiver input.

When considering interference from a terrestrial transmitter to an earth station receiver, it is more convenient to consider P_t and P_r of (1) as total powers rather than power densities.

It is assumed in calculating co-ordination distances for cases *a)* and *b)* of Section 1 that the communication-satellite system is employing carrier energy dispersal techniques when lightly loaded.

3. *Calculation of Minimum Permissible Basic Transmission Loss*

In any direction from the transmitting station, the required minimum value of permissible basic transmission loss (L_b) is obtained from the following Tables 1, 2 and 3.

TABLE 1

Interference from a Communication-Satellite Earth Station Transmitter to a Terrestrial Line-of-Sight Radio-Relay System

	Percentage of time	Values to be assumed for co-ordination
Permissible total interference in any telephone channel	0.01%	−40 dbm0
Permissible interference from one earth station to one radio-relay system receiver, assuming four such non-simultaneous interference entries	0.0025%	−40 dbm0
Receiver transfer characteristic assuming carrier energy dispersion to distribute interference uniformly over at least 300 kc/s bandwidth	—	1 db * (light loading worst case)
Hence, maximum value of unwanted-to-wanted signal ratio at the receiver input	0.0025%	−39 db
Minimum level of wanted signal at receiver input	—	−74 dbW *
Hence, permissible level of unwanted signal at receiver input, assuming carrier energy dispersion as above	0.0025%	−113 dbW
Factor for conversion of interference bandwidth to 4 kc/s from 300 kc/s	—	−19 db
Hence, permissible level of unwanted signal at receiver input in any 4 kc/s bandwidth	0.0025%	−132 dbW (per 4 kc/s)
Isotropic gain of radio-relay station antenna less feeder losses (Note 1)	—	42 db

* These figures are taken from an example of a 960-channel line-of-sight radio-relay system but the maximum permissible unwanted signal level of −113 dbW is almost independent of the number of channels carried.

	Percentage of time	Values to be assumed for co-ordination
Isotropic gain of earth station antenna effective in the horizontal plane less feeder and polarization losses (Note 2)	2.5%	G_{earth} db
Power supplied by earth station transmitter to the transmission line input per 4 kc/s bandwidth	—	P_{earth} dbW
Earth station site-shielding factor if applicable	—	F_s db
Minimum permissible basic transmission loss, L_b (in decibels)	0.1%	$P_{earth} + G_{earth} - F_s + 174$

Note 1 The value of 42 db, given in Table 1, should be used unless it is known that the terrestrial station receiving antenna gain is greater than 42 db, in which case the higher value may be used.

Note 2 For simplicity, the appropriate value of G_{earth} to be used shall be the maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 2.5% of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the screening obstacle.

TABLE 2

Interference from a Terrestrial Line-of-Sight Radio-Relay Transmitter to a Communication-Satellite Earth Station Receiver

	Percentage of time	Values to be assumed for co-ordination
Permissible total interference in any telephone channel	0.02%	−38 dbm0
Permissible interference from one terrestrial station to one earth station, assuming four such non-simultaneous interference entries	0.005%	−38 dbm0
Receiver transfer characteristic assuming carrier energy dispersion of the wanted signal	—	10 db *
Hence, maximum value of unwanted-to-wanted signal ratio at the receiver input	0.005%	−28 db
Minimum level of wanted signal at receiver input	—	−117 dbW *
Hence, permissible level of unwanted signal at receiver input	0.005%	−145 dbW
Isotropic gain of earth station antenna effective in the horizontal plane (Note 1)	5%	G_{earth} db
Isotropic gain of radio-relay station antenna less feeder loss	—	$G_{terr.}$ db
Earth station site-shielding factor if applicable	—	F_s db
Power supplied by terrestrial station transmitter to the transmission line input	—	$P_{terr.}$ dbW
Minimum permissible basic transmission loss, L_b (in decibels) (Note 2)	0.1%	$P_{terr.}+G_{terr.}-F_s+G_{earth}+145$

* These figures are taken from an example of a 1200-channel communication-satellite system but the maximum permissible unwanted signal level of −145 dbW is almost independent of the number of channels carried.

Note 1 For simplicity, the appropriate value of G_{earth} to be used shall be that maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 5% of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the screening obstacle.

Note 2 The application of co-ordination procedures for frequency sharing of this type involves the preparation, by the administration desiring to set up an earth station, of equal-power contours of co-ordination distance in the various azimuthal directions for several discrete levels of radiated power from the terrestrial station.

TABLE 3

Interference from a Terrestrial Transmitter to a Space Research Earth Station Receiver

	Percentage of time	Values to be assumed for co-ordination
Permissible interference in any bandwidth of 1 c/s at receiver input (Note 1)	0.1%	−220 dbW
Permissible interference in any bandwidth of 10 kc/s at receiver input (Note 2)	0.1%	−180 dbW
Isotropic gain of earth station antenna effective in the horizontal plane (Note 3)	10%	G_{earth} db
Isotropic gain of radio-relay station antenna less feeder losses	—	$G_{terr.}$ db
Earth station site-shielding factor if applicable	—	F_s db
Power supplied by terrestrial station transmitter to the transmission line input	—	$P_{terr.}$ dbW
Minimum permissible basic transmission loss, L_b, in decibels	1.0%	$P_{terr.}+G_{terr.}-F_s+G_{earth}+180$
Factor to convert from use of 1.0% to 0.1% transmission loss curves (Note 4)	—	15 db
Minimum permissible basic transmission loss, L_b, in decibels	0.1%	$P_{terr.}+G_{terr.}-F_s+G_{earth}+165$

Note 1 A comparison of the C.C.I.R. criteria for near-earth, deep-space and manned-space research indicates that the permissible levels of interference at the receiver input are substantially the same.

Note 2 Measurements on terrestrial station emissions indicate that the minimum occupied bandwidth under no-load conditions is of the order of at least 10 kc/s.

Note 3 In order to meet the 0.1 % time criteria for which the −220 dbW per cycle per second is permitted, the combination of earth station antenna gain, G_{earth}, in the horizontal plane and pertinent azimuthal direction, exceeded for 10 % of the time and the basic transmission loss, L_b, exceeded for 1.0 % of the time, is taken as an appropriate combination.

Note 4 From available propagation curves it is noted that $L_b(1\%) - L_b(0.1\%)$ over a range of typical co-ordination distances is about 10 db overland (Zone A) and 15 db oversea (Zones B and C). The conversion ratio of 15 db was selected to permit the use of the 0.1 % transmission loss curves employed in connection with Tables 1 and 2.

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4. *Summary*

The formulae giving the required basic transmission loss in db (L_b) not to be exceeded for 0.1 % of the time are summarized below:

(1) For co-ordination between an earth transmitting station and terrestrial receiving stations:

$$L_b = P_{earth} + G_{earth}{}^{1} - F_s + 174$$

(2) For co-ordination between terrestrial transmitting stations and a communication-satellite or meteorological-satellite earth receiving station:

$$L_b = P_{terr.} + G_{terr.} - F_s + G_{earth}{}^{2} + 145$$

(3) For co-ordination between terrestrial transmitting stations and a space research earth receiving station:

$$L_b = P_{terr.} + G_{terr.} - F_s + G_{earth}{}^{3} + 165$$

[1] See Note 2 of Table 1.
[2] See Note 1 of Table 2.
[3] See Note 3 of Table 3.

5. *Site-Shielding Factor*

In cases where earth stations are sited below the level of surrounding or nearby terrain it is necessary to adopt the following procedure. Thus, if, in a given azimuthal direction, an obstacle provides an angle of elevation, θ, to the earth station then—for that azimuthal direction—it is necessary, in calculating co-ordination distance, to employ the maximum earth station antenna gain at the angle of elevation, θ, rather than the maximum gain along the horizontal.

As previously discussed, where site-shielding applies, the value of required basic transmission loss, L_b, may be reduced by a site-shielding factor, F_s, expressed in decibels. The following values of site-shielding factor shall apply when the obstacle limiting the angle of elevation is situated more than 5 kilometres away from the earth station.

Minimum angle of elevation, θ, of obstacle, as seen from earth station	Allowable value of site-shielding factor, F_s, in decibels
below 1°	0
between 1° and 2°	5
between 2° and 3°	8
between 3° and 4°	11
between 4° and 5°	13
more than 5°	15

In the case of nearer obstacles, the values of site-shielding factor which apply may be obtained by multiplying the tabulated values by the fraction $d/5$, where d is the distance from the earth station to the obstacle in kilometres.

The values of site-shielding factor quoted here shall be used with caution where terrestrial stations may be located, within co-ordination distance, at sites which are substantially above the horizontal plane passing through the earth station.

6. *Equivalent Basic Transmission Loss at 4 Gc/s (L'_b)*

The propagation data considered in the next paragraph relate to the frequency of 4 Gc/s and it is therefore in general necessary to convert the minimum permissible basic transmission loss (L_b) into an equivalent loss at 4 Gc/s (L'_b) before using these data to find the co-ordination distance. The equivalent loss in decibels at 4 Gc/s is given by:

$$L'_b = L_b + 13 - 21.6 \log_{10} f$$

where f is the assigned frequency in Gc/s. This relationship is shown in Figure 1.

7. *World Radio-Climatic Conditions and Propagation Data*

The propagation curves of Figure 2 are labelled Zone A, Zone B, and Zone C, and correspond to the various basic radio-climatic regions of the world as follows:—

Zone A: Land

Zone B: Sea, at latitudes greater than 23.5° N and 23.5° S

Zone C: Sea, at latitudes between 23.5° N and 23.5° S inclusive.

In any direction from the earth station the required co-ordination distance is found as follows:

a) if the equivalent basic transmission loss L'_b is such that the co-ordination distance in the given direction lies wholly within one of the zones, the co-ordination distance may be obtained directly from Figure 2 using the appropriate curve;

b) if the co-ordination distance lies partly in one zone and partly in another, the curves for mixed paths, Figures 3, 4 and 5, should be used. These curves show the loss L'_b as a function of the path length in each of the two zones separately. Thus, if the path length in one zone and the required loss are known, the path length in the other zone can be determined. The path length in the first zone is the known distance from the

earth station to the zone boundary in the direction concerned, hence the further length in the second zone can be found. The total path length, or co-ordination distance, is the sum of these two path lengths. Figures 3, 4 and 5 cover all cases of mixed paths in two zones as follows:

Fig. 3: Zones A and B,
Fig. 4: Zones A and C,
Fig. 5: Zones B and C.

An example of the co-ordination distance calculation for a mixed path is worked out in the Appendix;

c) in certain geographical areas where propagation losses are known to be less than the values given by the pertinent zonal propagation curves, co-ordination distances should be calculated on the basis of the known propagation data.

APPENDIX

Example of Co-ordination Distance Calculation for a Mixed Path

The procedure to be followed in the case of a mixed path is illustrated by the following example, in which it is assumed that a basic transmission loss of 190 db is required to avoid interference from an earth station to terrestrial services in a given direction.

As shown in Figure 6A, the earth station is situated 50 km from the coast and there is an oversea path of 150 km before the coastline of a neighbouring country is reached. It is required to find the co-ordination distance from the earth station in the given direction using the mixed paths propagation chart represented by Figure 6B. The procedure is as follows:

1. Starting from the origin, the distance of 50 km from the earth station to the coastline is set off along the A axis of the chart as indicated by the point A_1.

2. The oversea path length of 150 km is then set off parallel to the B axis of the chart as indicated by the point B_1.

3. The further overland distance required is then measured parallel to the A axis from the point B_1 to the point of intersection with the 190 db curve, as indicated by X. This distance is found to be 90 km.

4. The co-ordination distance is the sum of the A and B co-ordinates of the point X and is equal to $50+150+90=290$ km.

FIGURE 1

Correction Factor to be Added to the Required Loss L_b at Frequency f to Obtain the Equivalent Loss L'_b at 4 Gc/s

$$L'_b = L_b + \text{correction factor}$$

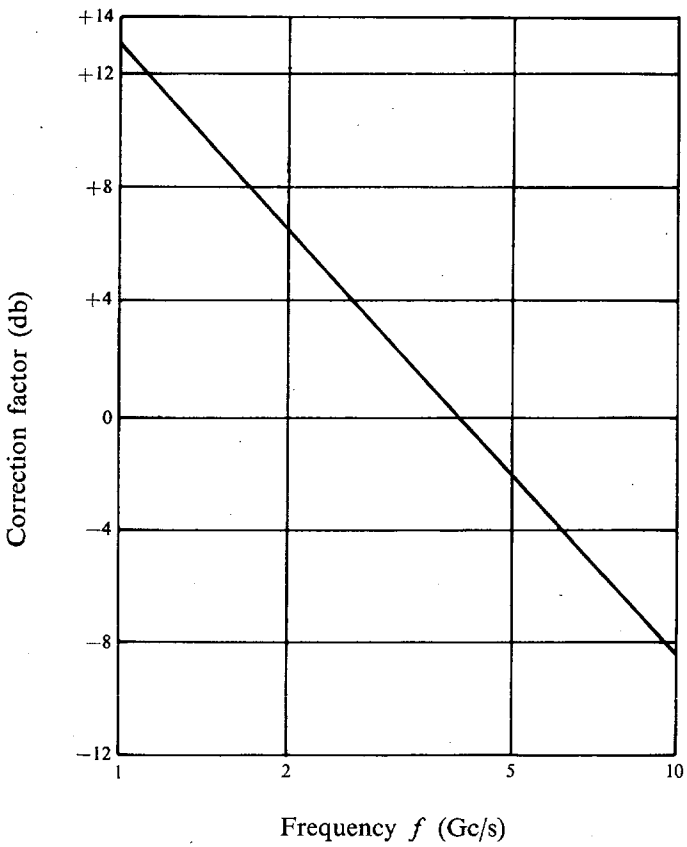

FIGURE 2

Simplified Tropospheric Propagation Curves for Calculation of Co-ordination Distance.
Basic Transmission Loss not Exceeded for 0.1% of the Time at 4 Gc/s

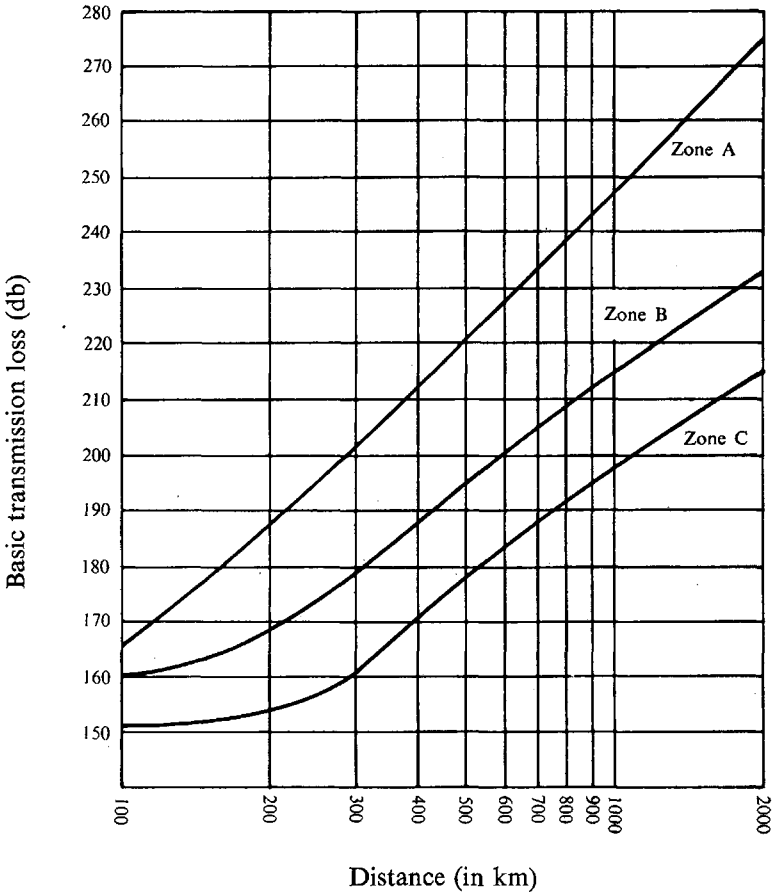

FIGURE 3

Chart for Co-ordination Distance Calculations
Mixed Paths in Zones A and B

Basic transmission loss not exceeded for 0.1 % of the time at 4 Gc/s, L'_b (db)

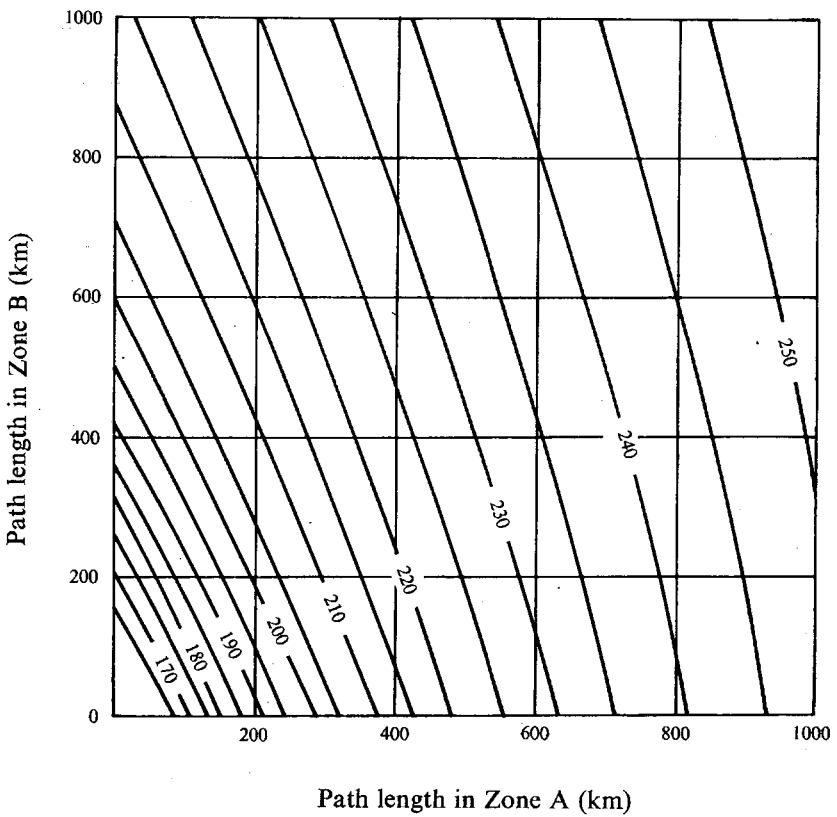

FIGURE 4

Chart for Co-ordination Distance Calculations
Mixed Paths in Zones A and C

Basic transmission loss not exceeded for 0.1% of the time at 4 Gc/s, L'_b (db)

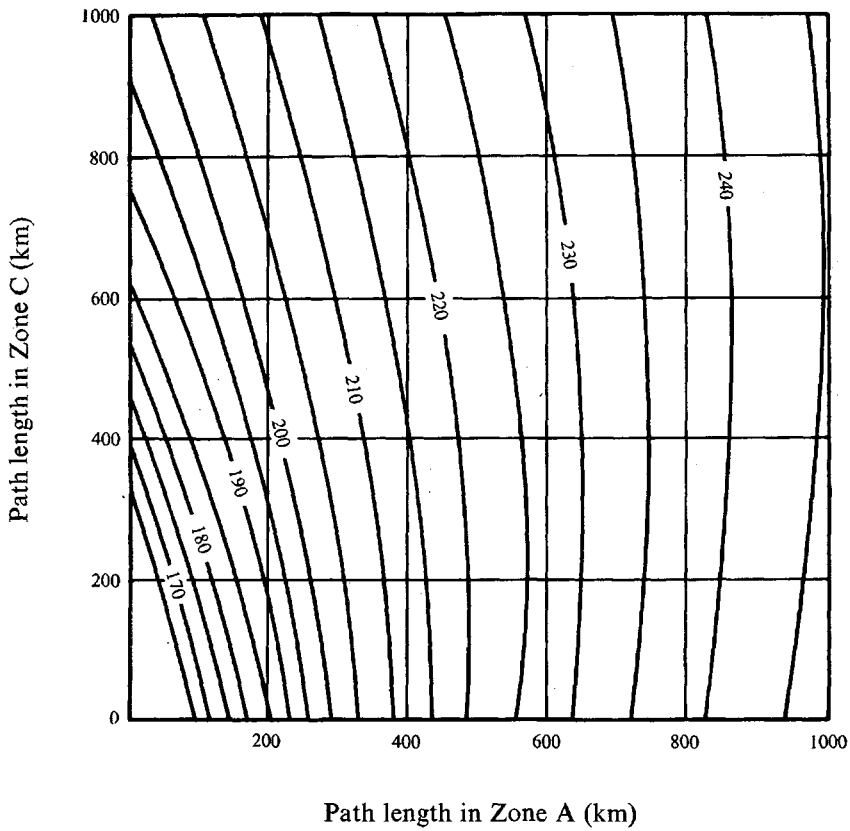

FIGURE 5

Chart for Co-ordination Distance Calculations
Mixed Paths in Zones B and C

Basic transmission loss not exceeded for 0.1 % of the time at 4 Gc/s, L'_b (db)

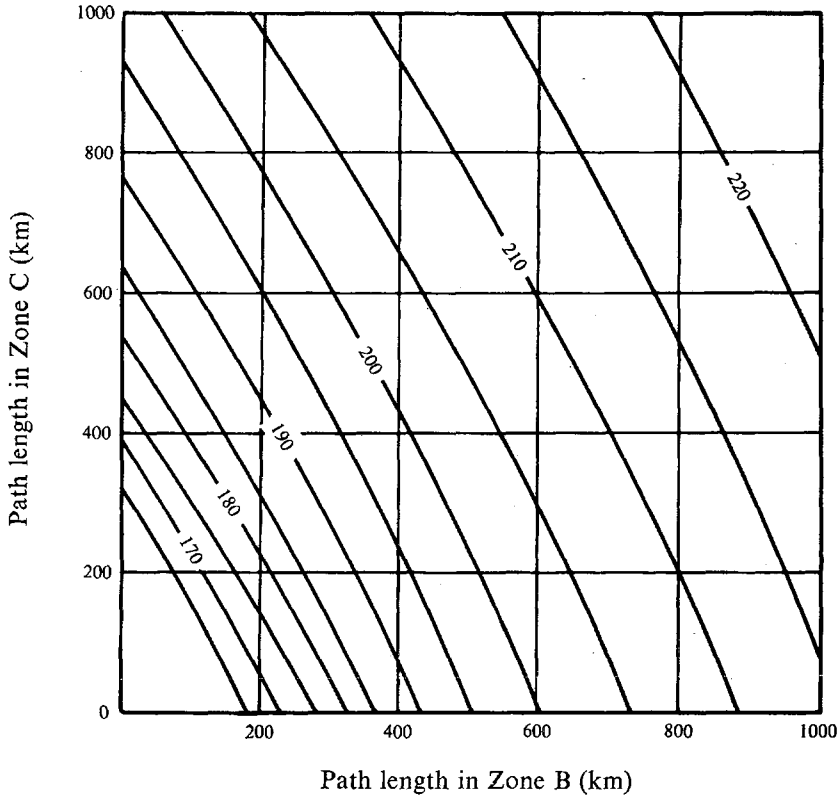

FIGURE 6

Example of Co-ordination Distance Calculation for Mixed Paths

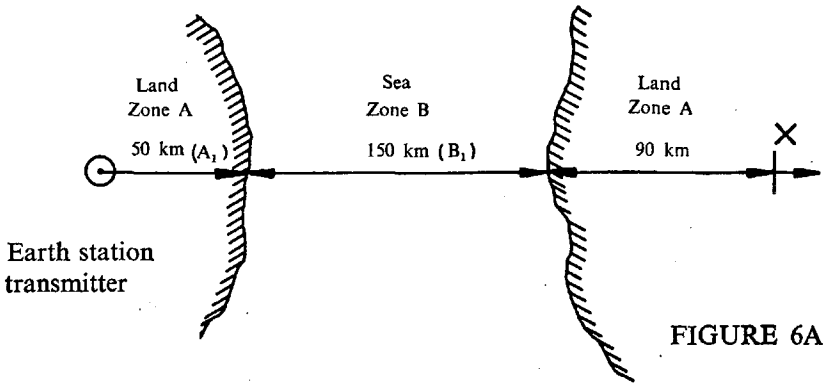

FIGURE 6A

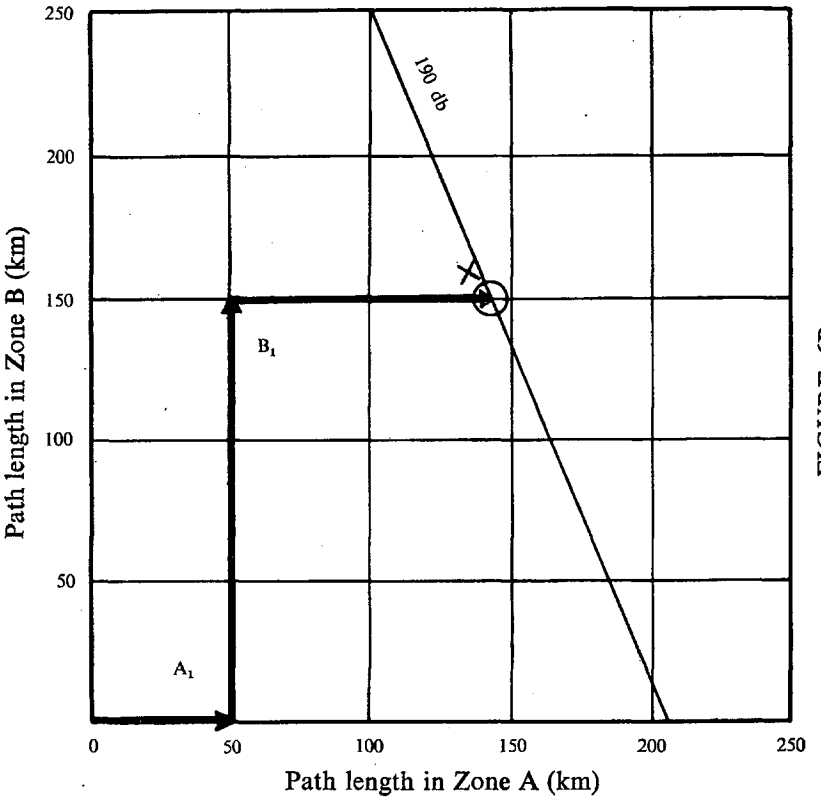

FIGURE 6B

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RECOMMENDATION No. 2A

to the C.C.I.R. and to Administrations Relating to the Calculation of the Probability of Interference between Stations within Co-ordination Distance

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the technical basis for sharing the frequency bands between terrestrial services and space services is based inter alia on geographical separation between the stations of these two types of services;

b) that the Final Acts of this Conference refer to the process of co-ordination between administrations, the later stages of which will involve the calculation of the probability of interference between stations of the two services;

c) that such calculations will require a knowledge of the system parameters of the terrestrial and space services involved and a knowledge of the propagation characteristics in the appropriate geographical areas;

d) that a concise presentation in readily usable form of the appropriate values of the factors governing interference between a variety of typical systems in the terrestrial and space services would be helpful in the implementation of the co-ordination procedures laid down in the Final Acts of this Conference;

noting

a) that the C.C.I.R., through its various Study Groups, particularly Study Groups Nos. IV, V and IX, is engaged in the active study of the various parameters which influence the sharing of frequency bands by the terrestrial services and the space services;

b) that, nevertheless, the data available at present from the C.C.I.R. do not make it possible for this Conference to lay down sufficiently precise and detailed methods for calculating in all cases the probability of harmful interference between stations of the two services;

invites administrations

during the period preceding the XIth Plenary Assembly of the C.C.I.R. to submit contributions concerning:

1. the essential steps to be taken in the calculation of the probability of interference between stations of the two services;

2. the values of those factors which govern interference between the stations of typical terrestrial and space systems;

and invites the C.C.I.R.

during the XIth Plenary Assembly, and in the light of contributions submitted under 1 and 2, to decide the most appropriate form, for example a separate manual, in which the material adopted should be published.

RECOMMENDATION No. 3A

to the C.C.I.R. and to Administrations Relating to Frequency Bands shared between Space and Terrestrial Services

The Extraordinary Administrative Radio Conference, Geneva, 1963,

recognizing

a) the value to the Conference of the material contained in Document No. 1 (results of C.C.I.R. studies relating to space telecommunications concluded at its Xth Plenary Assembly);

b) that further studies on a wide range of problems dealing with space communications form the subject of C.C.I.R. Questions and Study Programmes approved by the Xth Plenary Assembly;

considering however

a) that certain of the C.C.I.R. Recommendations, listed below, are provisional and call for further work and study before they can become definite:

Recommendation 355	" ACTIVE COMMUNICATION-SATELLITE SYSTEMS —Feasibility of sharing frequency bands with terrestrial radio services."
Recommendation 356	" COMMUNICATION-SATELLITE SYSTEMS SHARING THE SAME FREQUENCY BANDS AS LINE-OF-SIGHT RADIO-RELAY SYSTEMS—Maximum allowable values of interference in a telephone channel of a communication-satellite system."
Recommendation 357	" COMMUNICATION-SATELLITE SYSTEMS SHARING FREQUENCY BANDS WITH LINE-OF-SIGHT RADIO-RELAY SYSTEMS—Maximum allowable values

of interference in a telephone channel of a radio-relay system."

Recommendation 358 " COMMUNICATION-SATELLITE SYSTEMS SHARING THE SAME FREQUENCY BANDS AS LINE-OF-SIGHT RADIO-RELAY SYSTEMS—Maximum allowable values of power flux density at the surface of the Earth produced by communication satellites."

Recommendation 406 " LINE-OF-SIGHT RADIO-RELAY SYSTEMS SHARING THE SAME FREQUENCY BANDS AS THE SATELLITE RECEIVERS OF ACTIVE EARTH-SATELLITE COMMUNICATION SYSTEMS — Maximum effective radiated powers of line-of-sight radio-relay system transmitters."

b) that as a result of the deliberations of this Conference, particularly in relation to the provisions of Article 7, Sections VII, VIII and IX, and to the Annex to Recommendation No. 1A, further information is required in reply to the following Questions and Study Programmes already set for study by the C.C.I.R.:

Question 235 (IV) " TECHNICAL CHARACTERISTICS OF COMMUNICATION-SATELLITE SYSTEMS "

under Decides 4: Particularly,

a) the need for, and application of, maximum limits of power to earth stations and terrestrial stations in shared bands (cf. Regulations **470B** and **470G**),

b) the need for, and application of, escalation clauses on such power limits to permit the use

of higher powers in certain cases, when stations are situated at substantial distances from the boundary of neighbouring administrations (cf. Regulation **470H**);

under Decides 5: Particularly, as it may affect the co-ordination of frequency assignments for earth stations (cf. Articles 9 and 9A);

Study Programme 235A (IV) " FEASIBILITY OF FREQUENCY SHARING BETWEEN COMMUNICATION-SATELLITE SYSTEMS AND TERRESTRIAL RADIO SERVICES "

under Decides 1: Particularly, the values which should be allowed for site-shielding factors,

a) in the application of power limits (cf. Regulation **470G**, footnote 1),

b) in the calculation of co-ordination distance (cf. Recommendation No. 1A);

under Decides 3: Particularly, the minimum angle of elevation which should be employed by earth station antennae, taking account of tropospheric effects (cf. Regulation **470L**);

under Decides 5: Power flux density limits for communication-satellite space stations in bands shared with terrestrial services (cf. Regulations **470O** and **470P**);

under Decides 6: Particularly, as it concerns the selection of sites and frequencies for terrestrial stations and earth stations operating in shared frequency bands (cf. Regulations **470A** and **470E**);

Question 236 (IV)	" SHARING OF RADIO FREQUENCY BANDS BY LINKS BETWEEN EARTH STATION AND SPACECRAFT "
under Decides 2:	*a)* Particularly, sharing between space services and terrestrial services other than line-of-sight radio-relay systems, and *b)* power flux density limits for space stations of the meteorological-satellite service, the radionavigation-satellite service and the space research service, in bands shared with terrestrial services (cf. Regulations **470S** and **470T**);
New aspect:	Feasibility of sharing frequency bands, and the necessary sharing criteria, in bands below 1 Gc/s and above 10 Gc/s;
Question 237 (IV)	" TECHNICAL CHARACTERISTICS OF LINKS BETWEEN EARTH STATIONS AND SPACECRAFT "
under Decides 1, 2, 3 and 4:	Particularly the sharing of frequency bands between telecommand, telemetry, tracking or data transmissions of the space services and terrestrial services;
Question 242 (IV)	" TECHNICAL CHARACTERISTICS OF RADIONAVIGATION-SATELLITE SYSTEMS "
under Decides 3:	Feasibility of sharing frequency bands with other services, and relevant sharing criteria;
Study Programme 243A (IV)	" RADIO-COMMUNICATION ASPECTS OF METEOROLOGICAL-SATELLITE SYSTEMS "
under Decides 3:	Particularly, feasibility of sharing frequency bands with other services, and relevant sharing criteria;

Question 244 (IV)	" RADIOASTRONOMY "
under Decides 2.1:	Acceptable levels of harmful interference;
Study Programme 188 (V)	" INFLUENCE OF IRREGULAR TERRAIN ON TROPOSPHERIC PROPAGATION "
	Particularly the application of site-shielding factors (cf. Regulation **470G**, footnote 1, and Recommendation No. 1A);
Study Programme 190 (V) (See also *Study Programmes 185A (V) and 185B (V)*)	" TROPOSPHERIC PROPAGATION FACTORS AFFECTING THE SHARING OF THE RADIO-FREQUENCY SPECTRUM BETWEEN RADIO-RELAY SYSTEMS, INCLUDING SPACE AND TERRESTRIAL TELECOMMUNICATIONS SYSTEMS "
under Decides 3:	Particularly, the provision of more precise data on the minimum values of transmission loss occurring, under various climatic conditions, for very short periods of time (e.g. 1%, 0.1%), for overland, oversea, and mixed land/sea paths;
under Decides 5:	Particularly, the effects of reflections from rain, hail, cloud and aircraft in producing interference at long distances especially when using antennae with extremely narrow beamwidths;

recommends

1. that all administrations and recognized private operating agencies, through their participation in the work of the C.C.I.R., consider, as a matter of priority, the submission of contributions on these subjects, so that definite Recommendations can be prepared at the Interim Meetings of the relevant Study Group for adoption by the XIth Plenary Assembly of the C.C.I.R.;

2. that the C.C.I.R. should study:

2.1. the permissible interference criteria for the various space and terrestrial services sharing the frequency bands allocated by the E.A.R.C., Geneva, 1963, in order to permit the determination of:

2.1.1 the co-ordination distance and the probability of interference between stations within that distance;

2.1.2 the necessary limits of power flux density set up at the earth's surface by space stations;

2.2. the necessary limitation of spurious emissions and the frequency tolerances to be observed in both the terrestrial and space services insofar as they may affect sharing of frequency bands.

RECOMMENDATION No. 4A

to the C.C.I.R. Relating to the Study of Modulation Methods for Radio-Relay Systems in Relation to Sharing with Communication-Satellite Systems

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that Article 5 of the Radio Regulations permits the sharing of certain frequency bands by the communication-satellite service and the fixed service;

b) that the sharing criteria to avoid mutual interference between the stations in these two services have been established in Article 7;

c) that among many factors of over-all efficiency of utilization of frequency bands it seems that the reduction of interference between two services is most important;

noting

a) that the over-all efficiency of utilization of the frequency bands shared by the two services depends on the methods of modulation used by the systems concerned;

b) that studies of the preferred modulation characteristics for communication-satellite systems are to be carried out under Study Programme 235D (IV) of the C.C.I.R.;

recommends

that the C.C.I.R. should study especially, under the general framework of Question 236 (IV), modulation methods (such as pulse-code modulation using phase or frequency modulation) in particular for line-of-sight radio-relay systems in relation to sharing with communication-satellite systems.

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RECOMMENDATION No. 5A

to the C.C.I.R. Relating to the Broadcasting-Satellite Service

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the use of satellite transmissions for direct reception by the general public of sound and television broadcasts may be possible in the future;

b) that the C.C.I.R. is studying the technical feasibility of sound and television broadcasting from satellites, the technically suitable frequency bands for such a service, including the possibility of sharing with terrestrial services;

recommends

that the C.C.I.R. expedite its studies and make early recommendations on Question 241 (IV), Geneva, 1963, in particular, regarding those parts of the question relating to the technical feasibility of broadcasting from satellites, the optimum technical characteristics of the systems to be used, what bands would be technically suitable and whether and under what conditions those bands could be shared between the broadcasting-satellite and terrestrial services.

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RECOMMENDATION No. 6A

Relating to the Frequency Requirements in the HF Bands Exclusively Allocated to the Aeronautical Mobile (R) Service

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that for the safety of all aircraft it is essential to provide communications for routine flight of transport air-space vehicles intended to fly between points on the earth's surface both within and beyond the major part of the atmosphere;

b) that frequencies in the HF bands (between 2 850 and 22 000 kc/s) are technically suitable for such communications as well as those frequencies above 100 Mc/s now available to the aeronautical mobile (R) service;

recommends

that at the Extraordinary Administrative Radio Conference to be called to revise Appendix 26 to the Radio Regulations in accordance with Resolution No. 13 of the Administrative Radio Conference, Geneva, 1959, the necessary measures be taken to provide the high-frequency channels required for this purpose.

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RECOMMENDATION No. 7A

Relating to the Use of the Band 136-137 Mc/s by the Fixed and Mobile Services

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the Table of Frequency Allocations, Geneva, 1959, made provisions for the fixed and mobile services together with space services in the band 136-137 Mc/s;

b) that a number of administrations have fixed and mobile services operating in accordance with these provisions;

c) that the modified Table of Frequency Allocations, Geneva, 1963, makes provision for the space research service on a primary basis in the band 136-137 Mc/s, and makes provision for the continued operation of the fixed and mobile services on a primary basis in this band;

d) the great importance of affording the space research service protection against interference from stations in the fixed and mobile services, taking into account the very weak signals which may be used in the space research service;

recommends

1. that administrations of all Regions operating, or intending to operate, stations in the fixed and mobile services in the band 136-137 Mc/s take all possible steps to give the required protection to the space research service and to cease the operation of stations of the fixed and mobile services as soon as possible;

2. that administrations notify the International Frequency Registration Board, preferably in advance, of the date when these stations will have ceased operations, and that specific reference should be made to this Recommendation;

and requests the International Frequency Registration Board

to publish this information every six months.

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RECOMMENDATION No. 8A

Relating to the Need to Cease Operations of the Fixed and Mobile Services in the Bands 149·9-150·05 Mc/s and 399·9-400·05 Mc/s Allocated to the Radionavigation-Satellite Service

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the frequency bands 149·9-150·05 Mc/s and 399·9-400·05 Mc/s have been allocated to the radionavigation-satellite service on an exclusive world-wide basis;

b) that many administrations require an extended period of time to re-accommodate existing fixed and mobile operations in other appropriately allocated bands;

c) that early implementation of the radionavigation-satellite service will be of benefit to all administrations, particularly in its application to marine navigation;

d) that interference to users of the radionavigation-satellite service could constitute a hazard to the safety of life and property;

e) that the C.C.I.R. is studying the feasibility of sharing frequency bands between the radionavigation-satellite service and terrestrial services but has not yet been able to reach a conclusion in this regard;

recommends

1. that, pending an affirmative determination by the C.C.I.R. that sharing is possible and practicable between stations of the radionavigation-satellite service and the fixed and mobile services, administrations take all possible steps to protect from harmful interference the operations of mobile earth stations using the radionavigation-satellite service;

2. that, in the light of 1) above, administrations be urged to cease operation of their fixed and mobile stations in the bands 149·9-150·05 Mc/s and 399·9-400·05 Mc/s as soon as practicable, with particular emphasis on those stations located in coastal areas.

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RECOMMENDATION No. 9A

Relating to the Review of Progress in the Field of Space Radiocommunications

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that man is progressing rapidly in the conquest of outer space, that all nations will benefit, and that this progress depends upon efficient and orderly space communications;

b) that this Conference has taken the first steps in the field of development of space radiocommunications in having allocated frequency bands for space radiocommunications and having established technical criteria and frequency registration and notification procedures designed to facilitate the further development of space radiocommunications;

recognizing

a) that the development of space services will go on in parallel with the development of terrestrial communication systems;

b) that all Members of the Union have an interest in the rational use of frequency bands allocated for space communication services, in the avoidance of harmful interference to space and other services, and in the international regulation of the use of these frequency bands;

c) that the decisions of the Conference may be subject to increasing refinement and improvement by future Conferences of the Union;

d) that there will be available additional data relating to space radiocommunications resulting from further experimental and operational experience;

believing

that such refinement and improvement is in the best interests of all Members and Associate Members of the Union if the full benefits of new technology are to be realized;

recommends

1. that Members and Associate Members of the Union make available, to the appropriate permanent organs of the Union, pertinent

data resulting from experimental and operational experience relating to space radiocommunications, as well as their proposals concerning space radiocommunications;

2. that the Administrative Council of the Union should review annually the progress in space radiocommunications made by Administrations, and the available reports and recommendations of the permanent organs of the Union with respect thereto;

and further recommends

3. that until revised by a future Conference, including the conference mentioned in para. 4 below, notification and registration of frequency assignments to space services shall be effected in accordance with the procedures adopted by this present Conference;

4. that the Administrative Council of the Union should, in the light of its annual review, and at a date which it will determine, recommend to Administrations the convening of an Extraordinary Administrative Conference to work out further agreements for the international regulation of the use of radio frequency bands allocated for space radiocommunications by this present Conference.

RECOMMENDATION No. 10A

Relating to the Utilization and Sharing of Frequency Bands Allocated to Space Radiocommunications

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

Resolutions 1721 (XVI) part D and 1802 (XVII) part IV para. 3 of the General Assembly of the United Nations which refer inter alia to the unanimous belief of the Members of the United Nations that communication satellites should be organized on a global basis with non-discriminatory access for all nations;

considering further

the economic and social implications for all nations of global communications by satellites recently expressed in the report prepared for Members and Associate Members of U.N.E.S.C.O. in accordance with the decision of the 12th session of its General Conference in December 1962;

recognizing

that all Members and Associate Members of the Union have an interest in and right to an equitable and rational use of frequency bands allocated for space communications;

recommends

to all Members and Associate Members of the I.T.U.

that the utilization and exploitation of the frequency spectrum for space communications be subject to international agreements based on principles of justice and equity permitting the use and sharing of allocated frequency bands in the mutual interest of all nations.

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RECOMMENDATION No. 11A

Relating to the Radio Astronomy Service

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering that

a) by definitions 74, 75 and 75A in Article 1 of the Radio Regulations, 1959, Radio Astronomy is a service using reception only;

b) research in Radio Astronomy is conducted with the use of receiving equipment of the highest attainable sensitivity;

c) at the Extraordinary Administrative Radio Conference, Geneva, 1963, considerable recognition was given to the needs of the Radio Astronomy service;

d) in addition to the exclusive allocation of one band on a worldwide basis, some administrations have been able to provide exclusive frequency allocations for Radio Astronomy in some other bands;

e) the greatest practicable protection from interference is essential to the advancement of the science of Radio Astronomy;

recommends that

1. the next Ordinary Administrative Radio Conference should give further consideration to the provision of improved frequency allocations for Radio Astronomy;

2. in the meantime, administrations should afford all practicable protection to the frequencies now allocated to Radio Astronomy on a shared basis with other radio services.

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